

Solid Waste Management for Sustainable Urban Development (SWMSUD) Project in Indonesia



Project-level Environmental & Social Management Planning Framework (VOLUME 1)

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ABBREVIATIONS AND ACRONYMS

AIIB	: Asian Infrastructure Investment Bank
ALARP	: As Low As Reasonably Practical
AMDAL	: <i>Analisis Mengenai Dampak Lingkungan/</i> Environmental Impact Assessment
ANDALALIN	: <i>Analisis Dampak Lalu Lintas/</i> Traffic Impact Analysis
AoI	: Area of Influence
ASWM	: Advanced Solid Waste Management
B3	: <i>Bahan Berbahaya dan Beracun/</i> Toxic and Hazardous Materials
BAPPENAS	: <i>Badan Perencanaan Pembangunan Nasional Republik Indonesia/</i> Ministry of National Development Planning of the Republic of Indonesia
BMKG	: <i>Badan Meteorologi, Klimatologi, dan Geofisika/</i> Indonesian Agency for Meteorological, Climatological, and Geophysics
BMP	: Biodiversity Management Plan
BPPW	: <i>Balai Prasarana Permukiman Wilayah/</i> Regional Settlement Infrastructure Center
CBD	: Convention on Biological Diversity
CBOs	: Community-Based Organizations
CFP	: Chance Finds Procedure
CITES	: Convention on International Trade in Endangered Species
CRA	: Climate Risk Assessment
DED	: Detailed Engineering Design
E&S	: Environmental & Social
EHS	: Environmental, Health, and Safety
ESDM	: <i>Kementerian Energi dan Sumber Daya Mineral Republik Indonesia/</i> Ministry of Energy and Mineral Resources
ESF	: Environmental and Social Framework
ESIA	: Environmental and Social Impact Assessment
ESMP	: Environmental and Social Management Plan
ESMPF	: Environmental and Social Management Planning Framework
ESMS	: Environmental and Social Management System
ESP	: Environmental and Social Policy
ESS	: Environmental and Social Standard
FGD	: Focus Group Discussion
FPIC	: Free, Prior, and Informed Consent
FS	: Feasibility Study
GBV	: Gender-based Violence
GHG	: Greenhouse Gas
GIIP	: Good International Industry Practice
GoI	: Government of Indonesia
GRM	: Grievance Redress Mechanism
GSI	: Gender and Social Inclusion
HSE	: Health, Safety, and Environment
IBAT	: International Biodiversity Assessment Tool
IEE	: Initial Environmental Examination
IFC	: International Finance Corporation
ILO	: International Labour Organization

IP	: Indigenous Peoples
IPP	: Indigenous People's Plan
IPPF	: Indigenous Peoples Planning Framework
IUCN	: International Union for Conservation of Nature
JAKSTRADA	: <i>Kebijakan dan Strategi Daerah/ Regional Policy & Strategy</i>
JAKSTRANAS	: <i>Kebijakan dan Strategi Nasional/ National Policy & Strategy</i>
KII	: Key Informant Interview
KSNP-SPP	: <i>Kebijakan dan Strategi Nasional Pengembangan Sistem Pengelolaan Persampahan/ National Policy and Strategy for Solid Waste Management System</i>
LAP	: Land Acquisition Plan
LARP	: Land Acquisition and Resettlement Plan
LG	: Local Government
LMOs	: Living Modified Organisms
LRP	: Livelihood Restoration Plan
LTP	: Leachate Treatment Plant
LUDD	: Land Use Due Diligence
MoEF	: Ministry of Environment and Forestry/ <i>Kementerian Lingkungan Hidup dan Kehutanan Republik Indonesia</i>
MoF	: Ministry of Finance/ <i>Kementerian Keuangan Republik Indonesia</i>
MoHA	: Ministry of Home Affairs/ <i>Kementerian Dalam Negeri Republik Indonesia</i>
MPWH	: Ministry of Public Works and Housing/ <i>Kementerian Pekerjaan Umum dan Perumahan Rakyat Republik Indonesia</i>
MRF	: Material Recovery Facility
NGO	: Non-Government Organization
OHS	: Occupational Health and Safety
PIC	: Person In Charge
PIU	: Project Implementing Unit
POPs	: Persistent Organic Pollutants
PPE	: Personal Protective Equipment
PS	: Performance Standard
PUPR	: <i>Kementerian Pekerjaan Umum dan Perumahan Rakyat Republik Indonesia/ Ministry of Public Works and Public Housing of Republic of Indonesia</i>
RAP	: Resettlement Action Plan
RDF	: Refuse Derived Fuel
RKL-RPL	: Indonesian Regulatory Management and Monitoring Plans
RP	: Resettlement Plan
SEA	: Sexual Exploitation and Abuse
SEP	: Stakeholder Engagement Plan
SH	: Sexual Harassment
SIPSN	: <i>Sistem Informasi Pengelolaan Sampah Nasional/ National Waste Management Information System</i>
SPPL	: Statement of Ability for Environmental Management and Monitoring
SRF	: Solid Recovered Fuel
SWM	: Solid Waste Management
SWM-SUD	: Solid Waste Management for Sustainable Urban Development
TPA	: Waste Final Processing Sites
TPS3R	: Reduce, Reuse, Recycle Waste Processing Site

TPST	: Integrated Waste Processing Sites
UKL	: <i>Usaha Pengelolaan Lingkungan</i> / Efforts for Environment Management
UNFCCC	: United Nations Framework Convention on Climate Change
UPL	: <i>Usaha Pemantauan Lingkungan</i> / Efforts for Environment Monitoring
WMP	: Waste Management Plan
WtE	: Waste to Energy

EXECUTIVE SUMMARY

Project Background

Indonesia is facing an urgent and growing challenge in solid waste management, which is a significant contributor to greenhouse gas emissions and marine plastic pollution. In response, the Government of Indonesia (GoI) has enacted key regulations, including Presidential Decree No.97/2017 (JAKSTRANAS) and No.83/2018 (Marine Debris Management), aiming for a 30% waste reduction at source and 70% waste handling coverage by 2025. The Waste-to-Energy (WtE) initiative, including the use of Refuse Derived Fuel (RDF), is a critical part of these efforts.

To support these goals, the Asian Infrastructure Investment Bank (AIIB), together with the Alliance to End Plastic Waste (AEPW) and the Ministry of Public Works (PU), is financing the Solid Waste Management for Sustainable Urban Development (SWM-SUD) Project. This national-scale initiative targets improvements in infrastructure, institutional capacity, and community engagement to advance sustainable waste management practices and transition toward a circular economy.

The project consists of four main components:

1. Solid Waste Infrastructure Development: Construction and rehabilitation of TPST and TPA facilities, and procurement of equipment in selected cities and districts.
2. Institutional Strengthening and Community Empowerment: Enhancing the capacity of government agencies and local communities through training and awareness programs.
3. Matching Grant and Circular Economy Initiatives: Supporting innovations and public-private partnerships for waste recycling and reuse.
4. Implementation Support: Providing technical assistance and project management services through national-level consultants and advisors.

The project will be implemented in two tranches, covering ten initial locations across Indonesia, with potential expansion in Tranche 3. Final selection is based on detailed Readiness Criteria set by the Ministry of Public Works (PU) and Bappenas, including legal, financial, institutional, technical, and environmental-social requirements. Project activities may include the construction and rehabilitation of waste infrastructure, development of solid waste master plans, and integration of circular economy solutions for plastic and other recyclable materials—all of which must adhere to the safeguards and procedures defined in the Environmental and Social Management Planning Framework (ESMPF).

This ESMPF has been developed to guide the SWM-SUD Project in managing environmental and social risks and impacts in a sustainable manner across all project components. Serving as a strategic tool in lieu of sub-project-specific Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs), the ESMPF includes a generic ESMP and a Resettlement Planning Framework (RPF). It outlines key procedures for risk screening, impact assessment, mitigation, stakeholder engagement, land acquisition, and capacity building, in alignment with Indonesian regulations and the AIIB Environmental and Social Framework (2022). As a dynamic document, the ESMPF ensures that only sub-projects meeting the environmental and social requirements proceed to implementation, providing overarching guidance throughout the project lifecycle.

The ESMPF provides the methodology and tools to manage environmental and social (E&S) risks throughout the SWM-SUD Project. It includes guidance on baseline data collection, risk identification, screening procedures, and requirements for ESIAs aligned with both Indonesian regulations and the AIIB Environmental and Social Framework (2022). The ESMPF also outlines generic ESMPs, mitigation and monitoring measures, institutional

arrangements, capacity building strategies, and mechanisms for stakeholder consultation, disclosure, and grievance redress. It functions not only as a safeguard instrument but also as a decision-making tool to ensure that only eligible and compliant sub-projects proceed.

Legal, Regulatory and Policy Framework

This project is subject to various national regulations, including laws on environmental protection, waste management, land acquisition, and the protection of vulnerable groups and workers, supplemented by technical regulations issued by relevant ministries. Indonesia has also ratified several key international agreements related to the environment, climate change, biodiversity, and hazardous waste management, reinforcing its commitment to sustainable development. The project shall adhere to the AIIB Environmental and Social Framework (ESF), particularly the three Environmental and Social Standards (ESS) that cover environmental and social impact assessment, land acquisition and involuntary resettlement, and Indigenous Peoples' protection. Based on its complexity and potential impacts, the project is expected to be classified as AIIB Category A, which requires a comprehensive environmental and social assessment and management plan.

Environmental & Social Baseline Information & Data

Environmental baseline data include air and odor, biodiversity, water quality (both surface and groundwater), noise, climate and weather, vibration, soil and geology, land uses, leachate, traffic conditions, topography, flood risks, and legacy waste characteristics. Data collection is guided by relevant national regulations and aligned with international standards such as the World Bank EHS Guidelines and the IUCN Red List, ensuring that environmental risks are accurately identified and site-specific mitigation measures can be effectively designed.

On the social side, baseline data focus on the socio-economic context within the project's AoI, covering aspects such as household income and expenses, access to essential services, gender dynamics, labor and working conditions, community health and safety, local governance structure, community organizations, cultural resources, land acquisition, and indigenous people. Data is collected through a combination of secondary data review and primary methods including surveys, interviews, focus group discussions, and direct observations. This integrated approach allows for a comprehensive assessment of environmental and social risks, supporting the development of effective mitigation strategies and inclusive stakeholder engagement.

Environmental & Social Risks and Impacts

The approach to environmental and social impact prediction and evaluation within the framework of the SWM-SUD project includes the identification of project activities, assessment of potential impacts on the environment and affected receptors, as well as an evaluation of the sensitivity and environmental value of the affected areas. Impacts are classified based on their severity and scale, as well as the sensitivity of the receptors. This approach is also used to determine which sub-projects should be excluded from the main project. Impacts are then categorized as positive or negative and subsequently assessed in terms of their magnitude (high, medium, low, or negligible) and significance, based on the interaction between receptor sensitivity and impact magnitude.

Project risk assessment is conducted by combining the level of impact significance with the likelihood of occurrence. This approach is used to identify potential risks that may arise from project activities, including unforeseen events. The assessment also includes cumulative impacts, which are the combined effects of the project together with other existing or planned projects in the same geographic area, in order to identify potentially greater impacts on the environment or communities.

If necessary, cumulative impact assessments will be conducted based on a prepared Terms of Reference (ToR).

During the pre-construction stage, the project has the potential to generate significant impacts, including:

- Legacy Environmental Issues: Potential soil and water contamination resulting from poor past waste management practices.
- Social Impacts from Land Acquisition: Land acquisition for access roads may affect the livelihoods of landowners and land users.
- Community Concerns: These include potential unpleasant odors from project activities, the use of non-local labor that may cause social tension, and inadequate public consultation.

The potential impacts that may arise during construction phase include:

- Air Quality and Odor: Affected by construction activities and the mobilization of heavy equipment and materials.
- Noise and Vibration: Generated by heavy machinery used for earthworks and infrastructure construction.
- Solid Waste Management: Domestic waste from workers' basecamps and construction debris may cause pollution and attract disease vectors if not managed properly.
- Wastewater Management: Wastewater from workers' basecamps can contaminate surface water if not adequately treated.
- Biodiversity and Aquatic Biota: Construction activities can harm local flora and fauna, cause habitat loss, and lead to a decrease in biodiversity.
- Livelihood Disruption: Waste pickers, truck drivers, landowners, and land users may face income loss due to landfill relocation and land acquisition.
- Worker Health and Safety: Risks include occupational accidents, illness, lack of PPE, labor rights issues, GBV, and harassment.
- Cultural Resources: Community access to sacred sites near the project area may be disrupted.
- Public Concerns: Issues such as dust, noise, traffic, and use of non-local labor may raise concerns among communities, local government, and civil society.
- Community Health and Safety: Increased traffic, pollution, and odor can lead to accidents and illnesses such as respiratory infections and skin irritation.
- Indigenous Peoples: Construction activities may disrupt livelihoods or daily routines of Indigenous Peoples, especially within customary territories.
- Job Opportunities: The project can create employment, with a focus on prioritizing local workers to avoid negative public perception.
- Business Opportunities: Small businesses may emerge to serve construction workers or supply materials, enhancing community income.
- Traffic Disruption: Caused by roadside material stockpiles and the movement of construction vehicles and workers.
- Gender Issues: The presence of workers from diverse backgrounds may increase the risks of sexual exploitation, abuse, harassment, GBV, and intimidation.

The potential adverse impacts that may occur during the operational phase are expected to include the following:

- Air Quality and Odor: Emissions from waste transport, MRF, and landfill operations can degrade air quality and generate foul odors, disturbing nearby communities.
- Climate Change / GHG Emissions: Decomposing waste emits methane and carbon oxides that contribute to global warming.
- Visual Impacts: The landfill's presence can negatively affect the surrounding area's visual landscape.
- Noise and Vibration: Operational activities generate noise and vibrations that may disturb residents and wildlife.
- Soil Contamination: Leachate and hazardous waste may degrade soil quality.
- Solid Waste Management: Landfill operations generate various waste types that must be properly managed to avoid environmental damage.
- Wastewater Management: Leachate and wastewater may pollute local water bodies.
- Water Quality: Potential contamination of surface and groundwater by operational pollutants.
- Biodiversity and Aquatic Biota: Leachate and pollutants may harm local ecosystems and aquatic life
- Livelihood Disruption: Waste pickers and collectors may lose income due to changes in waste flow from TPST to the landfill.
- Gender-Based Risks: Recruitment of new workers from mixed backgrounds may increase the risk of GBV, including intimidation and harassment.
- Worker Health and Safety: Risks include occupational hazards, insufficient PPE, labor issues, and workplace GBV.
- Community Health and Safety: Traffic congestion, air pollution, and odors may lead to accidents and health issues (e.g., respiratory infections, skin problems).
- Cultural Resources: Cultural heritage sites near or within the project area require protection in line with local customs.
- Public Concerns: Ongoing or unresolved environmental complaints (odor, water/soil pollution, labor practices) can raise public distrust, especially if local labor is not prioritized.
- Indigenous Peoples: Operations may disrupt the livelihoods and daily life of IPs, particularly in customary territories.
- Job Opportunities: TPST operations may offer local employment and improve community welfare.
- Business Opportunities: Local businesses may benefit from supplying goods/services for TPST operations, supporting income generation.
- Traffic Disruption: Waste transport vehicles may increase congestion and affect local mobility.

Environmental & Social Procedures

The Environmental and Social Procedure ensures alignment of the SWM-SUD project with Indonesian regulations and AIIB requirements by establishing clear decision criteria in the ESMPF for screening and excluding sub-projects with unmitigable environmental and social risks.

The screening process for determining required environmental documents in Indonesia is governed by MOEF Regulation No. 4/2021. For landfills with sanitary landfill systems, AMDAL is required for capacities ≥ 500 tons/day, and UKL-UPL for ≤ 500 tons/day. For TPSTs, AMDAL applies to ≥ 500 tons/day, UKL-UPL to 50–500 tons/day, and SPPL to < 50 tons/day. TPSTs with thermal processes require AMDAL if ≥ 50 tons/day, and UKL-UPL if < 50 tons/day. All landfill and TPST activities fall under Category C and

must be completed within 60 days. Local governments are responsible for ensuring that required documents are in place according to project type and capacity.

Landfill risk assessments refer to Ministry of Public Works Regulation No. 03/2013, evaluating environmental and social parameters such as distance to water sources, waste pile depth, groundwater quality, soil permeability, and proximity to settlements. Based on these factors, landfills are classified into three risk levels—low, medium, and very high—with corresponding recommendations such as rehabilitation or immediate closure depending on the severity of the impacts.

The SWM-SUD sub-projects are classified as Category A or B under AIIB standards, based on the scale and significance of environmental and social impacts. Category A requires a comprehensive ESIA due to significant, widespread impacts, while Category B involves more limited impacts that are easier to mitigate. The ESIA involves the identification and assessment of the potential environmental and social impacts associated with the project implementation, identification of mitigation measures and development of ESMP and other associated plans such as stakeholder engagement plan. The ESIA complies with AIIB ESS and follows international best practices, aligned with Indonesia's legal framework and relevant international guidelines.

The SWM-SUD exclusion list is used to screen out projects with environmental and social risks that cannot be adequately mitigated. The decision-making process begins with environmental and social impact screening, followed by comparison with the exclusion list. If the risks can be addressed through project interventions or commitments from the local government, the process continues with the preparation of safeguard documents and a Letter of Agreement (Nokes). The Nokes must outline the local government's commitments to mitigation measures, including implementation schedule, budget, and responsible parties. If the risks remain high and no formal commitment is provided by the local government, the project will be excluded from the program.

In addition to physical investments, the development of the SWM-SUD Master Plan must also apply a safeguard approach to identify and manage both direct and indirect impacts of downstream investments. This process must comply with national regulations, AIIB ESS, and the ESMPF and ESIA frameworks. To ensure an effective safeguarding approach, a Sectoral Environmental and Social Assessment may be conducted or experienced specialists may be engaged. Supporting facilities—such as access roads or temporary landfills constructed by local governments—are also required to meet ESMPF and Ministry of Public Works (PUPR) standards; failure to do so may result in delays in disbursement of funds for the main project. The technical implementation of the Letter of Agreement by the regional infrastructure agency (BPPW) and the local environmental agency (DLH) must reflect the results of landfill risk assessments, feasibility studies (FS), and detailed engineering designs (DED), and must be supported by a monitoring mechanism conducted twice a year by PUPR and the local government.

Environmental & Social Management Plan

The ESMP for the SWM-SUD Project serves as a comprehensive environmental and social management tool that ensures adverse environmental and social impacts resulting from sub-project activities are mitigated and positive outcomes are enhanced. The ESMP also anticipates unexpected risks during construction and operation phases, with flexibility for adaptive management. Furthermore, it underscores the integration with associated plans, including:

- Climate Change and GHG Mitigation Plan: In order to provide guidance on emissions reduction efforts and ensure alignment with national and international climate commitments
- Climate Risk Assessment (CRA): In order to assess the physical and transition risks, and to ensure alignment with the Paris Agreement.
- The Waste Management Plan (WMP) is a comprehensive strategy that addresses the handling of solid and liquid waste throughout the various stages of a project.
- The Biodiversity Management Plan (BMP) is a strategy to protect ecologically sensitive areas and improve conservation measures.
- Stakeholder Engagement Plan (SEP): It is vital to ensure inclusive, transparent and continuous stakeholder consultation.
- Gender Action Plan (GAP): The company is committed to mitigating gender-based risks and promoting the inclusion and empowerment of women.
- The Resettlement Framework (LARPF/RPF/LUDD) Addressing the issue of economic displacement, particularly among informal waste pickers, by offering fair compensation and facilitating livelihood restoration.
- Indigenous Peoples Planning Framework (IPPF): It is vital to ensure the rights, culture and livelihoods of indigenous peoples are protected wherever relevant.

The ESMP aligns with the AIIB ESS, particularly ESS 1, and is an integral part of project planning and execution.

The following tables summarize the general Environmental Management and Monitoring Plan developed for implementation during the pre-construction, construction, and operation phases of the SWM-SUD Project.

Environmental Management and Monitoring During Construction and Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
Construction						
• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities) • Commissioning	Ambient Air Quality	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and Increased of Gas Concentration (CO, CO2, NO2, SO2, H2S, and HC	• Stabilizing exposed surfaces. • Minimizing activities that potentially suspend dust particles. • Apply dust control measures such as water spraying for heavily transport areas such as access roads to active construction areas, disturbed areas (e.g. land clearing areas), wet suppression (watering), gravel or asphalt surfacing, and equipment wash down areas etc. • Apply water to excavation areas, soil loading/unloading areas and unpaved roads; • Create a wheel wash at entrances to public roads or exit of the landfill construction site; • Locate material stockpiles as a far as practicable from and downwind of air sensitive receivers (community); • Implement speed controls on-site; • Ensure that the cab of all soil storage trucks is covered with tarpaulins;	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring sites and near sensitive receptors that may include dust, vehicle emission, and odour on 6 monthly basis.	Contractor	Local Government, CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			- Water spraying regularly for dusty static construction areas/ materials/ operations; - Controlling lorries and barges loading capacity to avoid spillage. - Cover soil stockpiles with erosion control blankets; - Use hoarding to attenuate winds and therefore reduce likelihood of wind-blown dust; - To apply good practice in construction in sequencing the construction works in phases that minimize scatter impacts that are difficult to control.			
- Construction of access road (Associated Facilities) - Land Preparation - Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation	Noise	Noise pollution	- Maintain site roads in good condition to reduce noise and vibration from vehicle movements. - Utilize the vehicle that has pass the emission test. - Scheduling vehicle movement to avoid accumulated noise from vehicles. - Adopt good practice for construction site –regular maintenance of vehicles and machinery proper training to operators.	Noise monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The noise monitoring should ensure compliance with the relevant provisions of Minister of Environment Decree (Kepmen LH) No 48 of 1996 on Noise	Contractor	Local Government, CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)				Standards and EHS Guideline 48 hour		
	Vibration	Increased vibration	- Using a foundation method that produces little vibration (drill pile foundation) - Regular maintenance of heavy equipment machinery. - Conducting socialization related to activities that can cause vibration - Repair buildings damaged by increased vibration	Vibration monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The vibration monitoring should ensure compliance with the relevant provisions of Minister of Environment Decree (Kepmen LH) No 49 of 1996 on Vibration Standard	Contractor	Local Government, CPMU
	Hydrology	Increased run off	- Removing all construction waste from construction sites and surrounding water bodies in a systematic manner. - Minimise the duration of stockpiling - Protect water bodies from sediment load by using sediment traps or other barriers. - It is recommended to conduct construction activities during the dry season	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out	Contractor	Local Government, CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			- Construct and rehabilitate adequate drainage channels to accommodate surface runoff. - Maintain water conservation by making biopore infiltration holes in green open spaces or parks. - Not dumping rubbish in drainage channels - Maintain drainage channels from rubbish and mud			
	Soil	Increased Soil Erosion	- Building sediment traps - Using geo-bags, rocks, and concrete to build protective walls; - Planting vegetation that functions to reduce surface soil erosion and increase soil stability.	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out.	Contractor	Local Government, CPMU
- Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Soil	Soil contamination	- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only. - Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be	Any complaints as to the management of soil quality will be directed to the management as soon as practical. Complaints and any actions arising from a complaint are recorded in grievances register to be maintained by site management. All scheduled monitoring is	Contractor	Local Government, CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			hard surfaced/re-vegetated as soon as practicable;	reported or as required by environmental regulator.		
	Groundwater quality	The leachate of temporary disposal site could infiltrate to the groundwater and potentially pollute it if the environmental protection and landfill membranes does not meet the standard.	• Provision of effective construction site run-off controls such as controlled discharge and temporary drains; • Proper management of refuelling activities, waste storage and disposal; • Hard surfaced with perimeter drain at re-fuelling areas; • Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident; • In-place spill response and clean-up procedures; and • Temporary fuel storage tanks constructed with adequate secondary containment/bunded.	Monitor groundwater quality from monitoring wells every 3 months.	Contractor	Local Government, CPMU
• Construction of access road (Associated Facilities) • Base Camp and Workshop • TPST Facilities (basic facilities, environmental protection facilities)	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	• Implement the landfill rehabilitation plan. • Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016).	Regular monitoring for surface water management plan will be conducted by contractor at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of	Contractor	Local Government, CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
and supporting facilities) • TPA Rehabilitation • Commissioning			Implement proper hazardous waste and hazard substances storage and management at construction site.	2021 Appendix VI on Management of Water Quality and Water Pollution Control.		
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	- Hazardous waste and hazard substances shall be - stored at concrete area with roof and secondary containment to prevent spillage to waterbodies.		Contractor	Local Government, CPMU
- Land Preparation - Construction of Base Camp and Workshop - Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction	Waste Management	Increased Construction Waste	- Construction waste to be disposed accordingly. - General construction waste can be disposed into the existing landfill. - Segregate hazardous waste for proper storage and collection by licensed hazardous waste collectors.	Any complaints as to the management of on-site waste are forwarded to the Director of TPA as soon as practical. Complaints and any actions arising from a complaint are recorded in a complaints register maintained by site management. Use TPA SOP to maintain documentation of waste generation, storage, and disposal.	Contractor	Local Government, CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
(Associated Facilities)						
Construction of Base Camp and Workshop	Waste Management	Increased Domestic Waste (include Hazardous Waste)			Contractor	Local Government, CPMU
		Increased domestic wastewater	Establish domestic wastewater management system.	Regular monitoring at established points and report to related agencies every 3 months.	Contractor	Local Government, CPMU
Land clearing, use of heavy machinery.	Biodiversity	Loss of habitat, impact on local flora and fauna, potential fatalities of species, forced relocation of wildlife.	Conduct land clearing based on sub-project design, refrain from opening areas outside designated boundary, conduct greening with fast-growing/local species.	Monitoring terrestrial biota at establish site and near sensitive receptor during construction phase.	Contractor	Local Government, CPMU
Operation						
- Operation of TPST - Operation of Residual Landfill	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5)	- Establishing frequent waste collection schedules. - Optimize waste collection routes to minimize travel distance and overall fuel use and emissions.	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring points and near sensitive receptors that may include dust, vehicle	Local Government/LPMU	CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
		Increased of Gas Concentration (NO ₂ , SO ₂ , H ₂ S, and HC)	- Develop and implement a standard operation procedure to control and minimize emission of dust and bio-aerosol during loading/unloading. - Include landfill gas collection system designed and operated in accordance with the applicable national requirements.	emission and odour on 6 monthly basis. Monitoring sites near sensitive receptors, 6-monthly during operation, and closure. Submit a monitoring report to related agencies every 6 months.	Local Government/LPMU	CPMU
- Operation of TPST - Operation of Residual Landfill	Soil	Soil contamination	- Develop and implement drilling management plan. - Properly store chemicals and hazard substances in sheltered area and provide kerb or secondary containment to prevent spillage.	Document and report soil quality management activities, maintain grievances register.	Local Government/LPMU	CPMU
	Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)	- Develop and implement transportation management plan that includes usage of material cover during material transportation and/or perform dust control by spraying water on the streets & roads when mobilization is performed during a particular hot day (dry season) twice a day (noon and afternoon). - Conduct the application of speed limit.	Regular monitoring for surface water management plan will be conducted by landfill operators at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of 2021 Appendix VI on Management of Water Quality and Water Pollution Control.	Local Government/LPMU	CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
		Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	• Use perimeter drains and landfill cell compaction, slopes and daily cover materials to reduce infiltration of rainfall into the deposited waste. • Prevent run-on of precipitation into the active area. • Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). • Regular monitoring of effluent quality to ensure leachate treatment plant operates well. • Direct the wastewater from truck/vehicle wash to the drainage channel.	Record leachate effluent discharge and pH on daily basis; Monitor leachate effluent quality every month; Monitor groundwater quality from monitoring well every 3 months. During operation stage, the result for scheduled monitoring should be reported to related agency every 3 months.	Local Government/LPMU	CPMU
• Operation of TPST • Operation of Residual Landfill	Waste management	Increased Domestic Waste Generation (Including Hazardous Waste)	• Collect hazardous waste into the Hazardous Waste Temporary Storage and dispose the hazardous waste through the licensed hazardous waste disposal. • Applied the ERP for oil spill.	Document and report waste management activities, maintain waste disposal records.	Local Government/LPMU	CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
		Increased Domestic Wastewater	Establish domestic wastewater management	Regular monitoring at established points, report to related agencies every 3 months.	Local Government/LPMU	CPMU
Facility operation, leachate discharge	Biodiversity	Ongoing impact on aquatic biota and biodiversity from potential leachate discharge	Maintain the effectiveness of leachate treatment plant.	Monitor aquatic biota at established sites and near sensitive receptors every 6 months during construction, operation, and closure. Report to related agencies every 6 month	Local Government/LPMU	CPMU

Social Management and Monitoring During Pre-Construction, Construction and Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
Pre Construction						
Land acquisition	Social Economic	Land user income disruption	• Monitor replacement land user • Establish a grievance redress mechanism (GRM)	• Reports on land usage by affected users • Continuous monitoring of GRM implementation to address issues	Contractor	Local Government/ LPMU
Stakeholders Socialization	Social Cultural	Increase of community concerns	• Conduct public consultation • Develop a grievance redress mechanism • Establish a dedicated complaints team • Prepare traffic management • Conduct regular air quality and odour monitoring	• Monitor number and frequency of consultations • Regular grievance tracking • Odour and air quality reports every quarter	Contractor	Local Government/ LPMU
Construction						
Recruitment Activities	Socio-economic	Workforce Opportunity	• Prioritise local recruitment. Ensure that the majority of workers hired during the operational phase are from the surrounding villages. • Establish a transparent recruitment process. Publicly advertise job opportunities and ensure fair selection. • Provide training to local workers. Provide skills training, including	• Monthly recruitment reports • Grievance log updates • Training completion reports	Contractor	Local Government/ LPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			health and safety protocols, to improve skills. • Prioritise employment for vulnerable groups, such as local waste pickers. • Establish a grievance mechanism. Provide easy access for local people to raise concerns about recruitment and employment.			
Workforce release	Socio-economic	Decrease Job Opportunity	• Conduct a desktop review about the gender-disaggregated number and human resources required by the project compared to the gendered availability of local Manpower • Prepare workforce release plan	• Workforce transition plan completion • Monitoring of released workers' employment status	Contractor	Local Government/ LPMU
Construction of Base Camp and Workshop	Socio-economic	Business Opportunity	• Conduct a desktop review about the number of businesses near the project area	Quarterly reports on engagement with local businesses	Contractor	Local Government/ LPMU
• Temporary disposal site construction • Waste disposal handling during construction (Associated)	Socio-economic	Waste picker Relocation	• Conduct socialization • Conduct socio-economic impact assessments with GSI lens to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans • Develop livelihood restoration plans specifically targeting women and elderly waste pickers, ensuring gender sensitive and inclusive approaches.	• Monitoring of displaced waste pickers • Bi-annual socio-economic impact reports • Monitoring of compensation and livelihood restoration programs	Contractor	Local Government/ LPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			Ensure compensation mechanisms consider the vulnerability of these groups.			
Land Preparation	Socio-economic	Disruption of waste pickers' livelihoods	- Conduct socio-economic impact assessments with GSI lens to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans - Implement targeted livelihood restoration programs with a focus on women and elderly waste pickers. - Offer skill development and alternative income opportunities tailored to their needs. - Engage with waste picker groups to ensure inclusive participation in decision-making.	- Quarterly socio-economic assessments - Monitoring of livelihood restoration program participation	Contractor	Local Government/ LPMU
- Mobilization of Equipment and Materials - TPA Rehabilitation	Socio-cultural	Cultural resources	- Conduct prior mapping and demarcation of the cultural resources and establish a protective buffer zone - Install signage and barriers to prevent entry of construction equipment and personnel into sensitive areas - Coordinate with local cultural/religious leaders to align construction activities with local customs and ceremonial schedule	- Monitor implementation of buffer zone and physical protection measures - Document any community complaints related to cultural resources disturbance - Monthly verification of contractor compliance with access restrictions	Contractor	Local Government/ LPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			• Conduct awareness training for workers on respecting cultural heritage • Ensure restricted access and traffic control near the cultural resources	• Hold coordination meetings with community and cultural representatives • Visual inspection and photo documentation of site integrity		
• Recruitment • Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials	Socio-cultural	Indigenous People	• Conduct regular consultation and communication with IPs. • Map customary territories and cultural resources to define work areas and material placement boundaries. • Ensure IP retain access to their livelihoods and cultural resources. • Develop a grievance mechanism specifically for IPs.	• Bi-annual community surveys • Regular grievance mechanism updates	Contractor	Local Government/ LPMU
• TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • Temporary disposal site construction - Waste disposal handling during construction		Community concern	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	• Bi-annual community surveys • Regular grievance mechanism updates	Contractor	Local Government/ LPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
(Associated Facilities)						
Mobilization of Equipment and Materials	Transportation	Disruption to Land Traffic	- Conduct a traffic impact assessment - Implement a traffic management plan	- Monthly traffic monitoring reports - Review traffic incidents and impact	Contractor	Local Government/LPMU
		Increase in Traffic Accidents	- Assess the road safety risks - Implement traffic control measures	- Monthly accident reports - Road safety audits	Contractor	Local Government/LPMU
- Construction of access road (Associated Facilities) - Land Preparation - Base Camp and Workshop - Mobilization of Equipment and Materials - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Health and Safety (Workers)	Increase in work accidents Hazards exposure (e.g. hazardous materials, moving heavy equipment, electricity, and dangerous gases) Additional factors (i.e. fatigue, insufficient training, and lack of supervision)	- Conduct comprehensive risk assessments - Implement a thorough Occupational Health and Safety (OHS) program - Ensure proper use of Personal Protective Equipment (PPE) - Establish safety zones - Provide regular training and necessary licenses - Implement a buddy system - Rotate tasks and provide drinking water	- Conduct a toolbox meeting before starting work. - Track workplace accidents involving construction workers throughout the construction process. - Prepare hazard identification and risk assessment, and prepare the work procedures.	Contractor	Local Government/LPMU
	Health and Safety (Community)	Increase in community risks	- Identify potential interactions - Create a buffer zone or high-security fence - Install warning signs and traffic signals	Prepare hazard identification and risk assessment, and prepare the work procedures.	Contractor	Local Government/LPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
		Increase in vulnerable populations	- Regularly monitor air and water quality - Conduct outreach and education - Manage drainage effectively	- Build a buffer zone or high security fence. - Installation of safety signs and traffic signals. - Evaluate the air and water quality. - Conduct community engagement and feedback with meeting and/or events - Collaborate with local educational parties and community groups		
Operation						
- TPST/Residual Landfill Recruitment - Operation of TPST	Socio-economic	Workforce Opportunities	- Prioritise local recruitment. - Establish a transparent recruitment process. - Provide training to local workers. - Prioritise employment for vulnerable groups, such as local waste pickers. - Establish a grievance mechanism.	- Monthly recruitment reports - Monitoring of vulnerable group employment - Review of grievance mechanism updates	Local Government/ LPMU	CPMU
	Socio-cultural	Community Concern	- Conduct a baseline survey to identify community expectation and concern to the project. - Review of community grievances about the project activity. - Prepare Grievance redress mechanism	- Quarterly grievance mechanism report - Monitoring community satisfaction levels and feedback through surveys	Local Government/ LPMU	CPMU

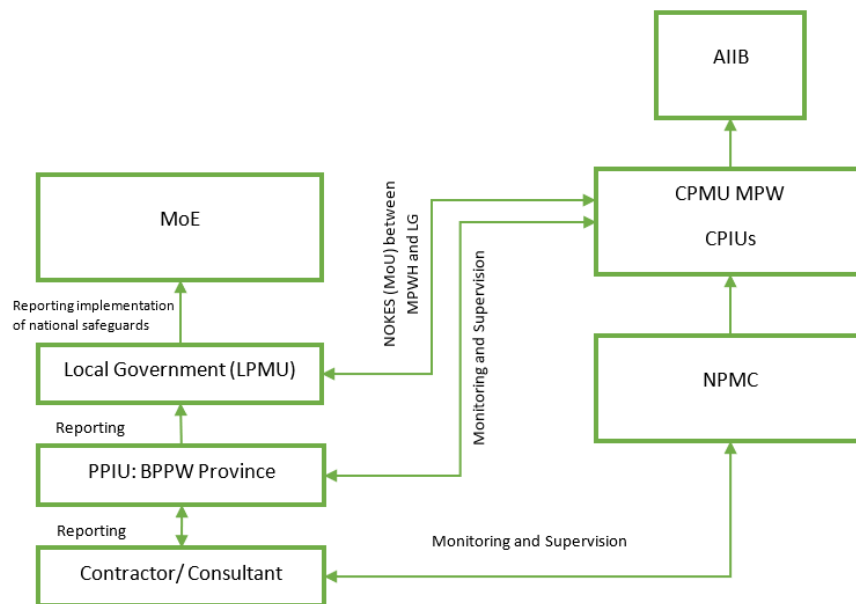
Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
- Operation of TPST - Operation of Residual Landfill	Socio-economic	Disruption of waste pickers' livelihoods	- Develop livelihood restoration programs. - Provide social security and health benefits. - Ensure transparent communication. - Monitor income levels.	- Quarterly livelihood restoration monitoring - Reports on income levels of waste pickers - Evaluation of social security and health benefits	Local Government/ LPMU	CPMU
- Operation of TPST - Operation of Residual Landfill	Socio-cultural	Cultural resources	- Conduct prior mapping and demarcation of the cultural resources and establish a protective buffer zone - Install signage and barriers to prevent entry of construction equipment and personnel into sensitive areas - Coordinate with local cultural/religious leaders to align construction activities with local customs and ceremonial schedule - Conduct awareness training for workers on respecting cultural heritage - Ensure restricted access and traffic control near the cultural resources	- Annual review of community grievance regarding the cultural resources - Assess the cultural resources conditions and community activities at the cultural resources to maintain the condition of the cultural resources and see if there is any disturbance from the project	Local Government/ LPMU	CPMU
		Indigenous People	Conduct meaningful consultation and participation based on the principle of Free, Prior, and Informed Consent (FPIC).	- Bi-annual community surveys - Regular grievance mechanism updates	Local Government/ LPMU	CPMU

Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
			- Provide information in a language and format that is easily understood by IPs. - Carry out participatory mapping of customary land before the project begins. - Develop a grievance mechanism specifically for IPs.			
- Operation of TPST - Operation of Residual Landfill	Health and Safety (Workers)	Increase in work accidents Hazardous working conditions Disorganised work environment	- Conduct routine risk assessments - Audit and develop work procedures - Monitor past accidents - Implement a comprehensive safety training program - Maintain strict supervision - Install safety signs and markers - Ensure cleanliness and organisation - Establish an effective communication system	- Track workplace accidents involving construction workers throughout the construction process. - Prepare hazard identification and risk assessment and prepare the work procedures. - Build a policy, organisation chart and responsibility, work programmes. - Prepare safety report to local government in every 3 months, and annual report for internal progress evaluation.	Local Government/ LPMU	CPMU

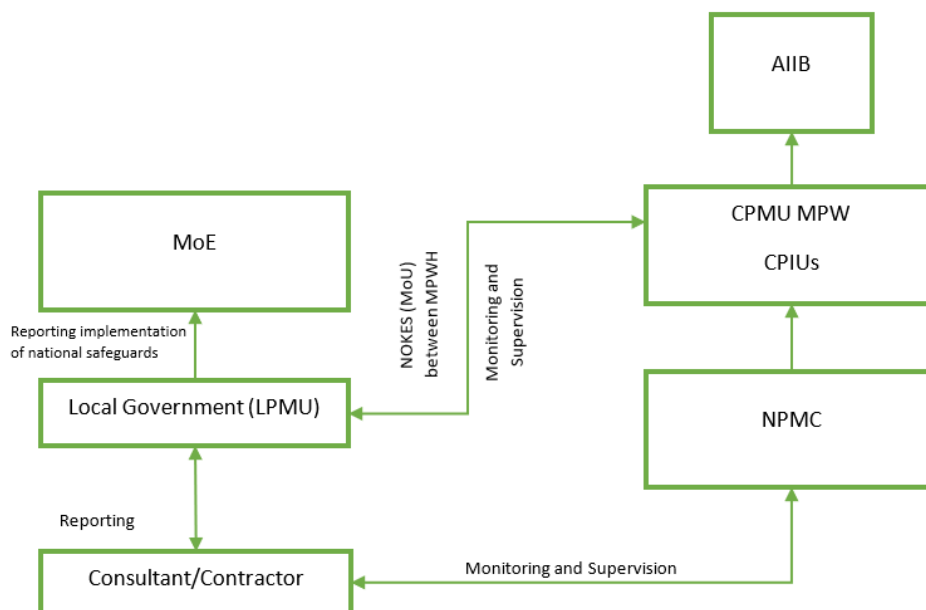
Activity/Aspect	Receptor	Potential Impact	Mitigation	Monitoring	Mitigation and Implementation Responsibility	
					Implementation	Supervision
• Operation of TPST • Operation of Residual Landfill	Health and Safety (Community)	Increase in community risks Increase in vulnerable populations Changes in Community Disease Changes in Environmental Sanitation	• Identify potential interactions • Conduct regular public health monitoring in coordination with local health authorities, including tracking of respiratory illnesses, skin infections, or other potential symptoms linked to waste operations • Establish a community health baseline and track changes over time to inform adaptive management • Create a buffer zone or high-security fence • Install warning signs and traffic signals • Regularly monitor air and water quality • Conduct outreach and education • Manage drainage effectively	• Review disease prevalences monthly and annual reports • Conduct regular (annual) health check-ups for communities near TPST and TPA • Monitor complaints related to odor, pests, and water pollution • Check condition and placement of safety signs and warning boards at access roads and gates Annual public health monitoring • Evaluate the air and water quality. • Conduct community engagement and feedback with meeting and/or events • Collaborate with local educational parties and community groups	Local Government/LPMU	CPMU

Institutional Arrangements

Implementing the Environmental and Social Management Plan (ESMP) in Indonesia requires a multi-tiered approach involving key institutions. The Asian Infrastructure Investment Bank (AIIB) oversees and evaluates the project to ensure it meets environmental and social standards. The Central Project Management Unit of the Ministry of Public Works and Housing (CPMU-MPWH) is responsible for monitoring and evaluating the project, coordinating efforts, supervising activities, and providing technical guidance. The Ministry of Environment and Forestry (MoEF) is the central authority for environmental management and policy formulation. It oversees the implementation of environmental regulations and ensures compliance with national standards.



Institutional Arrangement for ESMP Implementation on Construction Stage



Institutional Arrangement for ESMP Implementation on Operation Stage

The local government/local project management unit (LPMU) is responsible for the day-to-day management and implementation of the ESMP through the coordination with contractors and consultants. It also reports to the MoEF or the provincial environmental service department for national safeguards compliance. The Provincial Project Implementation Unit (PPIU) supervises activities and conducts work assessments at the regency or city level, as well as with facilitator staff.

The National Project Management Consultant (NPMC) assists the CPMU in managing the project through the project cycle and ensures that substantial environmental and social risk documents are prepared before submission to the AIIB. The NPMC also provides training and capacity building, including training on the ESMP and other relevant topics for project agencies.

Contractors and consultants engaged to carry out specific project-related tasks, including construction activities, environmental monitoring, and impact assessments are responsible to adhere to the mitigation measures outlined in the ESMP and report on their progress to the PPIU.

The Central Project Implementation Unit (CPIU) and AIIB will ensure that delivery organizations have the necessary expertise to carry out sub-project implementation tasks. Delivery organizations, including consultants, contractors, and NGOs, are responsible for establishing systems that make relevant employees, contractors, and other workers aware of the environmental and social requirements for project implementation outlined in the ESMPF.

All project personnel will attend an orientation covering the relevant ESMPF requirements, including health, safety, environmental, and cultural requirements. Sub-project workers involved in activities with the potential to cause serious social and/or environmental harm will receive task-specific training and certification.

Financing for SWM-SUD activities will come from the APBN, APBD, and other sources (loans and grants). The CPMU is responsible for ensuring that all parties, especially field implementers, have the capacity to meet the minimum requirements for implementing the ESMPF. Training will be conducted after the loan agreement is signed and the NPMC is formed.

Consultation and Disclosure Plan

Public consultation is a crucial process that involves stakeholders, such as the government, organizations, and the community, in order to gather their feedback and input on an issue, policy, or project. Consultations are conducted throughout the project cycle to ensure that decisions are inclusive, transparent, and aligned with the needs and desires of those affected. Stakeholders are categorized into three groups: those directly affected, those indirectly affected, and other relevant stakeholders.

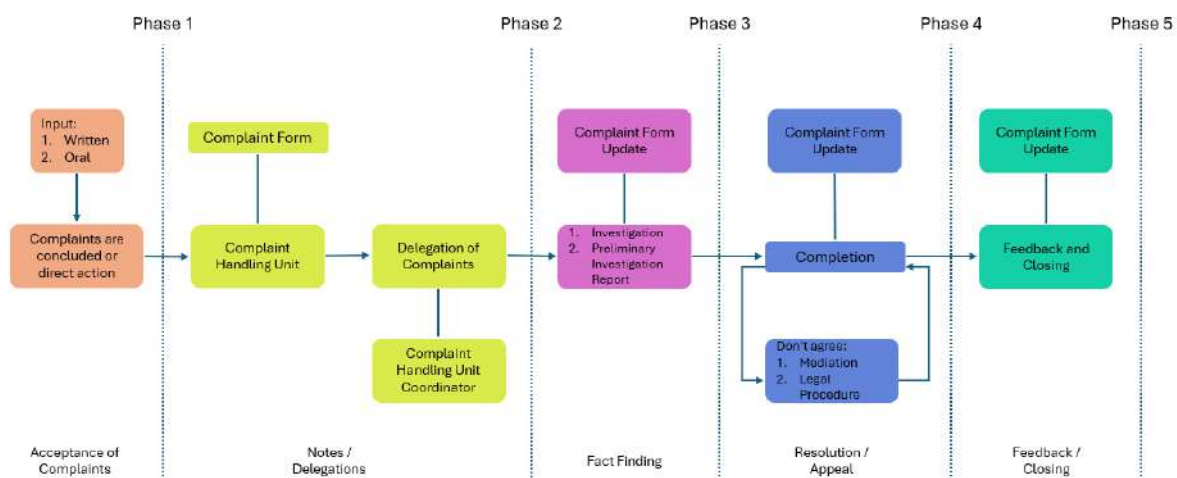
All stakeholders, including the affected community, must communicate with regarding project-related information. Methods of disseminating information include face-to-face meetings, print media, electronic media, social media, and public announcements. The frequency of public consultations depends on stakeholder agreements and project requirements.

Following up with stakeholders is essential to ensure that their voices are heard and that the project's goals are met. This can include double-checking information, testing proposed approaches, and addressing concerns. Reporting back to stakeholders on the progress of the consultation process establishes credibility, manages expectations, and reduces consultation fatigue and cynicism. The Central Project Implementation Unit (CPIU) is responsible for implementing public consultations and may be assisted by consultants or third parties.

The project will provide stakeholders with opportunities to offer suggestions, opinions, and feedback via a suggestion box, a designated contact person, or direct comments. Materials will be distributed both online and offline, including announcements, pamphlets, brochures, and banners. The Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan Framework (ESMPF), and Environmental and Social Management Plan (ESMP) documents will be uploaded to the official AIIB website, the project website, and the websites of relevant government agencies. The draft ESIA/ESMP must be prepared before finalizing the Bidding Document or during negotiations with contractors. Project information and environmental and social (ES) instruments will be disclosed in both Bahasa Indonesia and English.

The AIIB ESF requires the creation of a project-level grievance redress mechanism (GRM) to address concerns and complaints related to environmental or social impacts. The GRM ensures that all complaints are promptly and transparently addressed with the involvement of relevant stakeholders. Records and documentation of complaints are created as part of the grievance handling process and are regularly monitored by the Complaint Handling PIC.

The grievance procedure should be disseminated to stakeholders in a language that is easily understood by the public, and no fees or sanctions should be imposed on those who report. Complaints can be submitted directly to the Project Implementation Coordinator (PIC) or indirectly via websites, email, official letters, or community leaders/representatives. Information on how to submit a complaint must be available on the project website and in the project office and affected village offices.



Grievance Redress Mechanism Chart

The grievance procedure shown above involves five stages: complaint acceptance, notes/delegations, fact-finding, resolution/appeal, and feedback/closure. Complaints are accepted, analysed, and recorded through a standard feedback process. Once a grievance has been identified, it is officially recorded in a log and categorized as either low- or high-significance. An initial response is sent within six business days, and the issue is assigned to the relevant unit or department.

Fact-finding involves investigating the grievance and related activities, reviewing the results, and proposing a resolution. The proposed resolution is formally communicated to all parties. If the resolution is accepted, it is documented and implemented, and the grievance is closed. If the resolution is not accepted, it may be reconsidered, and another resolution may be proposed. If neither

party is satisfied, the complainant or project may resort to the courts. Finally, the accepted resolution is monitored and evaluated. All parties are notified and given the opportunity to provide feedback on the grievance process.

Environmental and Social Baseline Implementation Monitoring and Reporting

The environmental and social (E&S) monitoring and implementation framework is applicable throughout the project's lifecycle—from pre-construction to operation and post-operation. The monitoring framework is designed to ensure the effective implementation of mitigation measures, proactive risk management, and compliance with the AIIB Environmental and Social Standards (ESS), national regulations, and Good International Industry Practices (GIIP).

Monitoring Framework and Responsibilities:

- Environmental and social monitoring activities included in the ESMP will be conducted at each stage of the project.
- Pre-construction and construction phases: Monitoring will be led by the contractor under the supervision of the local government and CPMU.
- Operation and post-operation phases: Responsibility for monitoring will transition to the DLH or relevant government agencies.
- Monitoring will occur every three to six months, depending on the environmental aspect. Where feasible, all data collected should be gender disaggregated.
- Each mitigation and monitoring action is linked to a budget estimate and documented in a performance matrix.
- All monitoring results and complaints are recorded and reported to the relevant authorities quarterly or biannually, as required.

Appendices

The following guidance documents are provided as appendix to the ESMPF document:

List of Appendices	Summary Description
Appendix A – Indonesian Laws and Regulations on Solid Waste Management	Outlines the legal framework governing solid waste management in Indonesia
Appendix B – Environmental and Social Safeguard Screening Form	Provides a screening form to identify potential environmental and social issues.
Appendix C – Rapid Environmental Assessment Checklist for Solid Waste Management	Offers a checklist to conduct a rapid assessment of environmental aspects related to solid waste management
Appendix D – Cumulative Impact Assessment Table of Contents	Guides sub-projects in preparing cumulative impact assessments in line with AIIB ESS and national requirements
Appendix E – Procurement Terms of Reference	Details essential aspects of the procurement process, including responsibilities and performance targets.
Appendix F – Environmental and Social Code of Practice Template	Ensures compliance with environmental, social, occupational health and safety (OHS), and community health and safety standards.
Appendix G – Resettlement Planning Framework	Guideline to ensure that land acquisition and resettlement are conducted fairly and transparently, in line with Indonesian laws and AIIB standards.
Appendix H – Exclusion List	Provides the exclusion criteria for project eligibility.
Appendix I – Example of Memorandum of Agreement	Contains a sample of the Memorandum of Agreement to be used in the project.

List of Appendices	Summary Description
Appendix J – Site Visit Reports	Summarizes findings from site visits and suggests mitigation actions.
Appendix K – Workshop Reports	Documents the timeline and outcomes of consultations and workshops held.
Appendix L – Baseline Conditions	Describes baseline environmental, biodiversity, and social conditions at each site based on surveys.
Appendix M – Sample Grievance Form and Log	Provides templates for recording and tracking community complaints and grievances.
Appendix N – Contractor’s Environmental and Social Management Plan (C-ESMP)	Presents a comprehensive template and structure to ensure that construction activities are sustainable, safe, and compliant with environmental and social standards.
Appendix O – AIIB Pre-Assessment Findings	Summarizes AIIB’s environmental, biodiversity, and social findings from each site.
Appendix P – High Level Management Procedures	Describes procedures for managing temporary storage areas, biodiversity, environmental and social aspects of access roads, water supply, hazardous waste, and cultural heritage.
Appendix Q – Impact Assessment Format	Explains the table format used to determine the level of risk and impact.
Appendix R – Safeguard Master Plan	Outlines a systematic approach to ensure that the SWM-SUD Master Plan is developed with strong environmental and social due diligence, ensuring that downstream projects are safe, sustainable, and compliant with national and international standards.

1 Description of the Project

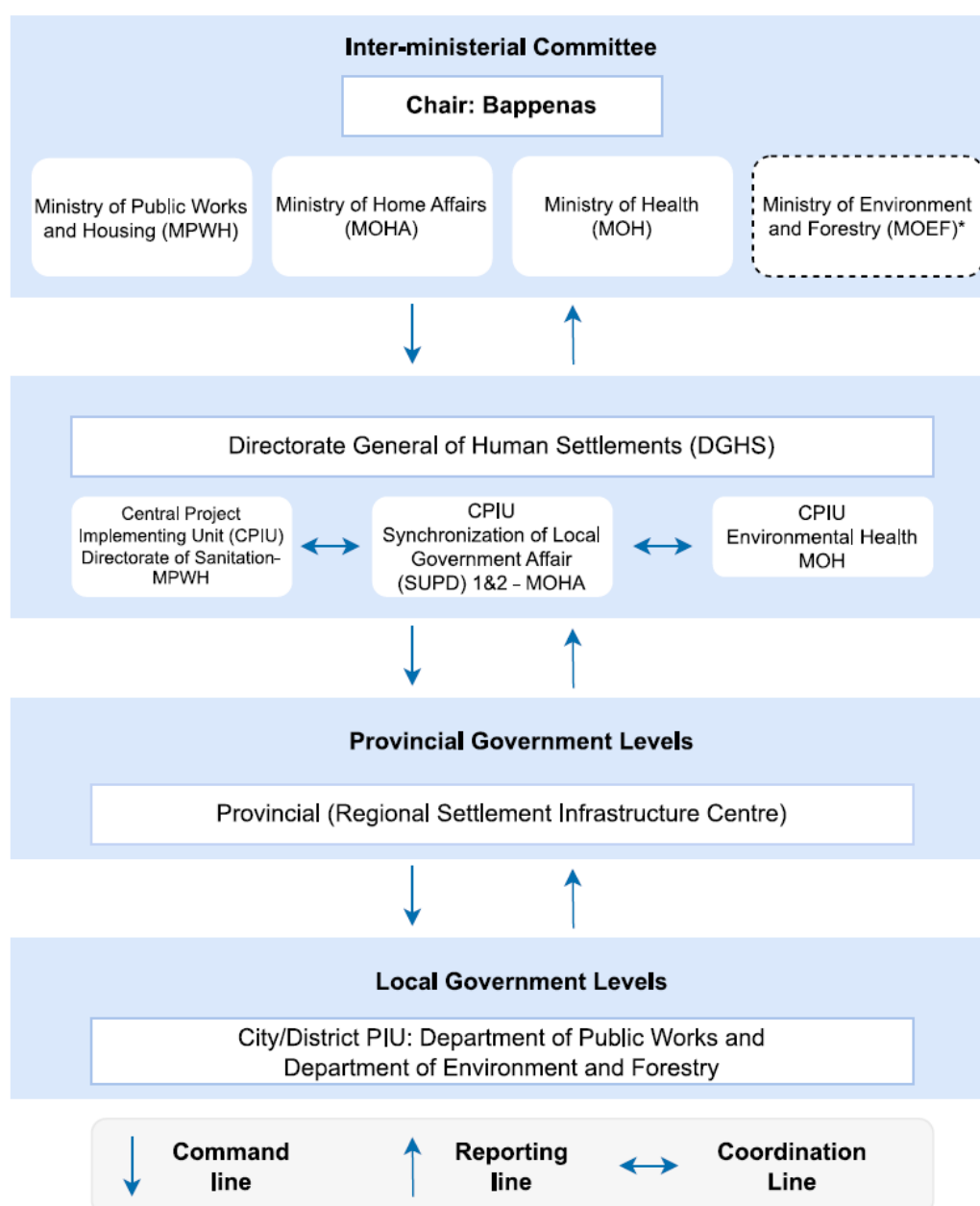
1.1 Background

- 1.1.1 Indonesia faces a continual challenge with waste management, a challenge which is further exacerbated by the increasing amounts of waste generated daily across the country. Solid waste is identified as the third largest contributing sector to GHG emissions in Indonesia behind land use and energy. Indonesia is also recognized as the second largest contributor to marine plastic waste behind China, of this 80% is derived for poor terrestrial based waste management. Recognizing the urgency, the GoI has taken decisive steps by enacting the Presidential Decree No.97/2017 on the National Policy & Strategy on Management of Household Waste and Household-like Waste (JAKSTRANAS), complemented by the Presidential Decree No.83/2018 on Marine Debris Management (Plan of Action on Marine Plastic Debris 2017–2025). These regulations underscore the country's commitment to addressing waste-related challenges. Indonesia faces a continual challenge with waste management, a challenge which is further exacerbated by the increasing amounts of waste generated daily across the country. Solid waste is identified as the third largest contributing sector to GHG emissions in Indonesia behind land use and energy. Indonesia is also recognized as the second largest contributor to marine plastic waste behind China, of this 80% is derived for poor terrestrial based waste management. Recognizing the urgency, the GoI has taken decisive steps by enacting the Presidential Decree No.97/2017 on the National Policy & Strategy on Management of Household Waste and Household-like Waste (JAKSTRANAS), complemented by the Presidential Decree No.83/2018 on Marine Debris Management (Plan of Action on Marine Plastic Debris 2017–2025). These regulations underscore the country's commitment to addressing waste-related challenges. By 2025, the GoI aims to achieve significant milestones: a 70% reduction in plastic leakage into waterways, a 30% reduction in waste at its source, and an overall waste handling rate, encompassing collection and disposal, of 70%. Further amplifying the nation's push towards innovative waste management solutions is the Presidential Regulation No.35 of 2018, which emphasizes the Acceleration of Waste-to-Energy Plant Development based on Environmentally Friendly Technology. The Indonesian government is pushing the Waste to Energy (WtE) initiative, with RDF being one of the pivotal approaches in this direction. It's worth noting that the development of RDF in six cities in Indonesia significantly supports the government's efforts to achieve the goals set out in Jakstranas and reinforces the implementation of Presidential Regulation No.35/2018. The Asian Infrastructure Investment Bank (AIIB) is considering providing a sovereign-guaranteed loan for the Republic of Indonesia to fund the Solid Waste Management for Sustainable Urban Development (SWM-SUD) Project. This initiative seeks to enhance waste management infrastructure in selected cities and districts in Indonesia.
- 1.1.2 The sub-projects will address all stages of the solid waste cycle, from waste collection and transport through to material recovery and recycling, waste to energy through Refuse Derived Fuel (RDF), and final disposal of residuals in sanitary landfills. The focus of the project will be on identifying and preparing Advanced Solid Waste Management Systems (ASWM) that promote waste reduction, recycling and the move towards a circular economy, and emissions reductions.
- 1.1.3 The Asian Infrastructure Investment Bank (AIIB), the Alliance to End Plastic Waste (AEPW) and Indonesia's Ministry of Public Works and Housing (PUPR) have established a co-investment partnership to provide integrated solid waste management (SWM) services in select cities and districts in Indonesia. The partnership will strengthen SWM institutional capacity at national and subnational levels and enable AEPW to contribute additional concessional resources into

the "[Solid Waste Management for Sustainable Urban Development Project](#)" (SWM-SUD) in Indonesia. The AEPW has appointed ESC to support the Ministry of Planning (BAPPENAS), Ministry of Public Works and Housing (PUPR) Cipta Karya, and Local Governments (LGs) to ensure project Readiness Criteria are complete and compliant, and to prepare international environmental and social safeguards documents (ESMPF, ESIA, ESMP), and Feasibility Study reports to meet AIIB standards and requirements. The project team will review and provide Due Diligence on all sub-project preparation documents and will compare them against the Government of Indonesia Readiness Criteria, and AIIB's Environment and Social Framework (2022) compliance standards.

- 1.1.4 The SWM-SUD Project will be managed through an Inter-ministerial committee, chaired, and coordinated by the Ministry of Planning BAPPENAS, and prepared & implemented by the PUPR, as illustrated in the Figure below:

Figure 1-1 Inter-Ministerial Committee



1.1.5 Component 1: Solid Waste Infrastructure in Selected Cities and Districts. This component focuses on the development of infrastructure for solid waste management in targeted cities and districts. The key activities include:

- Construction: Building necessary facilities for solid waste processing and management.
- Supervision: Overseeing the construction process to ensure quality and compliance with standards.
- Heavy Equipment: Procurement of essential machinery and equipment required for waste collection, transport, and processing.

1.1.6 Component 2: Institutional Strengthening and Community Empowerment. This component aims to enhance the capacities of local institutions and communities to manage waste more effectively. It includes:

- Institutional Strengthening: Empowering local governmental bodies with Ministry of Home Affairs through capacity building.
- Community Empowerment: Working with the Ministry of Health to engage and educate communities about waste management.
- Solid Waste Management Master Plan: Developing comprehensive master plans to guide long-term waste management strategies, under the supervision of the Ministry of Public Works and Public Housing.

1.1.7 Component 3: Matching Grant and Circular Economy Initiative. This component supports innovative approaches to waste management, particularly through partnerships and grants aimed at fostering a circular economy. Activities include:

- Implementation of Waste Management Ladder in SWMSUD: Introducing structured waste management practices under a broader urban waste management program.
- Waste Collection Facilities and Equipment through Matching Grants: Providing facilities and equipment through grants that match local or other sources of funding.
- Support for Circular Economy Piloting: Initiatives to pilot circular economy projects, such as recycling and reuse of materials, that reduce waste and create sustainable waste management systems.

1.1.8 Component 4: Implementation Support. This component provides the necessary support to implement the project, ensuring smooth execution. It includes:

- NPMC (National Project Management Consultant): Consultancy support to manage and oversee project implementation at a national level.
- Advisory for PMU + Bappenas: Providing advisory services to the Project Management Unit and the National Development Planning Agency (Bappenas).
- Evaluation and Study Consultant: Engaging consultants to evaluate the project's progress and conduct studies for future improvements and expansions.

1.2 Purpose of this ESMPF

1.2.1 The purpose of this Environmental and Social Management Planning Framework (ESMPF) is to ensure that each component of the Project is carried out in a sustainable way through the provision of guidance for the management of environmental and social risks and impacts, and

to ensure that potential negative impacts are minimized, while striving to maximize benefits for local communities and the environment.

- 1.2.2 This ESMPF is intended to guide all aspects of project development and implementation in a manner that integrates environmental and social risk/impact identification, avoidance, and management as a core consideration.
- 1.2.3 This ESMPF has been prepared during the SWM-SUD Feasibility Study and DED Phase, as the ESIA cannot be prepared fully without the finalised DED, but will remain valid and actively reviewed and updated throughout the life of the programme and beyond for those sub-projects that are selected for follow-on development, construction, commissioning, and operation of ASWM systems. The final ESIA/ESMP will be finalized later after project financing approval - even though the data collection etc. can be obtained now.
- 1.2.4 As a few sites and locations have not been finalised, the ESMPF is prepared instead of ESIAs/ESMP for each subproject. This ESMPF is developed to include a generic Environmental and Social Management Plan (ESMP) and a Resettlement Planning Framework (RPF), which will guide the preparation of subproject specific Environmental and Social Impact Assessments (ESIAs) and site specific Environmental and Social Management Plans (ESMPs) including site specific Resettlement Plan (RAPS) if needed. This ESMPF is also designed to provide a comprehensive framework on how to address potential adverse social and environmental impacts from all activities and interventions under the Project and comprises targeted mitigation and compensation measures as appropriate and in accordance with Indonesian legal and regulatory requirements, and AIIB's Environment and Social Framework (2022) standards. These are identified in the ESMPF and will be assessed and implemented through documents such as an AMDAL (Indonesian Regulatory EIA), RKL-RPL (Indonesian regulatory management and monitoring plans, Environmental and Social Impact Assessment (ESIA) developed in accordance with international safeguards, and supplementary documents as required.
- 1.2.5 This ESMPF clarifies the principles, rules, guidelines and procedures, and organizational arrangements to be applied to the ESIAs and ESMP to be prepared for each individual sub-project. It serves as the Project's over-arching guideline for the management of the environmental and social impacts of all sub-projects. Any sub-project that cannot be implemented in accordance with the ESMPF will not be included in follow-on stages of the project development.
- 1.2.6 This ESMPF incorporates procedures, measures and general plans for:
 - Environmental and social impact screening and risk categorization, impact assessment and management, and monitoring of interventions planned under the project;
 - Arrangements for the implementation of the provisions of the ESMPF, including amongst others E&S risk screening, assessment of impacts, implementation of E&S management measures, monitoring and reporting;
 - Recommendations for Stakeholder Engagement, including provisions for public information and disclosure;
 - Capacity building measures for ESMPF implementation for different stakeholders, depending on the respective responsibilities, tasks and existing capacities;
 - Supporting material for ESMPF implementation; and

Land acquisition and involuntary resettlement provisions (principles, entitlements, compensation valuation of losses, budget and cost estimate, implementation guidance and grievance redress mechanism).

1.3 Approach and Methodology of the ESMPF

1.3.1 The ESMPF includes the following:

- A description of the purpose of the ESMPF;
- **Legislative, regulatory, and policy** regime and international requirements and how they will be implemented under the ESMPF (gap analysis and measures to close gaps between national legislation and requirements of the applicable standards). The gap analysis shall cover requirements for public information and disclosure of E&S documentation;
- Summary guidelines regarding the collection of **baseline data** for environmental and socio-economic;
- Identification of potential **significant environmental and social risks and impacts** during construction and operational phases;
- Identification of **environmental and social assessment and management process** including screening process and identification of requirements for ESIA and/or any other types of environmental and social documentation to meet national and international laws, regulations and standards, including a brief guidance on how to conduct ESIA and ESIA-Associated Action Plans;
- Provision of an **Environmental and Social Management Plan (ESMP)** including identification of appropriate set of mitigation measures, based on anticipated risks and impacts (construction, operation and maintenance) and monitoring arrangements for risks, impacts and their mitigation measures. The monitoring provisions within the ESMPF will, to the best extent possible, be integrated into the overall monitoring programme for the project;
- Identification of **Institutional Arrangements** for implementing the provisions of the ESMPF and identification of capacity Building measures to ensure that the ESMPF can be effectively implemented, recommendations on how these capacity building measures can be implemented in the context of the overall project approach;
- Recommendations for **consultation** including strategy for consultation, information disclosure and grievance redress mechanism;
- Identification of implementation and monitoring requirements;
- **Tools and Materials** for the implementation of the ESMPF (i.e. Checklists, Questionnaires, as Annex to ESMPF); and
- Use of ESMPF as a decision making tool - to provide 'proper decision criteria'. This is the special request from the AIIB policy assurance team to be put into the ESMPF as an overarching ES instruments for the program.

1.3.2 As required under Section VII of the AIIB ESF (Disclosure, Consultation, Grievances and Project-affected People's Mechanism), the Bank mandates that the Client disclose "draft Environmental and Social Documentation", which can be taken to include the draft ESMPF. This is stipulated under Section A Disclosure of Environmental and Social Information paragraph 65 (Environmental and Social Information Disclosure by the Client). The draft ESMPF must be disclosed sixty (60) calendar days before the Bank's financing consideration for approval.

1.3.3 Section VII.B Consultation also requires that consultations should be conducted on Project-specific basis, which again can be taken to include the ESMPF.

1.4 Project Definitions

- 1.4.1 The following provides a summary of the sub-projects and some project definitions for reference during the preparation of environmental and social assessments.

Sub-projects

- 1.4.2 The project will be situated in ten selected cities and districts across Indonesia with the possibility to add the selected cities and regencies in tranche 3, including:

Tranche 1

- Kabupaten Temanggung
- Kabupaten Rembang
- Kabupaten Tasikmalaya
- Regional Aceh
- Kabupaten Jepara

Tranche 2

- Regional Magelang
- Kabupaten Gunungkidul
- Kabupaten Cirebon
- Kabupaten Banyuwangi
- Kabupaten Tabalong.

Tranche 3

Additional cities/regencies that will be selected.

- 1.4.3 The final selection and inclusion of these tranche 1, tranche 2, and tranche 3 locations depends on the Readiness Criteria mandated by the Ministry of Public Works and Bappenas and the requirements established by the AIIB. The readiness criteria from PUPR consists of:

- Letter of Interest
- Letter of Readiness to Accept Assets
- Letter of Readiness to Budget OP Costs (mentioning the nominal amount)
- Letter of Commitment from the DPRD regarding budgeting OP costs (mentioning the nominal amount)
- Letter of Location Determination
- Land Readiness (in the form of a land certificate)
- Compliance with the RTRW
- Environmental Permit Document
- Environmental Documents
- Feasibility Study (FS) Document
- Detailed Engineering Design (DED) Document
- Environmental and Social Safeguards Document

- Memorandum of Understanding
- Draft Regional Regulation
- Management Institution Readiness
- Technical Justification*
- Road, Electricity and Water Access
- Regional Agreement*
- MoU with Off taker

The readiness criteria from Bappenas consist of:

- Technical details of offtaker specifications (type of industry, company profile, location, distance to waste processing infrastructure)
- Availability, quantity, and functional condition of waste processing facilities and infrastructure
- Delineation of service areas to serve the TPST to be built
- Generation and percentage of waste collected to waste processing infrastructure, which has been sorted in the waste processing infrastructure, which is transported to the TPA
- Availability of waste flow/mass balance diagram
- Land Readiness (in the form of land certificate)
- Ability to provide separate waste transportation equipment and/or separate waste transportation scheduling
- Detailed human resource data collection for waste processing operators
- Ability to fulfil social and environmental aspects (safeguard)
- PKS between the Province and related Districts/Cities (for regional activities)
- Waste management operators (in the form of UPTD, BLUD, or BUMD)
- Cooperation agreement with off-taker of processed waste results
- Regional Regulation on Waste Management
- Regional Regulation on Waste Retribution
- Regulation on Master Plan for Waste Management Waste
- Regulation on the formation of waste management operators
- DPRD commitment to fund operating and maintenance costs and asset depreciation
- Data on APBD allocation for waste for the last 10 years
- Community readiness to be served by waste and to pay waste levies
- Mentoring and implementation of STBM triggering for the 4th pillar

Project Activities

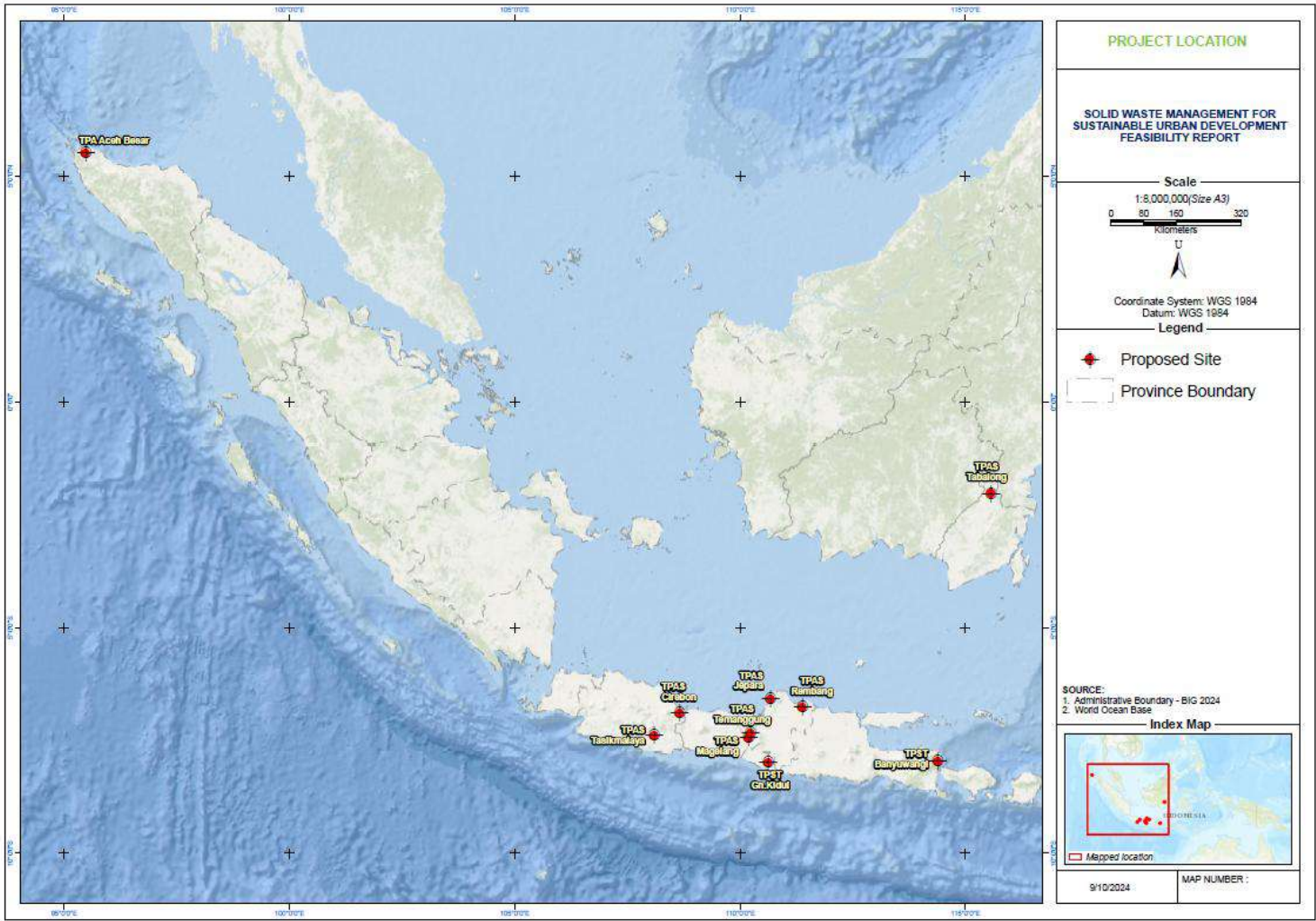
1.4.4 Project Activities are those included in the description of the Project set out in the Legal Agreements. The SWM-SUD Project may include the following activities:

- Construction of integrated waste management facilities, which could include collection, sorting, recycling and composting facilities and refuse-derived fuel (RDF) plants (sorting, shredding, and baling or pelletizing equipment to produce RDF);
- Rehabilitation, and/or expansion of existing landfills;
- Provision of heavy equipment; and
- Consideration of circular solution models for plastic waste and other recyclable material.
- Solid Waste Management Master Plan Development and legalization for sub-project.

Table 1-1 Project Activities for Each Sites

Sites	Project Activities
Tranche 1	
Kabupaten Temanggung	TPA Rehabilitation TPST Construction
Kabupaten Rembang	TPA Rehabilitation TPST Construction
Kabupaten Tasikmalaya	TPA Rehabilitation TPST Construction
Regional Aceh	TPST Construction
Kabupaten Jepara	TPA Rehabilitation TPST Construction
Tranche 2	
Regional Magelang	Construction of TPST
Kabupaten Gunungkidul	Construction of TPST
Kabupaten Cirebon	Construction of TPST
Kabupaten Banyuwangi	Construction of TPST
Kabupaten Tabalong	TPA Rehabilitation TPST Construction

Figure 1-2 Selected Project Locations



Associated Facilities

- 1.4.5 According to AIIB ESF (November 2022), section 35.1, Associated Facilities are activities that are not included in the description of the Project set out in the Legal Agreements governing the Project, but which, following consultation with the Client, the Bank determines are (a) directly and materially related to the Project; (b) carried out, or planned to be carried out, contemporaneously with the Project; and (c) necessary for the Project to be viable and would not be carried out if the Project did not exist.
- 1.4.6 For Associated Facilities Controlled or Not Controlled by the Client, the Bank requires the Client, as part of its environmental and social assessment, to identify and assess the potential environmental and social risks and impacts of Associated Facilities, and implement measures as follows:
- 1.4.7 If the Client does not control or have influence over the Associated Facilities, it identifies in the environmental and social assessment the environmental and social risks and impacts the Associated Facilities may present to the Project, as well as potential mitigation measures that are within the Client's control. Associated Facilities will be identified and classified during the scoping phase for all sub-projects and through consultation with AIIB safeguard experts. For each sub-project, associated facilities will be identified and scoped in or out of the FS/DED and E&S safeguarding work as appropriate. Associated Facilities may include road infrastructure, water supply etc that are newly and contemporaneously constructed during the project to reach the objective of the project in improving existing landfill operations and performance, but funded by local government budget and is not from the loan. The off taker is not associated facilities if the facility is not constructed at the same time as the project.

Project Boundary (and Associated Project Area of Influence)

- 1.4.8 According to the GoI, the project boundary is effectively the red line site area where any works associated with the project will take place. AIIB's ESF notes that the Project Area should be identified with a map and a description. The Project's Area of Influence (Aol) includes the area likely to be affected by the Project including all its ancillary aspects, considering environmental components and socioeconomic context directly and indirectly affected by the project activities at all stages.
- 1.4.9 In accordance with the Indonesian National Regulation - Minister of Public Works Regulation No. 3 of 2013, Article 32 on Waste Treatment Facility's technical conditions, 500m radius for direct impact and 1000m radius for indirect impacts will be used as the Aol for this Project. In addition to this, relevant Aol will be identified for each environmental impacts of each sub-project based on AIIB ESS and international good practice, considering the extend of the impacts and site conditions of each sub-project.

2 Legal, Regulatory and Policy Framework

2.1.1 This section provides a preliminary review of the applicable national and international legal and regulatory framework related to the potential risks and benefits of the implementation of the proposed project activities. It includes a brief review of applicable national legislation, policies and regulations; applicable international agreements and standards.

2.2 Review of national environmental and social policy, legal and regulatory framework

2.2.1 Environmental Assessment in Indonesia is regulated under Indonesian Laws and Regulations. Indonesian Laws and Regulations are divided into three levels – national, provincial, and city/regency. The following Government of Indonesia regulations serve as the basis for the overall approach in this ESMPF and include those relating to environmental, social assessment, and waste management:

Laws

- Law No. 6 of 2023 concerning Determination of Government Regulation in Lieu of Law Number 2 of 2022 concerning Job Creation into Law;
- Law No. 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments (State Gazette Year 2022 Number 4, Supplement to the State Gazette Number 6757);
- Law No. 7 of 2021 concerning Harmonized Tax (the Harmonized Tax Law);
- Law No. 23 of 2014 concerning Regional Government, as amended for the second time by Law No. 9 of 2015;
- Law No. 2 of 2012 concerning Land Acquisition for Development for Public Interest;
- Law No. 7 of 2012 concerning Social Conflict Handling;
- Law No. 11 of 2010 concerning Cultural Property Conservation;
- Law No. 28 of 2009 concerning Regional Taxes and Levies;
- Law No. 32 of 2009 concerning Management and protection of the environment;
- Law No. 18 of 2008 concerning Waste management;
- Law No. 17 of 2007 concerning the National Long-Term Development Plan for 2005-2025 (State Gazette of the Republic of Indonesia Year 2007 Number 33, Supplement to the State Gazette of the Republic of Indonesia Number 4700);
- Law No. 1 of 2004 concerning State Treasury;
- Law No. 25 of 2004 on the National Development Planning System (State Gazette of the Republic of Indonesia Year 2004 Number 104, Supplement to the State Gazette of the Republic of Indonesia Number 4421);
- Law No. 1 of 2004 on State Treasury;
- Law No. 13 of 2003 concerning Manpower;
- Law No. 17 of 2003 on State Finance (State Gazette of the Republic of Indonesia Year 2003 Number 47, Supplement to the State Gazette of the Republic of Indonesia Number 4286).

Government Regulations

- Government Regulation No. 21 of 2021 Concerning Organizing Spatial Planning;
- Government Regulation No. 22 of 2021 Concerning Environmental Protection and Management Implementation;
- Government Regulation No. 27 of 2020 Concerning Specific Waste Management;

- Government Regulation No. 28 of 2020 on Amendment to Government Regulation No. 27 of 2014 on Management of State/Regional Property;
- Government Regulation No. 12 of 2019 on Regional Financial Management;
- Government Regulation No. 72 of 2019 Concerning Amendments to Government Regulation Number 18 of 2016 concerning Regional Apparatus;
- Government Regulation No. 28 of 2018 Concerning Regional Corporation;
- Government Regulation No. 2 of 2015 concerning Social Conflict Handling;
- Government Regulation No. 27 of 2014 on Management of State/Regional Property;
- Government Regulation No. 79 of 2014 Concerning National Energy Policy;
- Government Regulation Number 101 Year 2014 about Hazardous Waste (B3) Management;
- Government Regulation No. 81 of 2012 Concerning Waste Management of Household Waste and Similar Household Waste Including Waste Management Policy and Strategy and Its Implementation as An Enforcement Order of the No. 18/2008;
- Government Regulation No. 8 of 2008 on Stages, Procedures for Preparation, Control and Evaluation of Regional Development Plan Implementation (State Gazette of the Republic of Indonesia Year 2008 Number 21, Supplement to the State Gazette of the Republic of Indonesia Number 4817);
- Presidential Regulation No. 19 of 2021 concerning Organizing Land Acquisition for Development in the Public Interest;
- Presidential Regulation No. 62 of 2018 concerning Handling Social Impacts in the Context of Providing Land for National Development;
- President Decree No. 11 of 1999 concerning Social Empowerment of Isolated Indigenous Community.

Presidential Regulations

- Presidential Regulation No.111 of 2022 Concerning Implementation of the Achievement of Sustainable Development Goals;
- Presidential Regulation No. 98 of 2021 Concerning Implementing Carbon Pricing to Achieve the Nationally Determined Contribution Target and Control Over Greenhouse Gas Emissions in the National Development;
- Presidential Regulation No. 18 of 2020 Concerning National Mid-Term Development Plan 2020–2024 (PR 18/2020), which sets out Indonesia’s GHG emissions targets in several key sectors, including forestry, peatland, agriculture, energy, transportation, industry, and waste management;
- Presidential Regulation No. 35 of 2018 Concerning Acceleration of Waste-to-Energy Plant Construction Based on Environmentally Sound Technology;
- Presidential Regulation No. 83 of 2018 Concerning Details of the Marine Debris Management plan, particularly on plastic waste;
- Presidential Regulation No. 97/2017 Concerning the National Policy & Strategy on Managing Household Waste and Household-like Waste (JAKSTRANAS) directs waste management strategies and targets;
- Presidential Regulation No. 4 of 2016 on Acceleration of Electricity Infrastructure Development;
- Presidential Regulation No. 38 of 2015 on Government Cooperation with Business Entities in Infrastructure Provision;
- Presidential Regulation No. 82 of 2015 on Central Government Guarantees for Infrastructure Financing Through Direct Loans from International Financial Institutions to State-Owned Enterprises;

- Presidential Decree No. 61 of 1993 concerning Basel Convention Legalization on the Control Of Transboundary Movements of Hazardous Wastes and Their Disposal.

Ministry of Home Affairs Regulation

- Minister of Home Affairs Regulation No. 7 of 2021 concerning Procedures for Calculating Retribution Rates in Implementing Waste Handling;
- Ministry of Home Affairs Regulation No. 47 of 2021 concerning Procedures for Implementing Bookkeeping, Inventory, and Reporting of Regional Property;
- Ministry of Home Affairs Regulation No. 22 of 2020 concerning Procedures for Regional Cooperation with Other Regions and Cooperation with Third Parties;
- Ministry of Home Affairs Regulation No. 12 of 2017 on Guidelines for Classification and Branches of Regional Technical Implementing Units;
- Ministry of Home Affairs Regulation No. 19 of 2016 concerning Guidelines for Management of Regional Property;
- Ministry of Home Affairs Regulation No. 33 of 2010 concerning Waste Management Guidelines;
- Circular Letter of the Minister of Home Affairs No. 061/4338/OTDA on Guidelines for Consultation on the Establishment of Branch Offices and Regional Technical Implementing Units.

Minister of National Development Planning / National Development Planning Agency

- Regulation of the Minister of National Development Planning / National Development Planning Agency No. 4 of 2011 concerning Procedures for Planning, Submitting Proposals, Assessment, Monitoring and Evaluation of Activities Financed by Foreign Loans and Grants.

Ministry of Finance Regulations

- Minister of Finance Regulation No. 26/PMK.07/2021 Concerning Funding Support from the State Budget for Waste Management in the Regions;
- Ministry of Finance Regulation No. 100/PMK.010/2009 on Infrastructure Financing Companies.

Ministry of Public Works and Public Housing Regulations

- Ministry of Public Works and Public Housing Regulation No. 8 of 2023 on Guidelines for Preparation of Cost Estimates for Construction Work in the Field of Public Works and Public Housing;
- Minister of Public Works Regulation No. 3 of 2013 regarding Implementation of Waste Infrastructure and Facilities in the Handling of Household Waste and Similar Household Waste;
- Minister of Public Work Regulation No 19 of 2012 concerning Regional Spatial Arrangement Guideline around Final Waste Processing Facility;
- Minister of Public Works Regulation No. 21/PRT/M/2006 regarding National Policy and Strategy for the Development of Solid Waste Management System (KSNP-SPP);
- Instruction of the Minister of Public Works and Public Housing No. 02/IN/M/2023 on the Process of Determining Integrated Design and Build Construction Work (Design and Build) in the Ministry of Public Works and Public Housing;
- Circular Letter of the Director General of Construction No. 73/SE/DK/2023 on Procedures for Preparation of Cost Estimates for Construction Work in the Field of Public Works and Public Housing.

Ministry of Environment and Forestry Regulations

- Minister of Environment and Forestry Regulation No. 21 of 2022 Concerning Procedures for Implementing Carbon Pricing;
- Minister of Environment and Forestry Regulation No.6 of 2022 National Waste Management Information System (SIPSN);
- Minister of Environment and Forestry Regulation No. 4 of 2021 concerning a List of Businesses and/or Activities Required to Have Environmental Impact Analysis, Environmental Management Efforts, and Environmental Monitoring Efforts or a Statement of Capability for Environmental Management and Monitoring;
- Minister of Environment and Forestry Regulation No. 6 of 2021 concerning Procedures and Requirements for Hazardous and Toxic Waste Management;
- Minister of Environment and Forestry Regulation No. 14 of 2021 concerning Waste Management at the Waste Bank;
- Minister of Environment and Forestry Regulation No. P.26/MENLHK/SETJEN/KUM.1/12/2020 concerning Handling of Bottom Ash and Fly Ash from Thermal Waste Processing;
- Minister of Environment and Forestry Regulation No. 14 of 2021 Concerning Waste Management at Waste Bank;
- Minister of Environment and Forestry Regulation No. 75 of 2019 Concerning Road Map of Waste Reduction by Producer;
- Minister of Environment and Forestry Regulation No. P.76/MENLHK/SETJEN/KUM.1/10/2019 concerning ADIPURA;
- Minister of Environment and Forestry Regulation No. P.10/2018 concerning JAKSTRADA;
- Minister of Environment and Forestry Regulation No.59 of 2016 concerning Leachate Quality Standards for Businesses and/or Activities at Final Processing Sites;
- Minister of Environment and Forestry Regulation No.P.70/2016 concerning an Emission Standard for thermal-based solid waste treatment businesses and/or activities;
- Minister of Environment Regulation No. 13 of 2012 concerning Guidelines for Implementing Reduce, Reuse and Recycle Through Waste Banks;
- Minister of Environment Regulation No 5/2012 on Activities Requiring Environmental Impact Assessment;
- Minister of Environment Regulation No. 16 of 2012 concerning Guidelines for implementing AMDAL;
- Minister of Environment Regulation No 17/2012 on Community Involvement in Environmental Impact Assessment and Environmental Permit Process;
- Ministry of Environment Regulation No. 16 of 2011 on Guidelines for Content of Draft Local Regulations on Household Waste Management and Similar Waste;
- Circular Letter Minister of Environment and Forestry SE.3/MENLHK/PSLB3/PLB.3/3/2021 concerning Management of B3 Waste and Waste from Handling Corona Virus Disease -19 (Covid-19).

Ministry of Energy and Mineral Resources Regulations

- Ministry of Energy and Mineral Resources Regulation No. 11 of 2021 concerning Implementation of Electricity Business;
- Minister of Energy and Mineral Resources Regulation No. 4 of 2020 concerning the Utilization of Renewable Energy for the Provision of Power amends Minister of Energy and Mineral Resources Regulation No. 50/2017 on Utilization of Renewable Energy Sources for Power Supply;

- Minister of Energy and Mineral Resources Regulation No. 53 of 2018 concerning amends Minister of Energy and Mineral Resources Regulation No. 50/2017 on Utilization of Renewable Energy Sources for Power Supply.

Ministry of Health Regulations

- Minister of Health Regulation No. 18 of 2020 concerning Medical Waste Management for Regional-Based Health Service Facilities.

Ministry of Social Regulations

- Minister of Social Regulation No. 10 of 2014 concerning Social Counselling.

Indonesia Standards

- SNI 8966:2021 concerning solid fuel for power plants (RDF/SRF).
- Procedures for Planning and Construction of Waste Final Processing Sites (TPA), PUPR 2018.
- Technical Guidelines for Preparing Feasibility Studies for Implementing Waste Infrastructure and Facilities, PUPR 2015.
- Technical Guidelines for the Reduce, Reuse, Recycle Waste Processing Site (TPS3R), PUPR 2017.

- 2.2.2 Appendix A summarizes the Key Solid Waste Management legislation relevant to developing the sub-projects.

2.3 Applicable international treaties signed by Government of Indonesia

- 2.3.1 Listing out the international treaties, conventions and protocols on environment, pollution control, biodiversity conservation and climate change as signed by GoI.

Table 2-1 International Conventions, Treaties and Protocols Signed by Indonesia

Conventions	Year	Status	Ratification Regulation	Relevance
United Nations Framework Convention on Climate Change (UNFCCC)	1992	Ratified	Law No 6 of 1994 concerning Ratification of the United Nations Framework Convention On Climate Change (United Nations Framework Convention on Climate Change)	Climate change mitigation and adaptation
Kyoto Protocol	1997	Ratified	Law Number 17 of 2004 concerning Ratification of the Kyoto Protocol to the United Nations Framework Convention On Climate Change (Kyoto Protocol to the United Nations Framework Convention on Climate Change)	Reduction of greenhouse gas emissions
Paris Agreement	2015	Ratified	Law Number 16 of 2016 concerning the Ratification of the Paris Agreement to The United Nations Framework Convention On Climate Change (Paris Agreement to the United Nations Framework Convention on Climate Change)	Global commitment to combat climate change
Convention on Biological Diversity (CBD)	1992	Ratified	Law Number 5 of 1994 concerning Ratification of the United Nations Convention On Biological Diversity (United Nations Convention Concerning Biological Diversity)	Conservation of biological diversity
Cartagena Protocol	1993	Ratified	Law Number 21 of 2004 Date of Invitation: 15 August 2004 Ratification of the Cartagena Protocol in Biosafety to the Convention on Biological Biodiversity (Cartagena Protocol on Biodiversity to the Convention on Biodiversity) Became Law	The movements of living modified organisms (LMOs)
Ramsar Convention on Wetlands	1971	Ratified	Presidential Decree No. 48 of 1991 concerning Ratification of the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat	Conservation and wise use of wetlands
Stockholm Convention on Persistent Organic Pollutants (POPs)	2001	Ratified	Law Number 19 of 2009 concerning the Ratification of the Stockholm Convention on Persistent Organic Pollutants (Stockholm Convention on Persistent Organic Pollutants)	Elimination of harmful chemicals
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1973	Ratified	Presidential Decree Number 43 of 1978 concerning Ratifying the "Convention On International Trade In Endangered Species of Wild Fauna And Flora", which was signed in Washington on March 3 1973, as attached to this Presidential Decree	Regulation of international trade in endangered species
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1989	Ratified	Presidential Decree No. 61 of 1993 concerning Basel Convention Legalization On The Control Of Transboundary Movements Of Hazardous Wastes And Their Disposal Presidential Regulation Number 47 of 2005 Ratification of the amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal Presidential Regulation Number 60 of 2005 Date of Invitation: 12 October 2005	Control of hazardous waste movements

Conventions	Year	Status	Ratification Regulation	Relevance
			Approval Of the Framework Agreement Between The Government Of The Republic Of Indonesia And The Secretariat Of The Basel Convention On The Control Of Transboundary Movements Of Hazardous Wastes	
Rotterdam Convention	1998	Ratified	Law (UU) Number 10 of 2013 concerning Ratification of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.	Prior informed consent for hazardous chemicals.
Minamata Convention on Mercury	2013	Ratified	Law (UU) Number 11 of 2017 concerning Ratification of the Minamata Convention On Mercury (Minamata Convention Regarding Mercury)	Reduction of mercury emissions
International Labour Organization (ILO) Convention 169	1989	Not-ratified		Rights of Indigenous and tribal peoples

2.4 AIIB E&S Framework & Standards

- 2.4.1 The AIIB Environmental and Social Framework (ESF) Approved February 2016 (Amended February 2019, May 2021 and November 2022) provides an overview of AIIB concerning environmental and social sustainability and its role in meeting the challenge of sustainable development in Asia.
- 2.4.2 The ESF provides general specifications, standards and objectives that clients should adhere to during project preparation and implementation. It attaches importance to the relevant country regulatory systems as sources of legally binding procedures and standards.
- 2.4.3 The ESF recognises that environmental and social sustainability is a fundamental aspect of achieving outcomes consistent with the mandate to support the development of sustainable infrastructure. Therefore, the Environmental and Social Policy (ESP) in the ESF aims to facilitate achievement of the Bank's Clients of development outcomes through a system that integrates sound environmental and social management into Projects.
- 2.4.4 Environmental and Social Standards set out more detailed requirements to be implemented as follows:
- **ESS1 Environmental and Social Assessment and Management:** Addressed in an E&S Assessment relating to risks and impacts and appropriate measures to avoid, minimise, mitigate, offset or compensate for them.
 - **ESS2 Land Acquisition and Involuntary Resettlement:** Addressed in the social section of the assessment report and as applicable in a freestanding land acquisition and resettlement plan, land acquisition plan or resettlement plan (LARP/LAP/RP) or a framework of the same.
 - **ESS3 Indigenous Peoples:** Impacts on Indigenous Peoples in a freestanding Indigenous People's Plan (IPP) or framework.
- 2.4.5 The following section examines the relevance of the ESF Policy and the three associated standards and directives, with their requirements detailed in Table below.

Table 2-2 Applicability of the AIIB ESS to the Project

Objectives	Requirements	Action taken by Local Government	Action taken by CPIU
AIIB environmental and Social Policy of ESF			
It outlines the Bank's mandatory requirements for projects supported through Investment Project Financing.	The environmental and social assessment should consider various types of E&S risks and impacts. It should also utilize the Borrower's environmental and social framework to assess, develop, and implement projects financed by the AIIB where suitable.	• Conduct environmental and social assessments considering various types of E&S risks and impacts. • Utilize the Borrower's environmental and social framework to assess, develop, and implement projects.	• Oversee and ensure the Sub-Project's compliance with the Bank's mandatory requirements. • Ensure the Sub-Project's assessments align with the Borrower's framework.
ESS 1: Environmental and Social Assessment and Management			

Objectives	Requirements	Action taken by Local Government	Action taken by CPIU
The main objective of ESS 1 is to ensure that projects achieve environmental and social sustainability. This involves integrating environmental and social considerations into the project's decision-making process at all stages to prevent, minimize, mitigate, or compensate for adverse impacts and enhance positive impacts.	• Conduct comprehensive environmental and social impact assessments to identify potential direct, indirect, and cumulative impacts. • Engage with affected communities through meaningful consultations. • Develop and implement an Environmental and Social Management Plan (ESMP) that details mitigation, monitoring, and management measures. • Implement grievance redress mechanisms accessible to all stakeholders, to receive and facilitate resolution of the concerns and complaints of people who believe they have been adversely affected by the Project's E&S impacts. • Assess E&S risks and impacts of Associated Facilities.	• Conduct detailed assessments to evaluate the environmental and social risks and impacts of project (eg. landfill rehabilitation, MRF construction and operation) including potential pollution and community health risks. This will be prepared in the form of an ESIA. • Prepare UKL-UPL or AMDAL including required technical approval based on the national regulations • Engage local communities and stakeholders through public consultations to gather input and address concerns • Develop an ESMP that outlines measures for mitigating environmental impacts, monitoring environmental performance, and managing social issues during construction and operation. • Establish a grievance redress mechanism to resolve complaints from affected communities efficiently and equitably.	• Review and approve the Sub-Project's comprehensive environmental and social impact assessments (ESIA). • Monitor the Sub-Project's engagement with local communities and stakeholders. • Ensure the development and implementation of the ESMP by the Sub-Project. • Monitor the effectiveness of grievance redress mechanisms
ESS 2: Land Acquisition and Involuntary Resettlement			
The goal is to minimize displacement, improve or at least restore the livelihoods of displaced	• Identify and document individuals and communities	• Determine the extent of land required for the	• Oversee the identification and documentation of

Objectives	Requirements	Action taken by Local Government	Action taken by CPIU
persons, and ensure that their living conditions are improved in real terms from pre-project levels. This standard applies whenever projects involve land acquisition, restrictions on land use, or both.	affected by land acquisition. • Prepare the LARP/LAP/RP detailing compensation, assistance, and resettlement measures. • Ensure that compensation is provided before displacement occurs and is sufficient to restore livelihoods. • Involve displaced persons in resettlement planning and implementation. • Avoid or minimize Involuntary Resettlement wherever feasible and where avoidance is not feasible, enhance or at least restore the livelihoods of all displaced persons.	landfill closure and MRF construction and identify all affected property owners and users. • Prepare the LARP/LAP/RP if the project leads to physical or economic displacement, outlining measures for fair compensation, livelihood restoration, and resettlement support. • Ensure transparent communication and active participation of all displaced individuals in resettlement planning. • Implement the LARP/LAP/RP before starting construction activities to ensure compliance with AIIB standards and local laws.	affected individuals and communities. • Review and approve the LARAP prepared by the Sub-Project. • Ensure fair and timely compensation to displaced persons. • Monitor the involvement of displaced persons in the resettlement process.
ESS 3: Indigenous Peoples			
To protect the rights of Indigenous Peoples and ensure that they are actively involved in projects that affect them. The standard aims to respect their dignity, human rights, economies, and cultures, and to ensure they receive culturally appropriate benefits without suffering adverse impacts.	• Conduct a social assessment to identify Indigenous Peoples and assess the project's impacts on them. • Develop an Indigenous Peoples Plan (IPP) or a framework if details are not yet known, outlining how impacts will be avoided or mitigated. • Ensure free, prior, and informed consultation leading to broad community support.	• Assess whether Indigenous Peoples are present in the project area and how they might be affected by the project activities. • If Indigenous Peoples are impacted, engage them in the planning process to ensure their cultural and social preferences are respected. • Prepare an IPP that includes culturally appropriate benefit-	• Oversee the social assessment conducted by the Sub-Project. • Review and approve the Indigenous Peoples Plan (IPP) prepared by the Sub-Project. • Monitor the engagement and consultation processes with Indigenous Peoples. • Ensure the implementation of culturally appropriate benefit-

Objectives	Requirements	Action taken by Local Government	Action taken by CPIU
	Provide mechanisms for Indigenous Peoples to benefit from the project.	- sharing mechanisms, ensuring that Indigenous Peoples gain from the project and are not adversely affected. - Implement culturally sensitive consultation processes and grievance mechanisms tailored to the needs of Indigenous Peoples.	sharing mechanisms and grievance processes.

2.4.6 Through a screening and categorisation process, the Bank categorises its projects as early as feasible to determine the nature and level of required environmental and social assessment, information disclosure and stakeholder engagement required. The Bank considers the type, nature, location, sensitivity and scale of the Project, which will then ensure that the assessment is proportional to the significance of the Project's potential environmental and social risks and impacts. AIIB Categorisation, assessment and instrument is provided in the table below:

Table 2-3 Summary of AIIB Categorisation

Categorization	Assessment and Instrument	Notes
Category A		
Likely to have significant adverse environmental and social impacts that are irreversible, cumulative, diverse or unprecedented. Impacts may affect an area larger than the sites or facilities subject to physical works. Impacts may be temporary or permanent in nature.	Environmental & Social Impact Assessment (ESIA) or equivalent E&S Assessment Environmental & Social Management Plan (ESMP) Environmental and Social Management Planning Framework (ESMPF)	Examines the Project's potential E&S risks and impacts (both positive and adverse) and compared them with those of feasible alternatives (including the "without Project" alternative) and recommends any measures needed to avoid, minimise, mitigate, offset or compensate for adverse impacts and improve E&S performance of the project.
Category B		
i. Has a limited number of potentially adverse environmental and social impacts; ii. The impacts are not unprecedented; iii. Few if any of them are irreversible or cumulative;	Initial review of the E&S risks and impacts of the Project. Based on the review, the Bank determines the appropriate instrument for the Client to assess the Project's E&S risks and impacts, on a case-by-case basis. The	Examines the Project's potentially adverse and positive environmental and social impacts and recommends any measures needed to avoid, minimize, mitigate, offset or compensate for adverse impacts and improve the environmental and social performance of the Project.

Categorization	Assessment and Instrument	Notes
iv. They are limited to the Project area; and v. They can be successfully managed using good practice in an operational setting.	Bank may determine that an ESIA or other similar instrument is appropriate for the Project. Commonly used instruments include ESMP or ESMPF.	
Category C		
Likely to have minimal or no adverse E&S impacts.	Does not require an E&S assessment but does require the Client to prepare an analysis of the E&S aspects of the Project.	N/A
Category FI		
If the Financing Structure involves the provision of funds to or through a financial intermediary	Environmental and Social Management System (ESMS).	

2.4.7 The SWM-SUD Project in Indonesia is likely to be classified as Category A due to its broad scope, which covers multiple stages of the solid waste cycle, including recycling, waste-to-energy processes through RDF, final disposal in sanitary landfills. These activities inherently carry significant environmental and social risks that are diverse, and potentially irreversible. The comprehensive nature of these interventions suggests a substantial potential for widespread environmental and social effects, thus necessitating a thorough Environmental and Social Impact Assessment (ESIA) and robust management plans as typical for Category A projects. However, it is possible that the project could be classified as Category B, depending on specific local conditions, the scale of intervention in particular cities, and the precise nature of the risks involved. If the environmental and social impacts are found to be more localized, less severe, not involving large-scale displacement or significant ecological disruption, and manageable through well-established practices, then a Category B classification could be appropriate. This determination would ultimately depend on detailed field-based assessments that consider the specific environmental and social contexts of the locations where project activities are planned. This said, for the sake of this project, it has been determined that even where projects are classified as Category B, an ESIA will still be prepared.

2.5 Harmonisation of Policies of AIIB & Government of Indonesia

2.5.1 Below provides a tabulated review of the AIIB framework/policy aligned with the national Indonesia regulation. Gaps are identified of gaps/harmonised framework. This might include approach to stakeholder engagement, examination of alternatives and cumulative impacts, social impacts, involuntary resettlement.

Table 2-4 Identified Gaps and Harmonised Framework

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
ESS 1			
A. General	Requires integrating environmental and social considerations into project decision-making and management at all stages.	Indonesian EIA (AMDAL) and other sectoral regulations focus on integrating environmental considerations but often less on social aspects.	Gap: Less emphasis on integrating social aspects into project decision-making. Harmonization: Enhance integration of social considerations in AMDAL and other regulatory frameworks to match AIIB's comprehensive approach.
B. Assessment and Management Process	Mandates a thorough assessment and effective management of environmental and social risks and impacts.	Indonesian regulations require environmental impact assessments but may vary in thoroughness and scope.	Gap: Potential variance in the depth and scope of assessments, especially for social impacts. Especially if the required environmental document is UKL-UPL Harmonization: Standardize assessment processes to include detailed social impact assessments, aligning with AIIB's comprehensive evaluation requirements.
C. Environmental Coverage	Requires a broad assessment of potential environmental risks and impacts, including biodiversity, pollution, and resource efficiency. Aols to cover larger distance depending on environmental aspects and impacts.	Indonesian environmental laws cover these aspects but not detail regarding greenhouse gasses assessment. Aols within 500m buffer.	Gap: There are no requirements to conduct assessment on greenhouse gases emissions assessment. In addition, Aols may extend more than 500m buffer depending on environmental aspects and impacts. Harmonization: Align enforcement and specificity in local regulations with AIIB's detailed environmental coverage to ensure comprehensive protection and sustainable resource use, to include greenhouse gases on the assessments, and to ensure associated facilities impacts are addressed and mitigation measures implemented.
D. Social Coverage	Stresses on assessing social risks and impacts, including impacts on vulnerable groups and gender considerations.	Social aspects are covered under various laws, but there may be gaps in addressing impacts on vulnerable groups and gender specific impacts	Gap: Inadequate focus on vulnerable groups and gender-specific impacts. Harmonization: Implement more focused social impact assessments and mitigation plans that emphasize protections for vulnerable groups and gender-specific impacts, per AIIB standards. Use of gender-disaggregated baseline data and analysis and monitoring these data.

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
E. Health and Safety	Requires the identification and management of health and safety risks for communities and workers throughout the project lifecycle.	Regulations exist for occupational health and safety, with less comprehensive coverage for community health and safety.	Gap: Community health and safety might not be as comprehensively managed as worker health and safety, the use of WBG EHS guidelines, the needs of GBV assessment Harmonization: Enhance community health and safety measures in project planning and implementation to match the comprehensive AIIB standards.
F. Labor and Working Conditions	Mandates good labor practices and the protection of workers' rights throughout the project cycle.	Indonesian labor laws protect worker rights but may lack specific provisions for project conditions and settings.	Gap: General labor laws may not fully address the specific conditions and needs of project settings like the GRM for worker and minimum age requirements (18 years old). Harmonization: Integrate specific AIIB labor standards into project labor policies to ensure all workers' rights and working conditions are fully protected.
ESS 2			
A. General	Emphasizes minimizing displacement and improving or restoring livelihoods of affected persons, ensuring compensation and rehabilitation.	Indonesian Land Acquisition Law focuses on compensation for land but may lack provisions on livelihood restoration.	Gap: Limited focus on livelihood restoration and support post-displacement. Harmonization: Enhance to include comprehensive livelihood restoration measures aligned with AIIB's requirements to ensure holistic rehabilitation.
B. Consultation and Participation	Mandates meaningful consultation with and participation of affected persons in the resettlement process.	Public consultation is required, but the depth and effectiveness of engagement can vary.	Gap: Potential variability in the effectiveness of public consultations. Harmonization: Standardize and enhance consultation processes to ensure meaningful and effective participation along the project lifetime, as per AIIB standards.
C. Vulnerable Groups	Special provisions are required for vulnerable groups to ensure that their livelihoods and standards of living are improved or at least restored.	Limited specific provisions for vulnerable groups in the context of land acquisition and resettlement.	Gap: Lack of detailed protection and enhancement measures for vulnerable groups. Harmonization: Introduce specific protections and enhancement measures for vulnerable groups in resettlement plans, aligning with AIIB's detailed requirements.

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
D. Grievance Redress Mechanisms	Requires the establishment of appropriate grievance redress mechanisms accessible to affected persons.	While grievance mechanisms exist, they may not be tailored specifically for resettlement grievances.	Gap: General grievance mechanisms may not adequately address resettlement-specific issues. Harmonization: Develop and implement resettlement-specific grievance redress mechanisms that are accessible and effective, including but not limited to the following: - Compensation and resettlement entitlements - Relocation assistance to displaced persons - Restoration of livelihood - Disclosure of information - Project-affected people without land titles or any recognizable legal rights are eligible for resettlement assistance and compensation for loss of non-land assets.
ESS 3			
A. General	ESS3 requires projects to foster full respect for Indigenous Peoples' identity, dignity, human rights, economies, and cultures.	The Indonesian constitution recognizes Indigenous Peoples' rights, but implementation varies by region.	Gap: Variability in how Indigenous rights is implemented and protected at the regional level. Harmonization: Establish consistent national guidelines that align with AIIB's comprehensive requirements to protect Indigenous rights across all regions.
B. Social Assessment	Projects must undertake a culturally appropriate social assessment to understand the impacts on Indigenous Peoples.	Indonesia requires consideration of Indigenous Peoples in environmental assessments, but practices vary.	Gap: Inconsistency in the depth and cultural appropriateness of social assessments Harmonization: Standardize social assessments to include detailed, culturally appropriate evaluations of impacts on Indigenous Peoples, ensuring alignment with AIIB standards.
C. Indigenous Peoples Plan (IPP)	An IPP is required, detailing how adverse impacts will be avoided or minimized, and benefits will be shared.	Regulations include requirements for community development plans, often without specific guidelines for IPPs.	Gap: Lack of specific requirements for IPPs in local regulations. Harmonization: Introduce specific requirements for IPPs within community development regulations to ensure detailed planning and benefit-sharing with Indigenous Peoples.
D. Consultation and Participation	AIIB standards mandate free, prior, and informed consultation with Indigenous Peoples to obtain their broad support for projects.	Indonesian law promotes consultation, but there is no strict requirement for obtaining prior informed consent.	Gap: Formal consent processes are not universally required or implemented. Harmonization: Implement a formal consultation and consent framework that meets AIIB's requirements for free, prior, and informed consent throughout the project lifecycle.

Aspect	AIIB Standards	Indonesia Regulation	Identified Gaps and Harmonised Framework
E. Grievance Redress Mechanisms	Requires effective and culturally appropriate grievance mechanisms specifically designed for Indigenous Peoples.	General grievance mechanisms exist but are not tailored specifically for Indigenous Peoples.	Gap: Lack of culturally tailored grievance mechanisms for Indigenous Peoples. Harmonization: Create culturally specific grievance mechanisms that are accessible and effective for Indigenous communities, aligning with AIIB standards.

3 Environmental & Social Baseline Information & Data

3.1 Environmental Baseline

3.1.1 This subsection provides a summary and guidelines related to the environmental baseline data required for the SWM-SUD activities. The table and paragraphs below cover the necessary parameters to be collected, the standards used for these parameters, and indicative locations for sampling.

Table 3-1 Parameters and standards for environmental baseline

Component	Description	Data Source and Standards
Ambient Air and Odor	Air quality and odor monitoring to identify changes caused by the project. Monitoring locations at the project site and surrounding areas (sensitive receptors).	WB EHS Guideline, Government Regulation No. 22 of 2021, Kepmen LH No. 50 of 1996
Noise	Noise monitoring at the project site and nearby residential areas for 48 hours. Noise Locations will be the same as Air Sampling Locations.	WB EHS Guideline, Kepmen LH No. 48 of 1996
Surface water quality	Surface water quality monitoring at key points to ensure compliance with EHS standards and national regulations. Sampling locations will be Downstream, midstream, and upstream.	WB EHS Guideline, Government Regulation No. 22 of 2021
Soil	Soil sampling at the project site to understand soil conditions.	World Bank Pollution Prevention Guidelines, Permenkes No. 2 of 2023
Groundwater	Groundwater quality data collection.	Permenkes No. 2 of 2023
Leachate	Leachate quality measurement to assess potential contamination and leachate treatment effectiveness.	Permen LHK No. 59 of 2016
Vibration	Vibration measurement at the project site and nearby residential areas to assess project impacts.	Permen LH No. 9 of 1996

Biodiversity (Flora and Fauna)

3.1.2 A combination of both primary and secondary data will be used to ensure a comprehensive assessment of biodiversity, especially if projects sites are near biodiversity hotspots. A baseline biodiversity survey should be conducted to evaluate the potential impacts of the project's activities on existing local flora and fauna within the area of influence. Monitoring should include both terrestrial and aquatic ecosystems, focusing on key species and habitats identified during the secondary data review. Databases like International Biodiversity Assessment Tool (IBAT), International Union for Conservation of Nature and Natural Resources ("IUCN"), World Database of Protected Areas ("WDPA"), and Key Biodiversity Areas

("KBA) can be used for initial screening and secondary data review. National standard like Government Regulation no. 22 of 2021 concerning Environmental Protection and Management should also be used as reference. Field surveys can be conducted to confirm the secondary data findings if deemed necessary.

- 3.1.3 The assessment of biodiversity data should adhere to international and national standards, including guidelines from the International Union for Conservation of Nature (IUCN) and Indonesia's biodiversity regulations (MoEF Regulation No.106/2018).
- 3.1.4 In peri-urban areas, biodiversity assessments should consider the unique mix of rural and urban influences. Specific attention should be paid to:
- Invasive Species: Identify and manage invasive species that may threaten local ecosystems. Regular monitoring and control measures should be implemented to prevent the spread of invasive species.
 - Protected Species: Identify any protected species within the project area. Implement measures to avoid or mitigate impacts on these species, such as creating buffer zones or modifying project activities to minimize disturbances.

Ambient Air and Odor

- 3.1.5 Baseline ambient air and odor monitoring should be conducted to assess potential changes in air quality caused by the project's activities within the area of influence. Monitoring locations should be established at the project site and at nearby residences potentially impacted by construction and transportation activities associated with the project. Air monitoring should be continuous for a 24-hour duration.
- 3.1.6 Assessment of the collected air quality data should be based on relevant international standards for each monitored parameter, including the World Bank's Pollution Prevention Abatement Handbook and the Environmental, Health, and Safety (EHS) Guidelines for Air Emissions and Ambient Air Quality. Additionally, Indonesia's regulations on ambient air quality, as outlined in Government Regulation Number 22 of 2021, should be used for assessment. Odor level assessment should be based on Ministry of Environment Decree Number 50 of 1996.

Noise

- 3.1.7 Baseline noise monitoring should be conducted at project sites and the nearest residential areas affected by transportation activities. Noise monitoring should be carried out continuously for a duration of 48 hours. The chosen noise monitoring locations should coincide with the ambient air monitoring sites to ensure consistency in environmental assessment.
- 3.1.8 The noise monitoring results should be compared against the recommended limits as per the IFC Standards—Environmental, Health, and Safety (EHS) Guidelines for Noise Management, as well as Indonesia's regulatory requirements, specifically Kepmen LH 48 Tahun 1996. This comparison will help identify potential exceedances and the need for mitigation measures to manage noise levels effectively.

Surface Water Quality

- 3.1.9 Surface water quality baseline should be conducted at key points, including upstream, downstream, and the outfall of the leachate treatment plant. This monitoring should include

assessing parameters and analyzing results to ensure compliance with the General Environmental, Health, and Safety (EHS) Guidelines on Water Quality standards set by the World Bank Group, as well as Government Regulation Number 22 of 2021.

- Upstream: Monitor surface water quality at locations upstream from the project site to establish a baseline and identify any pre-existing sources of pollution. This is especially important in peri-urban areas where agricultural runoff, industrial discharge, and urban wastewater can influence water quality.
- Midstream: Conduct regular monitoring at the outfall of the leachate treatment plant to ensure the treated leachate complies with the required water quality standards. This helps in verifying the efficiency of the treatment processes and preventing contamination of downstream water bodies.
- Downstream: Monitor surface water quality at locations downstream of the project site to assess the impacts of project activities. Specific downstream locations should include natural water bodies or drainage systems receiving the discharge,

3.1.10 In addition to standard water quality parameters, the monitoring should also include plankton and benthos assessments to evaluate the health of aquatic ecosystems.

Climate and Weather

3.1.11 Information on climate and weather should be collected to understand the existing environmental conditions in the project area. This data will be crucial for various assessments throughout the project's lifecycle. Key climatic parameters that should be gathered include precipitation, temperature, relative humidity, wind speed, and wind direction. This information will be obtained from secondary sources such as the nearest Indonesian Agency for Meteorological, Climatological, and Geophysics (BMKG) station and satellite data that available publicly.

Soil and Geology

3.1.12 Soil sampling should be conducted at the project location and near the leachate treatment plant. These locations should be selected to provide a comprehensive understanding of the soil conditions and potential impacts of project activities.

- Potential Leachate Contamination: Special attention should be given to areas where leachate may not be adequately contained or where overflow could occur. Sampling in these areas is critical to assess the risk of soil contamination and to implement necessary mitigation measures. This includes areas immediately surrounding the landfill and any downstream locations where leachate could potentially migrate.
- Agricultural Locations: Soil sampling should also be conducted in agricultural areas near the landfill to establish baseline soil conditions. This is essential to determine the potential impact of leachate on agricultural productivity and to ensure the safety of agricultural produce.

3.1.13 Soil parameters should be assessed in the context of World Bank's Pollution Prevention Abatement Handbook and Indonesia's regulatory requirements (Ministry of Health regulation No. 2 of 2023). In addition to primary soil sampling, secondary data should be gathered from government sources and other online databases as necessary.

Land Uses

- 3.1.14 The existing land uses of the project areas and their vicinity should be thoroughly described in accordance with regional spatial planning guidelines. This includes identifying current land use patterns, such as residential, commercial, agricultural, and industrial areas.

Groundwater and Groundwater Contour

- 3.1.15 For a comprehensive environmental assessment, it is essential to collect information on groundwater quality and groundwater contours. This data is crucial for understanding groundwater resources and evaluating the impact of leachate on the aquifer.
- 3.1.16 Groundwater sampling should be conducted at up to four locations per site, including monitoring wells and community wells. Sampling should occur both within the buffer zone or upstream areas, which will serve as control points, and downstream areas, selected based on the groundwater flow contours. All groundwater parameters should be measured and referenced according to Indonesian national standards and requirements (Ministry of Health regulation No. 2 of 2023).
- 3.1.17 In the absence of existing groundwater monitoring wells at the landfill, it is necessary to include new monitoring wells at strategic locations in the Detailed Engineering Design Preparation. The locations should include both upgradient (upstream) and downgradient (downstream) positions relative to the landfill to accurately assess the potential impacts of leachate migration. Additionally, community wells in the vicinity should be identified and included in the baseline program to provide a more comprehensive understanding of the groundwater conditions and potential contamination risks.

Water Resource

- 3.1.18 The primary objective of the water resource baseline assessment is to understand the current state of water resources within the project area, including the availability, quality, and usage patterns of both surface water and groundwater.
- 3.1.19 The baseline assessment of water resources should involve a thorough review of secondary data from government sources and interviews with the community.

Flood Risk

- 3.1.20 The flood risk baseline assessment should utilize secondary data from government sources, including INARISK, to evaluate the flood risk in the project area. This data will provide valuable insights into historical flood events, flood-prone areas, and the potential frequency and severity of future flooding.
- 3.1.21 In addition to government data, information from the local community should be gathered to understand their experiences and observations regarding flood risks.

Leachate

- 3.1.22 Leachate quality measurements should be carried out to determine the potential for contamination of water sources from leachate and the effectiveness of the Leachate Treatment Plant (LTP) in removing pollutants.

- 3.1.23 Leachate sampling should indicatively be conducted at two locations: the inlet and outlet of the LTP. Leachate parameters should be assessed according to the Indonesian national requirements, as stated in Ministry of Environment and Forestry Regulation Number 59 of 2016.
- 3.1.24 If the LTP is not operational, sampling should be conducted directly from the leachate collection points and any temporary storage or holding areas. This will help assess the raw leachate quality before any treatment.
- 3.1.25 In cases of leachate overflow, additional sampling points should be established at the overflow discharge locations. This includes any nearby drainage systems, surface water bodies, or low-lying areas where leachate might accumulate.

Vibration

- 3.1.26 The baseline assessment for vibration should involve taking precise measurements at strategic locations to evaluate the potential impact of project activities.
- 3.1.27 Measurements should be conducted inside the landfill to capture the vibration levels generated by ongoing operations and equipment use. Additionally, vibration levels should be measured in the nearest residential area, or 100 meters from the landfill gate, and/or sensitive receptors to assess the impact on local communities and ensure their living conditions are not adversely affected. Further, measurements should also be taken on the access road to understand the vibrations caused by vehicular movement associated with the project.
- 3.1.28 Measurements are carried out by placing a vibration measuring device on the floor or vibrating surface and connecting it to a vibration measuring instrument equipped with a filter. Reading and recording are carried out for each frequency 4 - 63 Hz or by sweeping with a vibration recording device. The measurement results of 13 data are depicted on a vibration graph so that they can be evaluated.

Traffic

- 3.1.29 The traffic baseline assessment should involve observations of local traffic movements to inform evaluations of community health, occupational health, and safety. These observations will help identify potential traffic-related risks associated with the project, such as increased vehicular movement and its impact on local roads and neighbourhoods.
- 3.1.30 If available, secondary data from previous ANDALALIN studies should be utilized to supplement and enhance the assessment, providing a comprehensive understanding of traffic patterns and issues.

Topography

- 3.1.31 Accurate data and information on topography are crucial for the project design to be implemented by the Local Government, particularly in selecting and stabilizing landfill sites to mitigate landslide risks.
- 3.1.32 To support the project design, a topographic survey in the project areas should be conducted. However, the team can utilize secondary data from government sources and other online data repositories for the environmental assessment.

Waste Legacy

- 3.1.33 The baseline assessment for waste legacy issues should focus on evaluating historical and current waste management practices at the project site and surrounding areas. This includes thoroughly examining the current landfill operations to identify any existing issues, such as improper waste disposal or inadequate cover. The assessment should also review the operation of the leachate treatment plant, to ensure it is effectively managing leachate and preventing contamination of surrounding soil and water bodies. Additionally, the availability and effectiveness of landfill methane gas pollution control measures should be evaluated to determine their adequacy in minimizing greenhouse gas emissions.
- 3.1.34 The assessment should consider the availability of essential environmental protection infrastructure, such as liners, drainage systems, and monitoring wells, which are critical for preventing soil and water contamination.

3.2 Socio-economic Baseline

- 3.2.1 For socio-economic baseline, area of influence (AoI) is determined by considering the Indonesian National Regulation - Minister of Public Works Regulation No. 3 of 2013, Article 32 on Waste Treatment Facility's technical conditions. The directly impacted area by construction and operation is the area within a radius of 500 m where social, economic, and cultural activities of the community are detected, while the indirect impacted area is the area within a radius of 500 m - 1000 m where social, economic, and cultural activities of the community are detected. The social baseline should provide an overview of the socio-economic and cultural conditions that exist in the project area. Project Affected People (PAP) can consist of waste pickers, waste collectors, business owners, landfill workers, land user (inside project location) and households that utilize natural resources (rivers, agricultural land, etc.) that are polluted by landfill activities. Social baseline data should include the following aspects:
- **Household income and expenses.** Household income and expenditure data should describe the real household income of project-affected households. The amount of income from each type of income source should describe the economic displacement that may be generated by the project. Respondents are people directly impacted by the project, consisting of waste pickers, collectors, residents around the landfill (1 km radius, if necessary), and other parties potentially affected.
 - **Access to essential services.** The information to be gathered includes collecting data on the number and types of facilities and infrastructure classified as essential services at the project site, the quality of these essential services, and the accessibility of these services.
 - **Gender dynamics.** Information should be explored regarding the existing picture of gender equality in terms of the division of roles, work, and others. In addition, it will be seen whether the project will have risks and impacts on gender equality and gender-based violence in the study area. Opportunities for gender benefits resulting from this project will also be identified.
 - **Labour and Working Conditions.** Information should be explored regarding employment issues, as well as health and safety issues in the work environment. Such as the availability of PPE and its use, work accident records, health insurance, availability of first aid kits, risk of certain diseases in the work area, and the potential or record of gender-based violence and sexual harassment.
 - **Community Health and Safety.** Information should be explored regarding the health profile of the community in and around the project location, as well as the history of accidents that have occurred. In addition, it will be seen whether the project will pose a security and safety risk to the community, both those working in the project location and those doing activities around the project location.

- **Local governance structures.** Information about the local government structure is needed to identify which local governments have interests in the project. An identification of the functions and duties of the local governments regarding the project's sustainability should also be conducted.
 - **Community organizations.** The information that should be extracted is about active community organizations and should be related to project activities. In addition, the influence of the organization on project implementation will be seen.
 - **Cultural resources.** Information about cultural resources should be collected, including both tangible and intangible cultural assets. This information should be obtained by documenting cultural resources that are officially registered by the government as well as those that are not officially registered but are still practiced by the community.
 - **Land Acquisition Data.** Information about all people affected by land acquisition, such as socio-economic baseline data from landowners, land users, tenants, squatters, and others.
 - **Indigenous People.** Information regarding the profile of indigenous communities, such as livelihoods including income and expenses, area coverage, resource utilization, perceptions of projects and others.
- 3.2.2 Social baseline data collection should combine various methods to obtain qualitative and quantitative data. Data collection should be conducted using secondary data, questionnaires, in-depth interviews, focus group discussions, and observations.
- 3.2.3 In the initial phase, secondary data collection should be carried out to obtain a general overview of the project location. Secondary data should be gathered through literature reviews available both offline and online, which may include government publications, non-governmental publications, academic publications, and other literature studies.
- 3.2.4 Structured questionnaires should be asked to the community who are potentially directly affected by the project activities. The estimated target respondents from the community include those living within a 1 km radius of the project site, waste pickers and collectors at the site, land users (if any) and other parties who may be impacted by the project activities. The target sample size should be adjusted to the survey objectives and the number of households affected by project activities based on the scoping process. Data collection for land acquisition data purposes should be carried out by census for all affected people.
- 3.2.5 In-depth interviews should be conducted with key informants using a series of pre-prepared open-ended questions. This qualitative method helps to triangulate/verify the quantitative data collected through other methods. The targets for in-depth interviews should be key stakeholders such as local government officials, NGO representatives and community leaders.
- 3.2.6 Focus group discussions (FGDs) should be conducted to explore the community's perspectives and concerns collectively. The FGDs should be divided into three groups, each consisting of 5-7 participants. The grouping and selection of participants should be tailored to the specific needs of each project location.
- 3.2.7 Field observations should also be carried out to evaluate the project area, community, and sensitive receptors such as public infrastructure and socio-economic activities, providing supplementary data for analysis.

4 Environmental and Social Risks and Impacts

4.1 Impact Predictions and Evaluation Approach

- 4.1.1 The impact predictions and evaluation approach discussed in this section will be adopted not only in the ESIA preparation but also to determine which sub-projects to be excluded from the Project and to provide information to the diagram in Figure 5.1 for decision making.
- 4.1.2 The evaluation of impact significance involves multiple considerations. This process includes analysing the project components and their effects relative to the existing environmental baseline and any sensitive receptors that might be affected. Each impact is then assessed based on its potential severity and scale. The methodology for determining the significance of impacts is depicted in the figure below. A more detailed explanation of each step in this evaluation process is provided in the following sections.

Figure 4-1 Evaluating Impact Significance



- 4.1.3 **Risk Category:** describes the significance of the project's potential environmental and social impacts and risks. This methodology helps in identifying the potential risks associated with project activities by evaluating how severe an impact could be and the probability of that impact occurring.

Table 4-1 Risk Category

Risk Category	Description
High	Project activities with potentially adverse environmental or social risks and/or impacts are highly diverse, irreversible or unprecedented. The impacts and risks have the potential to be significantly adverse due to the complex nature of the project, the size of the project, and/or the sensitivity of the project location.
Medium	Project activities with potential adverse environmental or social risks and/or impacts that are limited and few in number, generally site-specific, largely manageable and can be addressed through mitigation measures.
Low	Project activities with minimal or no negative environmental and social risks and/or impacts
Without Risk	An interaction is reasonably expected to occur and will result in positive outcomes

- 4.1.4 **Define Potential Impacts:** All activities associated with the proposed project should be identified and potential impacts resulting from these activities listed. The indicative list of potential impacts is provided in the next section.

- 4.1.5 **Define Receptors Sensitivity:** Sensitivity is specific to each aspect affected by the activity project, with criteria developed from established baseline information. Generic criteria for determining the sensitivity of receptors are outlined in the table below. The detailed technical assessments should define sensitivity in relation to the environmental or social aspect. For example, Jepara has four cultural resources within <500 m of the landfill and two listed as "suspected cultural heritage" by Jepara Regency Tourism and Culture Office. This is in addition to the cultural heritage sites identified in the Project Area of Influence (AOI) plan. Therefore, the sensitivity of the receptors is considered **high**.

Table 4-2 Criteria for Determining Receptor Sensitivity

Sensitivity	Definition
High	Receptor (human, physical or biological) with little or no capacity to absorb proposed changes and/or minimal opportunities for mitigation.
Medium	Receptor with little capacity to absorb proposed changes and/or limited opportunities for mitigation.
Low	Receptor with some capacity to absorb proposed changes and/or reasonable opportunities for mitigation.
Negligible	Receptor with good capacity to absorb proposed changes or good opportunities for mitigation.

- 4.1.6 **Evaluate Existing Environmental Values:** Evaluation of existing environmental values should be carried out by analysing the data from environmental and social baseline study process, as explained in the previous section.
- 4.1.7 **Define Impact Magnitude:** The assessment of impact magnitude is generally undertaken across two steps. First, the identified impact should be categorized as either beneficial or adverse. Second, impacts should be categorized as major, moderate, minor, or negligible based on the consideration of parameters such as:
- **Impact duration:** this ranges from "beyond decommissioning" to "temporary with no detectable impact"
 - **Spatial extent of the impact:** for instance, within the site boundary, to within village, Regency, Province, National or Trans-boundary
 - **Frequency:** a measure of the constancy or periodicity of the impact
- 4.1.8 The table below presents generic criteria utilized in determining impact magnitude. Each detailed technical assessment should define impact magnitude in relation to its environmental or social aspects. For example, employment will increase during the construction phase of the project. Local contractors will be employed to assist in construction activities, thus supporting the local economy. The impact on the economic environment during construction is assessed to be positive. The duration of the activity is considered to be medium and the impact magnitude to the socioeconomic structure of the area in scope is medium.

Table 4-3 Criteria for Determining Impact Magnitude

Magnitude (beneficial / adverse)	Definition (consider duration, spatial extent, reversibility, and emission standards compliance)
High	Fundamental change to the specific conditions assessed resulting in long term or permanent change, typically widespread in nature and requiring significant intervention to return to baseline; would violate National Standards, AIIB ESS or GIIP without additional mitigation.
Medium	Detectable change to the specific conditions assessed resulting in non-fundamental temporary or permanent change.
Low	Detectable but small change to the specific conditions assessed.
Negligible	No perceptible change to the specific conditions assessed.

- 4.1.9 **Define Impact Significance:** In general, impact significance is determined through a combination of receptor sensitivity and magnitude of change to that receptor. Impacts within the ESIA should be identified, and significance assessed, in a structure manner which accounts for this sensitivity and magnitude interaction as presented within the table below.

Table 4-4 Determining Impact Significance

		Impact Magnitude			
Sensitivity of Impact Receptor		Negligible	Low	Medium	High
	Negligible	Negligible	Negligible	Negligible	Minor
	Low	Negligible	Negligible	Minor	Moderate
	Medium	Negligible	Minor	Moderate	Major
	High	Minor	Moderate	Major	Critical

- 4.1.10 The resulting impact significance is generally as described below; however, this may vary between various technical specialties, particularly where numerical standards (rather than qualitative evaluation) is utilized in determining impact severity. The descriptions below, while drawing upon international best practice, have been adopted for the purposes of Indonesia and utilize similar language to that presented within the impact evaluation within the AMDAL.

Table 4-5 Description of Impact Significance

Impact Significance	Definition
Negligible	<u>Insignificant impact:</u> • Magnitude of the change is still within the limits of its natural variation • Impact is quite low and localized • Low probability of impact occurrence • Impact is reversible in a short period
Minor	<u>Insignificant impact:</u> • Magnitude of the impact is relatively small, and the probability of impact occurrence is low

Impact Significance	Definition
	- Impacts on physical and chemical environmental components are within the applicable environmental quality standard - Impact is reversible
Moderate	<u>Significant impact:</u> - Moderate impacts occurring over short period - Environment has enough time to recover its condition (homeostasis) - Benefits of project existence are limited to few numbers of communities (people) - Project activity has an irreversible impact, but impact is moderate - There is a conflict of interest in the use of various natural resources (agriculture, forestry, recreation, water resources, etc.) and other established uses in the project area - Impacts need to be managed effectively and efficiently so that the magnitude of the impact is reduced to a level of 'as low as reasonably practical'
Major	<u>Significant impact:</u> - Impact is classified as irreversible affecting a high number of people - The impact exceeds the applicable environmental quality threshold - Disturbs and/or has a negative impact on property of cultural significance to a community or ethnic or social group - Projects cause significant population growth or population concentration - Project converts productive (prime) agricultural land to non-agricultural use - Impacts need to be managed effectively and efficiently so that project activities do not cause large residual impacts over a long period of time and over a large area
Critical	Intolerable; not amenable to mitigation; alternatives must be identified – Project Stopper

4.1.11 **Define Likelihood of Impact:** For unplanned events or extreme situations, the likelihood that the particular event, impact or outcome will occurs should be ascribed a qualitative probability, as per the categories defined in the table below.

Table 4-6 Likelihood Category

Likelihood	Definition
Extremely Unlikely	The event is very unlikely to occur under normal operating conditions but may occur in exceptional circumstances (i.e., the event is generally never heard of in industry).
Unlikely	The event is unlikely but may occur at some time during normal operating conditions (i.e., the event is heard of in industry).
Low Likelihood	The event is likely to occur at some time during normal operating conditions (i.e., incident has occurred in the company before).
Medium Likelihood	The event is very likely to occur during normal operating conditions, (i.e., the event occurs several times per year in the company).
High Likelihood/ Inevitable	The event will occur during normal operating conditions (is inevitable), (i.e., the event happens several times per year at a location).

4.1.12 **Risk Assessment:** is calculated by combining the significance of an impact with its likelihood of occurrence. This methodology helps in identifying the potential risks associated with

project activities by evaluating how severe an impact could be and the probability of that impact occurring.

Table 4-7 Risk Assessment

Likelihood	Impact Significance				
	Negligible	Minor	Moderate	Major	Critical
High Likelihood	Low	High	Severe	Severe	Severe
Medium Likelihood	Low	High	High	Severe	Severe
Low Likelihood	Low	Moderate	High	Severe	Severe
Unlikely	Low	Low	Moderate	High	Severe
Extremely unlikely	Low	Low	Moderate	High	High

4.1.13 Cumulative Impact: The assessment of cumulative impacts considers the combination of multiple impacts that may result when the Project is considered alongside other existing or proposed projects in the same geographic area of similar development timetable. The assessment of cumulative impacts will identify where particular resources or receptors would experience significant adverse or beneficial impacts as a result of combinations or Projects (inter-project cumulative impacts).

4.1.14 Cumulative impact assessment is required when there is a need to evaluate the combined effects of an action in conjunction with other past, present, or reasonably foreseeable actions on environmental or social conditions. This assessment considers the incremental impact of multiple actions that may be individually minor but collectively significant over time.

4.1.15 In the event that Cumulative Impact Assessment is required, a Term of Reference for CIA is provided in Appendix D.

4.2 Potential Significant Environmental and Social Risks and Impacts During Pre-Construction Phase

4.2.1 Before commencing construction activities, there is a pre-construction phase that is expected to have potential impacts on Environmental (legacy issue), social, economic, and cultural aspects.

Environmental, Socio-economic and Cultural Risk and Impact

4.2.2 Legacy Issue: Potential environmental impacts that generated from the historical operations of waste management facilities, such as landfills, that were not previously managed according to best practices. These issues may include improper waste disposal methods, leachate contamination, the absence of landfill liners, and poor leachate or gas management systems. Such conditions can result in soil, surface water and groundwater contamination, air pollution, and health hazards for nearby communities.

4.2.3 Land Acquisition: Social impacts may arise during the pre-construction phase of the proposed project due to land acquisition activities. In this project, landowners or land users are among the most economically affected parties, as the land may serve as their primary source of livelihood. The land acquisition is intended for road access widening, which results in the loss of land, assets located on the land, and natural resources utilized by the landowners and users (if any) The project requires land for development for example for widening roads access, which results in loss of land, loss of property on the land and resources utilized by landowners

and land users (if any). A baseline study will be conducted to describe the existing conditions, and a social impact assessment will be carried out to evaluate the effects on the PAP.

- 4.2.4 **Concern:** Community concerns may arise before construction activities are carried out. These concerns may be due to socialization activities, legacy issues, lingering odors from landfill activities, and the use of non-local labor (not prioritizing local workers). The project may also attract the concern of NGOs/CSOs, making it necessary to identify those that are likely to have an interest in the project for future engagement.

4.3 Potential Significant Environmental and Social Risks and Impacts During Construction Phase

- 4.3.1 Considering the general activities (including related to temporary disposal area, access road as an associated facility, cultural heritage protection, hazardous waste handling, and impact to natural habitat) carried out during the construction period, there are several potential impacts that will arise regarding the environment and socio-economic and cultural aspects.

Environmental Risk and Impact

- 4.3.2 **Air Quality and Odor:** Risks and impacts to air quality will arise from the construction of the main facilities and supporting infrastructure of the project, as well as from the mobilization of equipment and materials.
- 4.3.3 **Emergency Response and Preparedness:** Construction activities in densely populated areas or those with narrow access roads can increase risks to both pedestrians and vehicular traffic. The safety and health of the community and workers during the construction phase must be managed and addressed by developing an emergency response and preparedness plan.
- 4.3.4 **Noise and Vibration:** Noise and vibration will be generated from the mobilization of equipment and materials, earthworks, and the construction of main facilities as well as supporting infrastructure for the project, which will involve the use of heavy machinery.
- 4.3.5 **Solid Waste Management:** During the construction phase, the operation of the workers' basecamp will increase the generation of domestic waste. Meanwhile, the construction of the supporting infrastructure for the landfill will generate construction debris. If not properly managed, the accumulation of domestic waste and construction debris can cause pollution and provide breeding grounds for disease vectors such as mosquitoes, flies, and rats.
- 4.3.6 **Wastewater Management:** Increased domestic wastewater will result from the operation of the construction workers' basecamp. If not properly managed, this increase can contaminate surface water.
- 4.3.7 **Biodiversity and Aquatic Biota:** During the construction phase, activities can significantly impact the flora and fauna at the project site. The movement of heavy machinery can lead to the fatality of various species, including rodents, lizards, and birds. The land clearing process, involving the removal of trees and vegetation, causes habitat loss for many animals. As their natural habitats are destroyed, these animals may be forced to relocate to new areas, such as human settlements or public spaces, potentially causing conflicts and ecological imbalances. Consequently, these disturbances result in a decrease in local biodiversity, reducing both the variety and abundance of plant and animal species in the area.
- Biodiversity and Aquatic Biota:** During the construction phase, activities can significantly impact the flora and fauna at the project site. The movement of heavy machinery can lead to the fatality of various species,

including rodents, lizards, and birds. The land clearing process, involving the removal of trees and vegetation, causes habitat loss for many animals. As their natural habitats are destroyed, these animals may be forced to relocate to new areas, such as human settlements or public spaces, potentially causing conflicts and ecological imbalances. Consequently, these disturbances result in a decrease in local biodiversity, reducing both the variety and abundance of plant and animal species in the area.**eSocio-economic and Cultural Risk and Impact to Livelihood Disruption:** During construction, waste pickers will experience economic displacement due to the temporary relocation of the landfill. This will impact waste pickers who work at the landfill daily, potentially causing a loss of livelihood or reduced income. The income of waste collectors who receive waste from waste pickers at the landfill is also expected to decrease. Additionally, other PAP, such as truck drivers, landowners and land users, will also face economic displacement as their land is transferred to the project, preventing them from benefiting economically from the land. However, the local government's commitment to waste pickers will be included in the impact assessment to see the impact on the PAP.

- 4.3.8 **Worker Health and Safety:** Construction activities will potentially have an impact on workers related to employment, health and safety. This concerns work agreements (benefits and obligations), availability and use of PPE, risk of work accidents or work-related diseases, GBV and sexual harassment in the workplace, and others.
- 4.3.9 **Cultural Resources:** There are several sites around the project location that are considered sacred by the community. The disruption of community access to cultural resources near the project location is expected to pose potential risks during the construction phase.
- 4.3.10 **Concern:** Concerns may arise due to potential environmental impacts during the construction phase. These concerns can include noise, increased dust, disruption of comfort, traffic congestion, and worries about the use of non-local labor (not prioritizing local workers). Concerns may come from various elements of society such as the community, government, and NGOs/CSOs.
- 4.3.11 **Community Health and Safety :** Increased traffic density, dust, noise, water pollution and odor during the construction phase can have an impact on the safety and health of the community around the project site. Such as increasing the potential for traffic accidents and the emergence of diseases such as ARI, itching, and other discomforts.
- 4.3.12 **Indigenous People.** Increased activity during construction can cause disruption to IPs' livelihoods or daily activities. Especially if the project location is within customary territory.
- 4.3.13 **Job opportunities:** Labor recruitment is one of the impacts of construction activities. It is expected that labor recruitment, according to the project's needs, will prioritize local workers to avoid negative perceptions from the community about the project's activities. The creation of job opportunities through employment can enhance the well-being of the community.
- 4.3.14 **Business opportunities:** The recruitment of labor can create business opportunities to meet the needs of construction workers by setting up small shops around the project site. Additionally, business opportunities can arise to supply materials and resources needed for construction. Business opportunities can improve community well-being by increasing their income levels.

- 4.3.15 **Traffic Disruption:** During the construction phase, traffic disruption may be caused by material stocks piling on the roadside, increased movement of construction workers and vehicles carrying materials and equipment.
- 4.3.16 **Gender:** During the construction period lot of workers will work at the site. These workers may come from local and non-local workers who have different cultures thus that there is the risks of sexual exploitation and abuse (SEA), sexual harassment (SH), and GBV, including intimidation, in the Projects.

4.4 Potential significant environmental and social risks and impacts during operational phase

- 4.4.1 After identifying major activities and processes during the operational phase, including cultural heritage protection, hazardous waste handling, impact to natural habitat, and associated facilities like temporary disposal area, access roads and water supply it is crucial to assess the potential impacts on the environment. These impacts can be categorized into ecological, physicochemical, and socioeconomic impacts. Generally, the potential adverse impacts during the operational phase are not expected to be significant.

Environmental Risk and Impact

- 4.4.2 **Air Quality and Odor:** Emissions from waste transport trucks, equipment, MRF and landfill operations can significantly affect air quality. Odor from waste decomposition can cause discomfort and health issues for nearby communities.
- 4.4.3 **Climate Change/GHG Emissions:** Methane and carbon oxides (COx) emissions from decomposing waste contribute to climate change and global warming.
- 4.4.4 **Emergency Response and Preparedness:** Operational activities pose risks such as fires, chemical spills, and natural disasters, which can have serious safety and environmental consequences.
- 4.4.5 **Landscaping/Visual Impact:** The operational phase of the landfill can cause visual pollution, affecting the aesthetic value of the surrounding area.
- 4.4.6 **Noise and Vibration:** Noise and vibrations from operational activities such as waste transport and equipment use can disturb nearby residents and wildlife.
- 4.4.7 **Soil Quality:** Operational activities can lead to soil contamination from leachate and hazardous waste, affecting soil quality.
- 4.4.8 **Solid Waste Management:** The operation of the landfill generates various types of waste that need proper management to avoid environmental harm and legacy issues.
- 4.4.9 **Wastewater Management:** Leachate and wastewater from operational activities can contaminate local water bodies, affecting water quality.
- 4.4.10 **Water Quality:** Operational activities can impact surface and groundwater quality through contamination from leachate and other pollutants
- 4.4.11 **Biodiversity and Aquatic Biota:** Leachate and other pollutants from landfill operations can affect local flora and fauna, particularly aquatic biota in nearby water bodies

Socio-economic and Cultural Risk and Impact

- 4.4.12 **Livelihood Disruption:** When the TPST begins operations, some or all of the waste will be diverted directly to the TPST. The residue from the TPST will then be sent to the landfill. This is expected to impact waste pickers and collectors, potentially causing them to lose part or even all of their income derived from waste
- 4.4.13 **Gender:** The potential recruitment of new workers from both within and outside the project area during the operational phase may pose risks of gender-based violence (intimidation, exploitation, and sexual harassment, GBV, etc).
- 4.4.14 **Worker Health and Safety:** Operation activities will potentially have an impact on workers related to employment, health and safety. This concerns work agreements (benefits and obligations), availability and use of PPE, risk of work accidents or work-related diseases, GBV and sexual harassment in the workplace, and others
- 4.4.15 **Community Health and Safety:** During the operational phase, it is estimated that there will be impacts due to traffic congestion, a decline in air quality, and odors, which could affect the safety and health of the community around the project site. This includes an increased potential for traffic accidents and the emergence of illnesses such as respiratory infections, skin irritations, and other discomforts.
- 4.4.16 **Cultural Resources:** The cultural resources near the project location, especially those within the location, need to be given special attention. Preservation and protection efforts must be carried out in accordance with local wisdom to ensure that community access to the sites is not disrupted and that the operation of the TPST is not affected.
- 4.4.17 **Concern:** Negative perceptions, such as concerns about odor or pollution of water and soil, can pose risks to the project if these current complaints remain unresolved or if other environmental impacts arise during the operational phase of the TPST. Additionally, concerns may also arise if the operational workforce does not prioritize local labor. Concerns may come from various elements of society such as the community, government, and NGOs/CSOs.
- 4.4.18 **Indigenous People.** Project activity during operation can cause disruption to IPs' livelihoods or daily activities. Especially if the project location is within customary territory.
- 4.4.19 **Job opportunities:** The impact of TPST operations is expected to create employment opportunities for the local community through the recruitment of new workers in accordance with the operational needs of the TPST. The creation of job opportunities through employment can enhance the well-being of the community.
- 4.4.20 **Business opportunities:** Business opportunities are expected to arise to support the operation of the TPST, including potential business collaborations with nearby villages and opportunities to supply the operational needs of the TPST. Business opportunities can improve community well-being by increasing their income levels.
- 4.4.21 **Traffic Disruption:** During the operation phase, traffic disruption may be caused by waste trucks, increased movement of waste trucks.
- 4.4.22 Appendix I provides examples of site visit findings which include detailed observations and initial assessments of the social and environmental conditions. These findings will be further

confirmed and investigated through comprehensive baseline studies during the project's implementation phase.

4.4.23 The potential adverse impacts that are associated with project activities are summarize in the table below.

Table 4-8 Impact Description

AIIB ESS	Components/Risk	Project Activities	Interaction Description
Pre-construction			
ESS 1 & ESS 2	Socio Economic: land user income disruption	Land acquisition	• There is a land acquisition of 12,697 m² for the project development plan. The land is owned by the Sanggrahan village government and is known as Bengkok Land. The land acquisition is done through a land swap mechanism where the village owned Bengkok Land is exchanged for land owned by the Temanggung Sub-district Government. The land swap process was completed in 2023 (before construction). • On the village government land, there are four land users who are Sanggrapan village officials. Based on information from the village head, the cultivators have received land compensation according to what was given by the Temanggung district government. In the preparation of the ESIA, a detailed investigation of the land acquisition process and the impact of the land acquisition on the land users is required.
ESS 1	Socio-Cultural: Increase of community concerns	Stakeholders Socialization	• There are community concerns about the existing activities of the Sanggrahan landfill. Based on interviews with village leaders, several community complaints were identified regarding the presence of TPA Sanggrahan. The main issues are the unpleasant odour that occurs at certain times and the spillage of waste on the roads during the transport of waste to the TPA, which has the potential to increase community concerns when the project plan is socialised with the community. There will be various concerns from the community regarding the Project Development Plan, for example from waste pickers regarding economic activities and concerns about traffic disruption during the activity phase. In addition to the concerns that will arise, there will also be the potential for community expectations regarding the positive impacts of the development of the Sanggrapan landfill.

AIIB ESS	Components/Risk	Project Activities	Interaction Description
Construction			
ESS 1	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5)	• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary disposal site construction • Commissioning	• Dust emissions will occur during both the land clearing/preparation phase and construction activities. The clearing process will lead to dust fall, classified as Total Suspended Particles (TSP). If not managed, the cleared land will continue to generate dust throughout all construction operations. Actions like material movement and site grading on cleared land will also contribute to dust generation.
ESS 1	• Air Quality: • Increased of Gas Concentration (CO, CO2, NO2, SO2, H2S, and HC)	• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary disposal site construction • Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities) • Commissioning	• Mobilization and construction activities will involve construction traffic, heavy equipment, machinery, and other heavy vehicles. These activities result in the emission of pollutants from fossil fuel combustion. The main pollutants released include CO, CO2, SO2, NO2, N2O, VOCs, and hydrocarbons (HC). Additionally, rehabilitation work on old dumping xx and landfill cells may lead to an increase in odor, particularly due to higher concentrations of hydrogen sulfide (H2S) in the ambient air.
ESS 1	Noise pollution	• Construction of access road (Associated Facilities) • Land Preparation • Construction of Base Camp and Workshop • Mobilization of Equipment and Materials • Construction of TPST Facilities • TPA Rehabilitation • Temporary disposal site construction	• Essentially generated by the operation of the mobile equipment assigned to the worksite. Noise levels are expected to rise in the Project Area due to increased use of: • Light and heavy construction vehicles • Diesel generators o Heavy machinery • Power tools.

AIIB ESS	Components/Risk	Project Activities	Interaction Description
ESS 1	Increased Vibration	• Construction of TPST Facilities • TPA Rehabilitation • Temporary disposal site construction	• Vibration may occur due to the civil works activities particularly construction of TPA, TPST and supporting facilities. Operation of construction equipment cause ground vibrations which spread through the ground and diminish in strength with distance. Building founded on the soil in the vicinity of construction site response to vibration. Ground vibration from construction activities rarely reaches levels that can damage structures and there is currently construction equipment available that can minimise the impact of vibration.
ESS 1	Increased in Surface Run-Off	• Construction of access road (Associated Facilities) • Land Preparation • Construction of TPST Facilities • Construction of TPA Rehabilitation Temporary disposal site construction	• The landfill has been operating so that the drainage channel in the project site has been constructed, the arrangement of the landfill and TPST will improve the function of the drainage channel thus storm water can be controlled.
ESS 1	Soil : Increased Soil Erosion	• Construction of access road (Associated Facilities) • Land Preparation • Construction of TPST Facilities • Construction of TPA Rehabilitation Temporary disposal site construction	• During rainfall, the surface runoff will carry construction materials and erode the soil. Currently, the landfill operation has been operational whereby the stormwater and erosion control infrastructure at the project site has been built, therefore the impact of increased erosion can be categorized as low
ESS 1	Soil : Soil contamination	• Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	• Potential soil contamination due to improper handling of waste materials from both the existing landfill and construction equipment
ESS 1	Water Quality: Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	• Construction of access road (Associated Facilities) • Base Camp and Workshop • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • TPA Rehabilitation • Commissioning	• Construction activity could pollute the surface water quality in the form of silt pollution, the release of hydrocarbons or chemicals, and the release of other site waste into the water such as litter or building materials.
ESS 1	• Water Quality: • Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	• Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	• There is a possibility that leachate from the temporary disposal site operation could flow into surface water bodies without prior treatment, if the LTP is still not operating properly.
ESS 1	• Water Quality: • Groundwater Pollution (TSS, N	• Temporary disposal site construction - Waste disposal	• The leachate of temporary disposal site could infiltrate to the groundwater and potentially pollute it if the environmental

AIIB ESS	Components/Risk	Project Activities	Interaction Description
	total, pH, BOD, DO, COD, Mercury, Cadmium)	handling during construction (Associated Facilities)	protection and membranes does not meet the standard.
ESS 1	Physiography : Landscape Change	Land Preparation	Changes to the landscape due to clearing and construction activities.
ESS 1	Waste Management: Increased Construction Waste	- Land Preparation - Construction of Base Camp and Workshop - Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	- Generation of demolition and construction waste from construction activity. - Demolition and construction work has potential to produce hazardous solid waste, such as contaminated soil due to oil spill, oily rags, container of petroleum based product, wall paint can and spill cleanup materials from oil and fuel spills.
ESS 1	Waste Management: Increased Domestic Waste (include Hazardous Waste)	Construction of Base Camp and Workshop	- Domestic solid waste will also be produced, most likely in the form of food waste, plastic and food packaging, from workers during construction. Domestic waste will be generated continuously during the months of construction period. - Demolition and construction work has potential to produce hazardous solid waste, such as contaminated soil due to oil spill, oily rags, container of petroleum based product, wall paint can and spill cleanup materials from oil and fuel spills.
ESS 1	Wastewater management: Increased domestic wastewater	Construction of Base Camp and Workshop	Domestic wastewater will also be produced by the workers during construction.
ESS 1	Climate Change/GHG Emission: Increased GHG emission	- Land Preparation - Base Camp and Workshop - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	- GHG emission will generate from waste decomposition. - Increased GHG emissions from machinery and vehicles. - Land preparation within 4 to 6 ha areas will increase CO₂, N₂O, and CH₄, which leads to a lower heat reduction rate and increased air temperature.
ESS 1	Biodiversity and Ecosystem Services:	- Construction of access road (Associate facilities) - Land Preparation	Construction will involve tree clearance and earthwork within an area of 2.5 to 3 ha. Land clearing will remove existing

AIIB ESS	Components/Risk	Project Activities	Interaction Description
	Habitat Loss	- Construction of Base Camp and Workshop - Construction of TPST facilities - TPA rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	vegetation which are habitats for fauna species. Clearing and construction activities may produce dust, noise, bad air quality and odour which may impact the fauna within a 1 km radius.
ESS 1	Biodiversity and Ecosystem Services: Roadkills and human-wildlife conflict due increase in construction traffic	Mobilization of Equipment and Materials	The construction and mobilization of heavy equipment may increase the roadkill for several species of fauna like small mammal and reptile, this can cause impact to the ecosystem.
ESS 1	- Socio-economic: - Workforce Opportunity	Recruitment Activities	Workforce recruitment at construction phase might cause job opportunity for local people, wages and working conditions, labor right and fair treatment.
		Workforce release	Workforce release post-construction may lead to potential social issues related to unemployment or loss of income.
ESS 1	- Socio-economic: - Business Opportunity	Construction of Base Camp and Workshop	The construction of a workers' base camp during the construction of this project will provide business opportunities for the surrounding community. These will include catering for workers, laundry and other basic needs for the workers who will live in the base camp.
ESS 1 & 2	Socio-economic: Waste picker Relocation	Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	- Land preparation activities during the construction phase will have an impact on the relocation of waste pickers' stalls. According to data from the Sanggrahan TPA UPTD, there are 69 waste pickers, comprising 49 women and 24 elderly individuals. This group is particularly vulnerable and may be disproportionately affected by the proposed changes. Any operational changes at the TPA could have a negative impact on the local economy, particularly affecting women and the elderly, who are among the most vulnerable groups in the community. - The project development plan indicates that the location of the waste picker stalls in the TPA will become the location of the project development. This will

AIB ESS	Components/Risk	Project Activities	Interaction Description
			necessitate the cleaning up of non-permanent stalls.
ESS 1 & 2	Socio-economic: disruption of waste pickers' livelihoods	Land Preparation	- Construction activities can cause significant disruption to waste pickers' livelihoods, particularly affecting women and the elderly who are more vulnerable to economic displacement. - Waste pickers may still be able to engage in economic activities at the landfill site, but these may not be as optimal as they are now. temporary landfill relocation activities and other construction activities at the landfill site can potentially disrupt waste pickers' livelihoods.
ESS 1	Socio-cultural: Community concern	- Recruitment - Construction of access road (Associated Facilities) - Land Preparation - Base Camp and Workshop - Mobilization of Equipment and Materials - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Mobilization, civil works, labor recruitment, and basecamp operation activities may raise new concerns and complaints from the surrounding community. These concerns may differ from the initial complaints experienced by the community during the construction phase
ESS 1 & ESS 3	Socio-cultural: Cultural resources disturbance	Mobilization of Equipment and Materials	Near the Sanggrahan landfill, two sites about 500 metres away are considered sacred by the local community. These sites are the tomb of Mbah Selo Werso (Kramatan Bulu) and the Petilasan of Nyi Putri/Nyi Gandik. Although there is no evidence that the landfill has affected the cultural resources, the potential for disruption to the cultural resources and annual community events needs to be monitored to avoid future social conflict.
ESS 1	Transportation: Disruption to Land Traffic	Mobilization of Equipment and Materials	- The mobilization of heavy vehicles and construction materials may increase traffic volume around the Sanggrahan landfill. The passage of heavy vehicles can disrupt community activities and potentially cause other issues, such as road damage. - Construction mobilization may disrupt traffic, especially on the Kranggan-Kaloran road.

AIIB ESS	Components/Risk	Project Activities	Interaction Description
ESS 1	Transportation: Increase in Traffic Accidents	Mobilization of Equipment and Materials	• The mobilization of heavy vehicles and construction materials may cause road damage, which could lead to traffic accidents.
ESS 1	Health and Safety: increase in work accidents	• Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	• Workplace accident risks increase due to intensive physical activities, heavy equipment/vehicle use, and working at heights when constructing TPST building. Workers face hazards such as frequent exposure to hazardous materials, moving heavy equipment, electricity, and potential presence of dangerous gases (e.g. methane). Fatigue, insufficient training, and poor supervision further raise the risk of accidents.
ESS 1	Health and Safety: increase in community accidents	• Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • Temporary disposal site	• Landfills located near residential areas or public access pose risks to surrounding communities, particularly from exposure to hazardous gases, waste leaks, and the movement of heavy vehicles. Children or residents who are unaware of the dangers of landfills may experience accidents, including getting trapped in waste piles or being injured by vehicles entering and exiting the site.
Operation			
ESS 1	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5)	• Operation of TPST • Operation of Residual Landfill	• Waste pick-up trucks and the rotary dryer machine used in TPST operations will increase dust concentration in the ambient air.
ESS 1	Air Quality: Increased of Gas Concentration (NO ₂ , SO ₂ , H ₂ S, and HC)	• Operation of TPST • Operation of Residual Landfill	• The landfill, waste pick-up trucks, and the rotary dryer machine used in TPST operations will release pollutants into the ambient air, including CO, CO ₂ , SO ₂ , NO ₂ , VOCs, and hydrocarbons (HC). Additionally, odors from waste decomposition may cause discomfort and pose potential health risks to nearby communities.
ESS 1	Soil: Soil contamination	Operation of Residual Landfill	• Leachate from landfills can contaminate soil with harmful substances like organic compounds, heavy metals, and toxins. If not properly managed, it seeps into the ground, increasing soil acidity, reducing fertility, and disrupting ecosystems. Accidental spills can spread contaminants, further impacting surrounding areas and water sources.
ESS 1	• Water Quality:	• Operation of TPST • Operation of Residual Landfill	• Surface water quality is likely to deteriorate due to contamination from

AIIB ESS	Components/Risk	Project Activities	Interaction Description
	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)		landfill leachate. Leachate contains dissolved substances from the interstitial water of the disposed waste and its degradation products, along with potential suspended solids, including pathogens. If not properly collected and treated, leachate can migrate from the landfill, leading to surface water contamination as it flows into nearby water bodies.
ESS 1	- Water Quality: - Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	Operation of Residual Landfill	Leachate from the landfill operation may contaminate groundwater quality through infiltration if not managed properly.
ESS 1	Waste management: Increased Domestic Waste Generation (Including Hazardous Waste)	- Operation of TPST - Operation of Residual Landfill	- Domestic solid waste will also be produced, most likely in the form of food waste, plastic and food packaging, from workers during operation. Domestic waste, will be generated continuously during the operation period. - Operation stages has potential to produce hazardous solid waste, such as contaminated soil due to oil spill, oily rags, container of petroleum based product, wall paint can and spill cleanup materials from oil and fuel spills.
ESS 1	Wastewater Management: Increased Domestic Wastewater	- Operation of TPST - Operation of Residual Landfill	Wastewater will also be produced, most likely in the from workers during operation. Domestic waste, will be generated continuously during the operation period.
ESS 1	Climate Change/GHG Emission: Increased GHG emission	Landfill and facility operations	Landfill and facility operations may reduce the possibility of absorbing CO₂, CH₄, and N₂O which leads to lower heat reduction rate and increase air temperature.
ESS 1	Biodiversity and Ecosystem Services	Landfill and facility operations	Landfill and facility operations may produce uncomfortable noise, bad air quality and odour which disturb the flora and fauna within 1,5 km radius.
ESS 1	Social-Economic: Workforce Opportunities	- TPST/Residual Landfill Recruitment - Operation of TPST	The recruitment of workers, both skilled and unskilled, will be conducted openly to support the operation of the TPST. This provides employment opportunities for the local community.
ESS 1 & 2	Social-Economic: disruption of waste pickers' livelihoods	- Operation of TPST - Operation of Residual Landfill	The operation of the TPST allows waste arriving at the landfill to be processed directly at the facility. This has the potential to reduce the amount of waste

AIIB ESS	Components/Risk	Project Activities	Interaction Description
			that waste pickers can collect and, consequently, decrease their income.
ESS 1	Social-Cultural: Community Concern	- TPST/Residual Landfill Recruitment - Operation of TPST	The operation of the TPST generates high expectations from the community; however, if the TPST causes negative impacts on the community, complaints will arise regarding its operations.
ESS 1	- Health & Safety: - increase in work accidents	- Operation of TPST - Operation of Residual Landfill	The risk of workplace accidents during the operational phase in TPST can increase due to various factors, including the operation of heavy machinery, interactions among workers, and waste handling processes. Workers are often exposed to hazardous working conditions, such as unstable piles of waste, dangerous gases, and the movement of large vehicles that can lead to accidents. A dirty and disorganized work environment can also contribute to the risk of accidents, such as slips, falls, or being injured by sharp objects.

5 Environmental and Social Procedures

- 5.1.1 The Environmental and Social Procedure has been developed to align the SWM-SUD project with both Indonesian regulations and AIIB requirements. It specifically addresses the AIIB's policy assurance review, emphasizing the need for well-defined decision criteria in the ESMPF. This approach ensures that all sub-projects undergo comprehensive screening to identify and exclude those with significant environmental and social risks that cannot be adequately mitigated.

5.2 Environmental and Social Assessment and Management Process

Indonesia Environmental Document

- 5.2.1 In Indonesia, the screening process for determining the necessary environmental documents required for development is regulated by the Ministry of Environment Regulation No. 4 of 2021 concerning the List of Businesses and/or Activities Required to Have Environmental Impact Analysis (AMDAL), Environmental Management Efforts and Environmental Monitoring Efforts (UKL-UPL), or a Statement of Ability for Environmental Management and Monitoring (SPPL).
- 5.2.2 This regulation stipulates that the **construction of waste landfills using a controlled landfill/sanitary landfill system along with its supporting installations**, must have an AMDAL if the capacity is greater than or equal to 500 tons per day, and must have a UKL-UPL if the capacity is less than or equal to 500 tons per day. The regulations do not provide a requirement for SPPL.
- 5.2.3 The regulation stipulates that for **the development of integrated waste processing sites (TPST) with physical and mechanical-biological processing**, an AMDAL is required if the capacity is greater than or equal to 500 tons per day, a UKL-UPL is required if the capacity is between 50 and 500 tons per day, and an SPPL is required if the capacity is below 50 tons per day. **TPST activities involving thermal processing** must have an AMDAL if the capacity is greater than or equal to 50 tons per day, and a UKL-UPL if the capacity is below 50 tons per day. The **construction of landfills and TPSTs** falls under Category C activities, which have a low cumulative value scale and must be completed within a maximum of 60 days. The table below provides the summary of required environmental document for waste facilities.

Table 5-1 Required Environmental Document for Waste Facility

Facility Type	Capacity (tons per day)	Required Environmental Document
Landfill (Controlled/Sanitary)	≥ 500	AMDAL
	≤ 500	UKL-UPL
TPST (Physical & Mechanical-Biological Processing)	≥ 500	AMDAL
	50 - 500	UKL-UPL
	< 50	SPPL
TPST (Thermal Processing)	≥ 50	AMDAL
	< 50	UKL-UPL

- 5.2.4 The local government is responsible for ensuring that all necessary environmental document requirements are fulfilled for participation in the SWM-SUD project. This includes obtaining the appropriate AMDAL, UKL-UPL, or SPPL based on the project's capacity and nature, to comply with national regulations.

Indonesia Landfill Risk Assessment

- 5.2.5 The Landfill Risk Assessment for the project can be conducted in alignment with the Ministry of Public Works and Housing (MPWH) Regulation No. 03/2013 concerning the implementation and management of waste processing facilities. This risk assessment evaluates various environmental and social parameters to determine the level of risk associated with the landfill's operations. The criteria include factors such as distance to water sources, waste filling depth, groundwater quality, soil permeability, and proximity to settlements, among others. The assessment is used to classify landfills into three categories of risk: low, medium, and very high. Each risk level comes with recommended actions, ranging from rehabilitation to immediate closure depending on the severity of the potential environmental or social impacts. The full assessment, including detailed weightings and sensitivity indices for each parameter, can be found in **Appendix C**. This appendix provides a breakdown of the various criteria used to calculate the landfill's risk index (RI) and the corresponding recommendations for action.

Environmental and Social Impact Assessment

- 5.2.6 The Environmental and Social Impact Assessment (ESIA) process is a critical component for projects categorized under Category A or Category B, as it ensures the comprehensive evaluation of potential environmental and social impacts. Given the nature and scale of the SWM-SUD project, it is likely to fall under either Category A or Category B.
- 5.2.7 A project is categorized as Category A if it is likely to have significant adverse environmental and social impacts that are irreversible, cumulative, diverse, or unprecedented. These impacts may affect a larger area than the sites or facilities subject to physical works and can be either temporary or permanent. For Category A projects, the Bank requires the client to conduct a detailed environmental and social impact assessment (ESIA) or an equivalent assessment. This assessment must be comprehensive, examining the project's potential risks and impacts, both positive and adverse, and comparing them with feasible alternatives, including the "without project" scenario. The ESIA also recommends measures to avoid, minimize, mitigate, offset, or compensate for adverse impacts and improve the project's environmental and social performance. Additionally, an environmental and social management plan (ESMP) or an environmental and social management planning framework (ESMPF) must be prepared and included in the ESIA report.
- 5.2.8 A project is categorized as Category B if it has a limited number of potentially adverse environmental and social impacts, which are not unprecedented, and are few, if any, irreversible or cumulative. These impacts are typically confined to the project area and can be successfully managed using good practice in an operational setting. For Category B projects, the Bank requires the client to conduct an initial review of the environmental and social risks and impacts. Based on this review, the Bank, in consultation with the client, determines the appropriate assessment instrument, which may include an ESIA or another similar instrument. The scope of the assessment for Category B projects is narrower than that for Category A, but it still examines the project's potentially adverse and positive impacts and recommends measures to avoid, minimize, mitigate, offset, or compensate for adverse impacts and improve environmental and social performance.

- 5.2.9 Consultant will develop ESIA and ESMP documents for each proposed subproject site, as well as a stakeholder engagement plan. The ESIA will provide project description, desktop review, impact assessment methodology, baseline data, and identify all environmental impacts (including direct and indirect impacts) that may result from the project activities. The evaluation will follow internationally accepted best practices and the AIIB ESS. It will consider receptor sensitivity, impact magnitude, frequency, and significance (defined as major, moderate, minor, or negligible).
- 5.2.10 **Scoping and screening:** Prior to preparing the ESIA, scoping is necessary to gain an overview of the project. The ESIA screening process for this project will use the AIIB Environmental and Social Standards (ESS) to evaluate project risks. The Project Team will conduct scoping visits and consultations with authorities, compile an ESIA Scoping Report, review available documents, and evaluate the quality of relevant data. The Project Team, consultants, and the client will conduct interviews to analyse the gaps between national and. **The evaluation of impact significance involves multiple considerations:** This process includes analyzing the project components and their effects relative to the existing environmental baseline and any sensitive receptors that might be affected. Each impact is then assessed based on its potential severity and scale. The more detailed description regarding the impact evaluation available in Chapter 4. The table below describes the task/detail activities for ESIA process, support required, and responsible parties.

Table 5-2 ESIA process

Task/ Detail Activity	Data/Support Required	Responsible Party
Project screening and scoping		
1. Site visit preparation 2. Site visit 3. Scoping result	• Coordination of scoping activity plan • Environmental document (Amdal, UKL UPL, SPPL) • Latest scavenger data • Land tenant data • Data of Community development program • Updated secondary data (e.g. population, livelihoods etc.) • Data on consultations that have been conducted • Environmental monitoring report / RKL RPL Implementation Report for landfills • Submit Masterplan/PTMPs from municipalities/districts that have not yet been issued. • Provide transport operational data such as vehicle type, fuel, and route. • TPS data served by the landfill • Project alternatives	• Ministry of Public Work and housing • Balai Prasarana Permukiman Wilayah (BPPW) Province • Environmental agency • Sub-district/village office • Consultant
Legal & Regulatory framework		

Task/ Detail Activity	Data/Support Required	Responsible Party
1. Reviewing Indonesia Regulatory framework 2. Reviewing International Regulatory framework	• Confirm and provide regulations regarding the project.	• Ministry of Public Work and housing • BPPW Province • Environmental agency • Consultant •
Baseline Studies (Environmental & Social)		
1. Preparation (survey plan, subbies, etc) 2. Data Collection (environmental and Transportation) Site visit 3. Laboratory Process 4. Review Lab Result 5. Preparation (Method, survey plan, subbies, etc) 6. Secondary Data Collection 7. Social Survey (Questionnaire, KII & FGD) 8. Social Data Analysis 9. Draft Baseline Report 10. Review by Client 11. Final Baseline Report	• Support for baseline activity • Coordination of data collection activity plans • Survey Permit • Support in data collection such as to MEMR local agency (ESDM) on groundwater quality data if relevant •	• Ministry of Public Work and housing • BPPW Province • Environmental agency • Consultant •
Impact Assessment, Mitigation Measures and Management Plan		
1. Identifying Environmental and Social Impact 2. Environmental and social impact (include	Confirmation and consultation regarding costs and organizational arrangements.	• Ministry of Public and housing • BPPW Province • Environmental agency • Consultant

Task/ Detail Activity	Data/Support Required	Responsible Party
GSI) assessment 3. Cumulative impact assessment 4. Developing mitigation measures 5. Developing Environmental and Social Management Plan (including SEP) 6. ESIA and ESMP review by client 7. Final ESIA and ESMP		

5.2.11 The SWM-SUD project should prepare the ESIA with the following Table of Contents:

Table 5-3 ESIA Table of Content

Chapter Title	Envisaged contents and assumptions/exclusions
Non-technical summary	Summary of the ESIA that highlights and briefly describes all aspects evaluated and the proposed management, mitigation, and management measures.
Chapter 1: Introduction	Includes project background, objectives, and ESIA structure
Chapter 2: Legal and regulatory Framework	Describe the AIIB guidelines and Indonesia regulatory setting, permitting matrix, and international environmental and social safeguards applicable.
Chapter 3: Project description and Alternatives option	- Detailed description of project setting and project components - Presents aspects such as need for project, technology type, site selection, layout and climate change considerations - Include project alternatives, such as no project scenario
Chapter 4: Baseline Condition	This chapter will describe the environmental and social conditions based on primary and secondary data collected by the Project Team. The baseline data will present data including but not limited to the baseline at provincial, regency/city, and village level, detailed profile and household level analysed with a certain sample size surveyed, summary of poverty and vulnerability factors, community structure, distribution of income, consumption, goods and services, tourism, education, skills, gender equality, and community health.
Chapter 5: Stakeholders Engagement Activities	This chapter provides information on the consultations conducted by the project to date. Furthermore, updates on consultations and interviews with key stakeholders, local communities and potentially affected households conducted by the Project Team to ensure a broader, more inclusive, and continuous process between project

Chapter Title	Envisaged contents and assumptions/exclusions
	proponents and potentially affected parties during the construction and operation phases, and to gauge public perception of the proposed project development. The subchapter also explains how it aided in identifying impacts and developing management, mitigation, and monitoring measures. Additionally, it offers recommendations to enhance future consultations. This section will also introduce the Stakeholder Engagement Plan (SEP).
Chapter 6: Grievance Redress Mechanism	Describes an arrangement for receiving, evaluating, and facilitating the resolution of workers' and affected people's concerns, complaints, and grievances about the borrower/client's E&S performance on a project, including gender-related concerns.
Chapter 7: Impact Assessment	This chapter will consist of an impact assessment for environmental and social aspects at the pre-construction, construction, and operational stages (including temporary disposal and access roads as associated facilities, cultural heritage, hazardous waste handling, and natural habitat). Presenting a desktop review and a standardized impact assessment methodology. The assessment will include evaluating receptor sensitivity, determining the magnitude of the impact, evaluating its significance, and analyzing residual impact levels. Environmental Impact Assessment • Presentation of air quality and odor baseline and impact assessment. • Presentation of noise and vibration baseline and impact assessment. • Presentation of water quality baseline and qualitative impact assessment. • Presentation of soil baseline and impact assessment. • Description of the site conditions; potential risks associated with climate change issues; physical environmental risks and liabilities that may exist on the site; and physical risks associated with climate change based on related risk sources. The consultant should carry out a CRA with key responsibilities that include collecting and post-processing essential datasets, such as historic hydrometeorological data, initial project design documents, and relevant flood zoning maps. The assessment will further entail identifying the project's climate-sensitive components and associated hazards, referencing the Aware physical climate risk screening report. The consultant should evaluate the sensitivity of these components to the identified climate hazards, determine the potential risks, and spotlight any inherent climate-resilient design features. The efficacy of these features in mitigating risks will be analysed, followed by an evaluation of any remaining climate risks post-implementation. The consultant should also pinpoint and assess potential adaptation measures, ensuring they align with the project's design to effectively address any residual climate risks. • Descriptions on terrestrial biodiversity values that might be at risk and an overview of potential impacts and necessary mitigations. Impacts and mitigation will be prepared against the expectations of national and international good practice, requirements, and guidelines. • Presentation of hydrological and geomorphological baseline (gathered from secondary sources) and impact assessment.

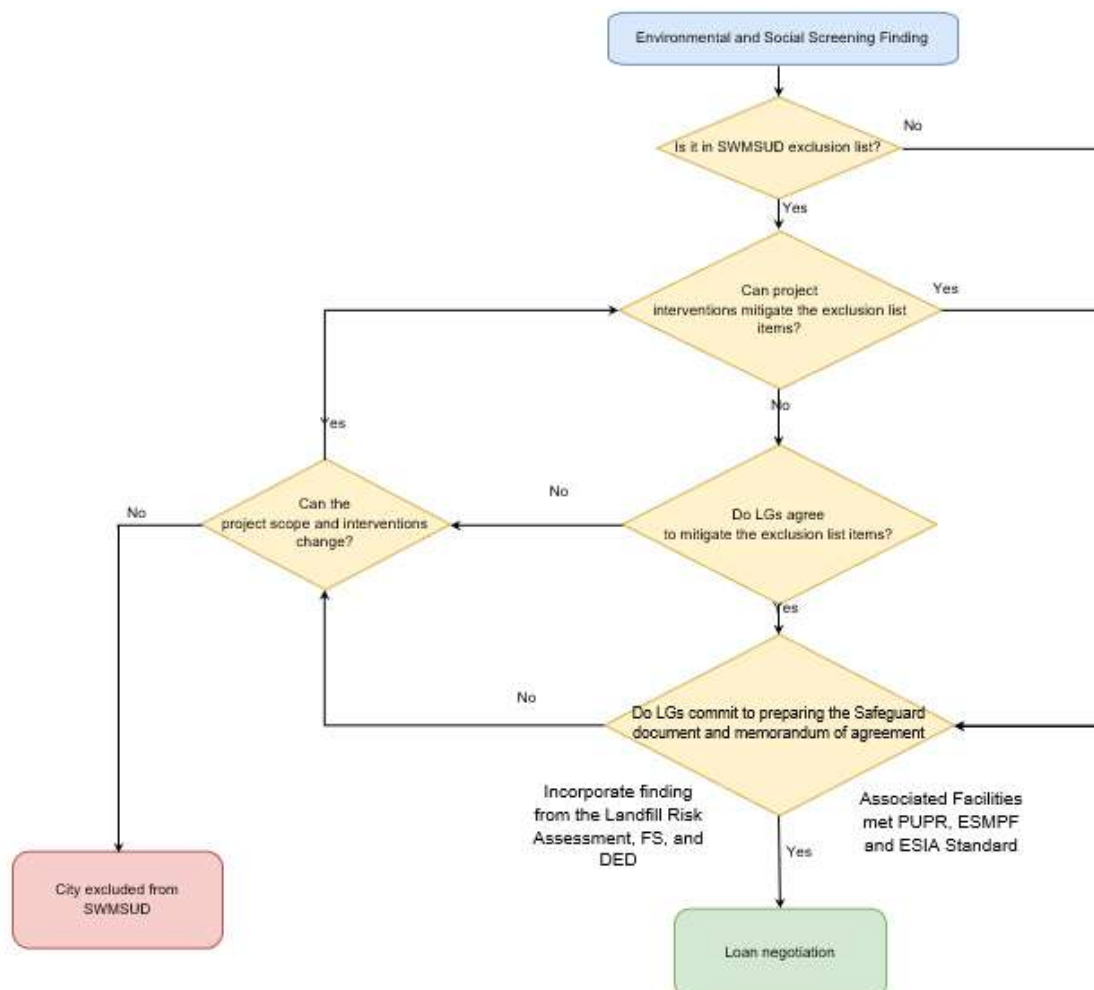
Chapter Title	Envisaged contents and assumptions/exclusions
	• Presentation of CRA on estimated gross emissions of greenhouse gases (GHGs) as a result of the project and the net GHG emissions compared to baseline emissions and the alignment of the project with the mitigation and adaptation goals of the Paris Agreement on climate change. Socio economic impact assessment • The socio-economic impact assessment will look at aspects related to loss of livelihoods and direct/indirect impacts on indigenous peoples' dignity, human rights, livelihood systems, culture, community health and safety, public access, impacts on community economic activities (agriculture, livestock, fisheries, etc.), gender and social inclusion aspects, and positive impacts of the project. This section will also introduce the Resettlement Action Plan (RAP, if applicable). • The consultation will attempt to understand (and map if possible) the various provisioning and regulating ecosystem services within the Area of Influence (AoI). Ecotourism alongside the ecosystem services assessment, it is proposed to undertake consultation through key informant interviews to identify existing and planned ecotourism developments and initiatives being undertaken within the area. • Socio-Cultural Conditions within the Project AOI. The study will include tangible and intangible cultural heritage in and around the Project area which includes impact on the historic landscape, architecture and archaeology of the site, monuments and living heritage resources. • Analyze local level traffic movements will be made to guide aspects of community health, occupational health and safety evaluations. The traffic analysis will be made by considering the influence of additional trucks due to RDF operations. • Analyze the occupational health and safety concerns arising from project activities, particularly during construction and operations, including traffic, and provide recommendations for corrective and remedial measures to be implemented in the environmental management plan;
Chapter 8: Cumulative Impact Assessment	Evaluation of spatial and temporal boundaries and receptors, summary of trends, identification of other projects, defining cumulative impacts and development of high-level management, mitigation, and monitoring measures.
Chapter 9: Environmental and Social Management Plan	Describe the mitigation, monitoring, management, and institutional measures to be taken during the pre-construction, construction, and operation phases to eliminate adverse impacts, offset them, or reduce them to acceptable levels. This should be based on the outcomes of the ESIA and serve as a single point of reference for all environmental and social management and monitoring measures. The plan will outline practical measures for monitoring and providing feedback at the field level. Reports will be submitted to the Bank, government agencies, and community stakeholder groups. The plan will be structured as follows: • Introduction • Definition of values, principles, objectives, and goals • Confirmation of risks and impacts

Chapter Title	Envisaged contents and assumptions/exclusions
	• Construction environmental and social management, mitigation, and monitoring measures • Operations environmental and social management, mitigation, and monitoring measures • Emergency Preparedness and Response • Organizational capacity, competency, and training requirements • Stakeholder engagement (In form of Stakeholder Engagement Plan), • Daily, weekly, and monthly inspections • Monitoring, auditing, and review (include estimated cost) Normally, a separate document will be created for ESMP.
Chapter 10: Conclusion and Recommendation	Summarizes the significance of residual impacts and provides recommendations for management plans that must be prepared for the project. The aim is to reduce, avoid, and mitigate potential project impacts.

SWM-SUD Exclusion List

5.2.12 The decision-making process outlined in Figure 5.1 incorporates both exclusion criteria and risk management measures, ensuring that sub-projects align with SWM-SUD's environmental and social objectives, as well as AIIB's requirements. The exclusion list is applied to projects or activities with inherent environmental and social risks that cannot be mitigated, where immediate rejection of the project is necessary. In contrast, risk management involves assessing projects with potential but manageable risks, where mitigation measures can be implemented to reduce impacts to an acceptable level. For example, the Payakumbuh Landfill was excluded due to its high and unmanageable environmental and social risks. On the other hand, landfills in Tasikmalaya, Rembang, and Temanggung were approved for rehabilitation following thorough risk management measures. The decision to proceed with Tasikmalaya's rehabilitation, for instance, was based on the Landfill Risk Assessment mandated by PermenPU 3/2013, which demonstrated that effective mitigation, through proper LTP design and landfill rehabilitation, could significantly reduce environmental and health risks. If the risks remain high after implementing all mitigation measures, a "NO GO" decision is taken. Local Government commitment and capacity to allocate resources for operation, maintenance, and budgetary needs are also crucial factors in determining whether a project moves forward or is excluded. The decision-making process must distinguish between projects requiring exclusion due to unmanageable risks and those that can be improved through well-designed mitigation measures, ensuring that high-risk projects are not excluded by default but carefully considered.

Figure 5-1 Decision Making Flowchart



5.2.13 The flowchart outlines the decision-making process for integrating cities into the SWM-SUD project, focusing on the identification and mitigation of environmental and social risks. Here's a detailed description of the flowchart:

5.2.14 **Environmental and Social Screening Findings:** The process begins with the identification of environmental and social screening findings. These findings are based on an initial assessment of the project's potential impacts on the environment and local communities.

5.2.15 **SWMSUD Environmental and Social Exclusion List:** These findings are compared against the SWMSUD environmental and social negative list. This list includes criteria and conditions under which certain activities, sites, or processes are deemed unsuitable for inclusion in the project. The exclusion list is provided in the Appendix G

5.2.16 **Can Project Interventions Mitigate the Exclusion List?** If the project interventions can mitigate the negative impacts identified on the exclusion list, the process continues to the

next step. If not, the project scope and interventions need to be changed to address these issues.

- 5.2.17 **Change the Project Scope and Interventions:** If the negative impacts cannot be mitigated by project interventions, the project scope and interventions must be revised. If changes cannot adequately address the negative impacts, the city will be excluded from the SWM-SUD project.
- 5.2.18 **Do Local Governments Agree to Mitigate the Exclusion List by Their Own Effort:** If the project interventions cannot mitigate the negative impacts, the next step is to check if the local governments (LGs) agree to mitigate the negative impacts through their own efforts. If the LGs do not agree, the city will be excluded from the SWM-SUD project.
- 5.2.19 **Safeguard Document and Memorandum of Agreement:** If the LGs agree to mitigate the negative impacts, a safeguard document (a new ESIA or a supplemental document to the existing AMDAL or UKL UPL) and memorandum of agreement must be prepared and agreed upon. This memorandum or agreement outlines the committed actions, timelines, budgetary support and responsible parties of the local governments in addressing the identified impacts or ES legacy issues. Also, the remedies if the agreed actions can't be fulfilled. The ESMPF will prepare a template for the memorandum of agreement (*Nota Kesepakatan/nokes*) for each generic E&S issue or material aspects of such facilities and activities that need to meet the requirement of ESSs, such as but not limited to i) Proper Landfill Management -ensure landfill can work based on sanitary landfill procedures, daily cover with adequate budget, clear boundary of cell perimeter with drainage and access road, LTP operations with adequate power supply and functioning equipment, etc. ii) Commitment for Monitoring Activities of ground water and LTP effluent : frequency of monitoring, defined and available budget and responsible party, and the remedy if not being met iii) Off-taker agreement – when will be ready and commitment to follow ESMPF – not to use RDF for food processing industry etc., (iv) Social issues- waste pickers, vulnerable groups, cultural heritage, stakeholder consultation, complaints, land needed for temporary cells that will include key action items, budget, timelines and PIC and remedy (v) E&S Legacy Issues, the MoA need to clearly mention the legacy issues and the key actions, budget, timelines, PIC and remedy. (vi) Occupational Health and Safety – for LG with high fatality rate. Synergy of Planning, Implementation of Development, and Utilization of Integrated Waste Processing, and Arrangement of Final Processing Sites Nokes as an umbrella for cooperation in the SWM-SUD program between PUPR represented by the Director of Sanitation and Local Government represented by the Regent. The scope of this Nokes includes:
- development planning;
 - provision of TPST land and waste storage locations during the implementation of TPA arrangement;
 - socialization of TPST construction and TPA arrangement;
 - implementation of construction;
 - handover and utilization; and
 - monitoring and evaluation.
- 5.2.20 To ensure compliance with environmental and social safeguards, any associated facilities constructed by local governments such as access roads and temporary landfills, the associated facilities must meet the requirements outlined in the ESMPF and ESIA. Local governments are required to design, finance, and contract these facilities in alignment with the standards established by PUPR (or their regional representative called Balai). If the associated facilities

fail to meet the ESMPF, ESIA, and PUPR requirements, disbursement for the main project works may be halted. The technical implementation of NOKES is recommended to incorporate the findings from the Landfill Risk Assessment, FS, and DED reports, ensuring that key action items, budget, and timelines address the identified risks.

- 5.2.21 The technical implementation of NOKES is carried out by the Regional Settlement Infrastructure Agency (BPPW) and the Environmental Service Regency (DLH). NOKES contains articles related to force majeure, problem-solving, addendums, and termination of NOKES. Meanwhile, monitoring will be carried out by PUPR and the Regional Government every two times a year in the form of a Monitoring Report Document.
- 5.2.22 **Loan Negotiation:** Once the safeguard document and memorandum of agreement (part of readiness criteria requirements) are in place, the process moves to loan negotiation, indicating the project's readiness to proceed with financial backing.
- 5.2.23 **City Excluded in SWM-SUD Project:** If at any step, the negative impacts cannot be mitigated, or the LGs do not agree to address them, the city will be excluded from the SWM-SUD project.

Safeguarding Approaches for the SWM-SUD Master Plan Development

- 5.2.24 The development of the SWM-SUD Master Plan in each sub project requires a safeguarding approach to address potential direct and indirect environmental and social impacts from downstream investments or projects. These impacts must be managed in compliance with national regulations, the AIIB ESS, the ESMPF, and the ESIA requirements. The safeguarding process involves identifying potential environmental and social risks early and implementing mitigation measures that align with these frameworks.
- 5.2.25 To make sure safeguarding of the SWM-SUD Master Plan, various approaches can be adopted. These may include conducting a Sectoral Environmental and Social Assessment (SESA) to evaluate potential risks and provide strategic recommendations or engaging a qualified environmental and social safeguard specialist to review and advise on the Master Plan's development.

6 Environmental and Social Management Plan

6.1 Introduction

6.1.1 This section presents the outline of environmental and social management plan (ESMP) of the project. The sub-project specific ESMP will be included in the ESIA report.

6.1.2 The primary objective of the Environmental and Social Management Plan (ESMP) is to record environmental and social impacts from the sub-project activities, and to ensure the effective implementation of the identified mitigation measures to reduce those adverse impacts on the environment and people of the program influence area, and to enhance positive impacts. It is also an effective management tool for identifying and addressing any unexpected or unforeseen environmental impacts that may arise during construction and operational phases of the sub-projects.

6.1.3 The specific objectives of the ESMP are:

- Based on the impacts and risks identified through the assessment process, to identify the mitigation measures during the program-wide ESMPF and sub-project specific ESIA;
- Facilitate the implementation of the mitigation measures during implementation of SWM-SUD;
- Maximize and sustain potential program benefits and control negative impacts;
- Outline roles and responsibilities for program proponent, contractors, consultants, and other members of the program team for the environmental and social management of the program; and
- Define a monitoring mechanism and identify monitoring parameters to:
 - Ensure the implementation and effectiveness of mitigation measures;
 - Maintain proper management of assessment of impacts on natural resources and on society; and
 - Assess environmental training requirements for different stakeholders at various levels.

6.1.4 The ESMP should be prepared and implemented as an integrated part of the project planning and execution. It should not be seen merely as a standalone activity limited to monitoring and regulating activities against a pre-determined checklist of required actions. Instead, it should interact dynamically as the sub-project implementation proceeds, dealing flexibly with environmental and social impacts, both expected and unexpected. To help ensure proactive implementation, the ESMP should be a part of the Contract Document for all sub-projects to be implemented under the SWM-SUD.

6.1.5 The ESMP will be managed through several tasks and activities and site-specific management plans. One purpose of the ESMP is to record the procedure and methodology for management of mitigation identified for each negative impacts of the program. The management will clearly delineate the responsibility of various participants and stakeholders involved in planning, implementation and operation of the program.

6.1.6 The ESMP should clearly lay out the following components:

- Mitigation and enhancement measures required to be taken during preconstruction, construction and operation phases of a sub-project which will be required to eliminate or offset adverse environmental impacts (or to reduce them to acceptable levels);
- Actions needed to implement these measures;
- Monitoring plan to assess the effectiveness of the mitigation measures employed;

- Estimation of cost of implementation of ESMP; and
 - Institutional arrangement for implementation of ESMP.
- 6.1.7 In addition, third party monitoring for inclusion in the bidding document, and training requirements for institutional strengthening are presented separately in the ESMPF.
- 6.1.8 The ESMP is developed following the requirements outlined under ESS 1, which mandates the identification of project risks and impacts, and the development of measures to manage and mitigate these risks. The plan must be comprehensive and tailored to the specific needs of the project, including provisions for enhancing the capacity of the client if needed.
- 6.1.9 The preparation, disclosure, and consultation process for the ESMP involves identifying potentially adverse impacts, determining requirements to address these impacts, describing means for meeting those requirements, disclosing the draft ESMP, and engaging in consultation on the ESMP. The ESMP typically includes mitigation measures, environmental and social monitoring and reporting requirements, institutional arrangements, provisions for information disclosure and consultation, grievance mechanisms, community health and safety measures, capacity development and training measures, implementation schedule and cost estimates, performance indicators, and provisions for adaptive management. For projects involving existing facilities, the ESMP will focus on remediation measures to address any existing environmental and social adverse impacts, ensuring that these facilities meet the objectives of the applicable ESSs.

6.2 Inclusion of relevant components of ESMP in contract documents

- 6.2.1 The specific IEE/ESIA/RP should include a section on the environmental and social clauses which must be incorporated into the Tender Documents. These clauses are aimed at ensuring that the Contractor carried out their responsibility of implementing the ESMP, monitoring plan and any other environmental and social measures. These clauses may also specify penalties for non-compliance, as well as incentives to promote strong compliance.
- 6.2.2 The Contractors must be made accountable to implement the plans and mitigation measures relevant to their scope of work, through contract documents and/or other agreements. The sub-project ESIA will include an ESMP to encompass all the details plans, measures and management systems that they are required to develop and implement, to be based on this ESMPF recommendations and sub-project ESIA findings.
- 6.2.3 The Consultants of the LG will be responsible for incorporating the E&S management requirements in the bidding documents, with the assistance of the E&S consultants. Generic guidelines to incorporate E&S aspects in the bidding documents are listed below and should be further elaborated and expanded upon based on the findings and recommendations of the sub-project ESIA:
- Contractor version of the ESMP along with any Codes of Practice
 - Prepare cost estimates to be incorporated in the Bid Documents
 - Penalty clauses for non-compliance

6.3 Associated Action Plan Requirements

- 6.3.1 In addition to the main ESIA document, there may be a need for impact-specific documents or associated action plans, depending on the specific project impacts and risks. Below are the descriptions of the ESIA Associated Action Plan that might be required.

Climate Change and GHG Mitigation Plan

- 6.3.2 Climate Change Mitigation Plan is aims to:

- Provide direction and increase understanding of government policies in mitigating climate change
- Encourage and direct waste management mitigation programs to reduce GHG
- Provide direction and understanding about MRV and institutions
- Encourage and direct efforts to identify existing and simple technologies, as well as assemble technologies that are adaptive to climate change

- 6.3.3 The GHG Mitigation Plan report should include the following components:

Preparation

Mapping existing policy

Mapping waste management activities

GHG Baseline Estimation

Potential reduction/Mitigation plan of GHG

Potential funding of the Mitigation plan

Monitor, record and review plan

- 6.3.4 Climate Risk Assessment (CRA) is an integrated framework that includes governance, strategy, risk management, and disclosure on strategy resilience/adaptation assessment to face short-term, medium-term, and long-term climate changes. The CRA report should include the following components:

Introduction;

Climate Projections and Hazards for the Region;

Climate Change Mitigation Potential;

Physical Climate Risk Assessment;

Climate Change Adaptation Recommendations;

Paris Alignment Assessment;

Climate Finance; and

Conclusions.

Waste Management Plan (WMP)

- 6.3.5 The Waste Management Plan (WMP) outlines the strategies for managing all solid and liquid waste, including hazardous and non-hazardous materials, generated during all phases of the project (pre-construction, construction, and operation). The WMP report should include the following components:

Introduction

Waste Types

Waste Collection and Disposal

Waste Minimization

Monitoring

Consultation

References

Biodiversity Management Plan (BMP) in accordance with ESS1

- 6.3.6 A Biodiversity Management Plan (BMP) is a critical document designed to manage and mitigate the potential impacts of development projects on biodiversity. It is essential for projects that may have significant adverse effects on local flora and fauna, particularly those situated in or near ecologically sensitive areas, habitats of endangered species, or regions with high biodiversity value. The BMP is typically required during the planning phase of a project and must be continually updated throughout the project lifecycle to ensure ongoing protection and enhancement of biodiversity. The BMP report should include the following components:

Executive Summary

Introduction

Regulatory Framework

Baseline Biodiversity Assessment

Impact Assessment

Mitigation Measures

Biodiversity Monitoring Plan

Roles and Responsibilities

Capacity Building and Training

Reporting and Documentation

Review and Update of BMP

Appendices

Stakeholder Engagement Plan (SEP) in accordance with ESS 1

- 6.3.7 The stakeholder engagement plan is developed to identify stakeholders who have an interest in and can influence the project activities. This identification is carried out to devise appropriate approaches and strategies for involving the relevant stakeholders. In detail, the table of contents for the stakeholder engagement plan is as follows:

Introduction

National and International Requirements

Stakeholder Identification and Categorization

Public Announcements and Public Consultations Strategy

Ongoing Stakeholder Engagement Activities

Resources and Responsibilities

Grievance Mechanism

Monitoring and Reporting

Gender Action Plan in accordance with ESS1

- 6.3.8 A Gender Action Plan (GAP) will be developed to address adverse impacts and promote inclusion and equality for women in benefit-sharing. In collaboration with relevant stakeholders, including the Client and community members, measures will be identified to prevent potential negative effects from the influx of migrant workers, as well as risks related to gender-based violence, sexual exploitation and abuse, and sexual harassment (GBV/SEA/SH). In detail, the table of contents for the gender action plan is as follows:

Background

Legal and Policy Framework Relevant to Gender

Gender Action Plan Aspect of Project

Gender Context of the Project Area

Gender Climate in Waste Facility

Gender Action Plan

Land Acquisition and Resettlement Planning Framework / Land Acquisition Planning Framework / Resettlement Planning Framework (LARPf/LAPf/RPf) or Resettlement Plan (RP)/Land Use Due Diligence (LUDD) in accordance with ESS2

- 6.3.9 In the waste management project, waste pickers at the landfill are the most impacted by the project activities. Scavenging is typically their primary source of livelihood due to limited employment options. Therefore, this document will focus primarily on economic displacement. However, if the project requires land for development, the impact on landowners and land users will also be assessed.
- 6.3.10 Therefore, the document needs to thoroughly assess the impact on waste pickers by conducting a baseline study on their socio-economic conditions and livelihoods, including programs planned by the government or project proponents to mitigate these impacts. The document will also propose strategies for minimizing and mitigating the effects, as well as outline monitoring programs and their implementation. The table of contents included in this framework component is as follows:

Introduction

Policy Objectives and Key Principles

Resettlement Planning Framework

Regulatory and Policy Framework

Eligibility, Evaluation, and Entitlement

Implementation Arrangements

Public Consultations and Information Disclosure

Grievance Redress Mechanism

Monitoring

- 6.3.11 The aide memoire notes that the local government has committed to integrating informal and organized waste pickers into the project. The government to conduct a series of consultation activities and assessments of social impacts as part of the site-specific ESIA's, and to provide gender informed and appropriate measures to mitigate risks and impacts on informal, organized, and seasonal waste pickers, including waste truck drivers. The government will make significant efforts to ensure the following:

The seasonality nature of waste pickers are considered during the social baseline survey, providing appropriate measures to improve the waste pickers' condition;

They do not lose their income during project construction where access is restricted, and proper entitlements will be given to them before construction starts as part of livelihood restoration plan;

They are connected with the non-government organizations/civil society organizations (NGOs/CSOs) for relevant programs and training, including facilitating their registration with the waste pickers associations and with other government programs, including Universal Health Insurance Coverage (or JKN).

Indigenous Peoples Planning Framework (IPPF) in accordance with ESS3

- 6.3.12 The Indigenous Peoples Planning Framework (IPPF) is prepared to provide guidance on identifying indigenous peoples (IP), the impact of the project on them, appropriate ways to engage with indigenous peoples, and beneficial and mitigation measures. The table of contents included in the IPPF comprises:

Introduction

Objectives of Indigenous Peoples Planning Framework

National and International Requirements

Identification of Affected Ips in Project Areas

Screening for Indigenous People

Potential Impacts on Indigenous People

Social Impact Assessment and Indigenous Peoples Planning

Consultation, Participation, and Disclosure

Grievance Redress Mechanism

Implementation and Monitoring

6.4 Environmental codes of practice and occupational health and safety guidelines

- 6.4.1 To ensure sustainable management of environmental issues and the safety of workers in development projects, adherence to a comprehensive set of environmental codes of practice and occupational health and safety (OHS) guidelines is essential. In Indonesia, these standards are governed by various national regulations, while the World Bank's Environmental, Health, and Safety (EHS) Guidelines provide additional international benchmarks. These regulations

and guidelines cover a wide range of topics, including waste management, water and air quality, noise control, biodiversity protection, hazardous materials handling, site management, community health and safety, and emergency preparedness.

Indonesia National Regulations

6.4.2 Waste Management:

- Law No. 18/2008: Waste Management.
- Government Regulation No. 81/2012: Management of Household Waste and Similar Waste.
- Government Regulation No. 27/2020: Specific Waste Management.
- Ministry of Environmental and Forestry No. 6/2022: National Waste Management Information System.
- Ministry of Environment and Forestry Regulation No. 14/2013: Symbols and Labels for Hazardous and Toxic Material Waste.

6.4.3 Water Quality and Resource Management:

- Government Regulation No. 22/2021: Management of Environmental Quality and Control of Environmental Pollution.
- Ministry of Environment Regulation No. 5/2014: Wastewater Quality Standards.
- Ministry of Environment and Forestry Regulation No. 59 of 2016 Quality Standards for Landfill Leachate Effluent
- Ministry of Public Work Regulation No. 1/2016: Procedures for Licensing for Exploitation of Water Resources and Use of Water Resources
- Ministry of Environment and Forestry No. 68/2016: Domestic Wastewater Quality Standards.

6.4.4 Air Quality Management:

- Government Regulation No. 22/2021: Management of Environmental Quality and Control of Environmental Pollution Appendix VII.
- Ministry of Environment Decree No. 48/1996: Odor Standards.
- Ministry of Environment and Forestry Regulation No. 70/2016: Emission Quality Standards for Thermal Waste Treatment Businesses and/or Activities

6.4.5 Noise Management:

- Ministry of Environment Decree No. 48/1996: Noise Level Standards.

6.4.6 Biodiversity Protection:

- Law No. 5/1990: Conservation of Living Natural Resources and Their Ecosystems.
- Government Regulation No. 7/1999: Preservation of Flora and Fauna.

6.4.7 Hazardous Materials Management:

- Government Regulation No. 74/2001: Management of Hazardous and Toxic Substances.
- Government Regulation No. 22/2021: Management of Environmental Quality and Control of Environmental Pollution Appendix IX-XIII.
- Ministry of Environment Regulation No. 6/2021: Requirement and Procedure for Hazardous Waste Management.

6.4.8 Site Management:

- Government Regulation No. 22/2021: Management of Environmental Quality and Control of Environmental Pollution.
- Government Regulation No. 27/2012: Environmental Permits.
- Ministry of Environment Regulation No. 16/2012: Guidelines for Preparing Environmental Documents.
- Ministry of Manpower Regulation No. 1/1980: Occupational Safety and Health in Construction Works.
- Indonesian National Standard No. 03-3241-1994: Procedures for Selecting Location of Waste Disposal Site.

6.4.9 Community Health and Safety:

- Law No. 22/2009: Traffic and Road Transport.
- Law No. 36/2009: Health.
- Ministry of Health Regulation No. 2/2023: Implementing Regulations of Government Regulation Number 66 of 2014 concerning Environmental Health.

6.4.10 Occupational Health and Safety Guidelines

- Law No. 1/1970: Occupational Safety.
- Government Regulation No. 50/2012: Implementation of Occupational Health and Safety Management System.
- Ministry of Manpower Regulation No. 5/2018: Occupational Safety and Health in the Work Environment.
- Ministry of Manpower Regulation No. 8/2010: Personal Protective Equipment.
- Ministry of Manpower Regulation No. 8/2020: Occupational Safety and Health for Lifting and Transporting Equipment.
- Ministry of Manpower Regulation No. 3/1998: Accident Reporting and Investigation Procedures.
- Ministry of Manpower Regulation No. 2/1992: Procedure for Appointing Obligations and Authorities of OHS Experts.
- Ministry of Manpower Regulation No. 4/1987: OHS Committee and Procedures for Appointment of OHS Experts.

6.4.11 Land Acquisition

- Law No. 2/2012: Land Procurement For Development For Public Interests
- Government Regulation No. 39/2023: Organizing Land Acquisition for Development in the Public Interest.

6.4.12 Cultural Resources/Heritage

- Law No. 11/2010: Cultural Heritage.

World Bank Environmental, Health, and Safety (EHS) Guidelines

6.4.13 General EHS Guidelines:

- EHS General Guidelines (2007): These provide guidance on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors.

6.4.14 Industry Sector Guidelines:

- EHS Guidelines for Waste Management Facilities (2007)

6.4.15 Community Health and Safety:

- EHS Guidelines for Community Health and Safety (2007): These cover infrastructure and equipment safety, disease prevention, and emergency preparedness and response.

6.4.16 Construction and Decommissioning:

- EHS Guidelines for Construction and Decommissioning (2007): These include guidance on the safe and environmentally sound construction and decommissioning of facilities.

6.5 Mitigation measures to address E&S impacts

6.5.1 Mitigating environmental and social (E&S) impacts is a crucial aspect of sustainable project management. This section provides a high-level overview of potential impacts associated with the construction and operation phases of development projects, along with proposed mitigation measures. The impacts and mitigation strategies are presented in a tabulated format for clarity and ease of reference. Each table outlines specific impacts, the corresponding mitigation measures, and assigns responsibility for implementation and supervision.

Table 6-1 Proposed Mitigation Measures and Monitoring

Environmental Management and Monitoring During Construction

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Construction						
- Construction of access road (Associated Facilities) - Land Preparation - Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling	Ambient Air Quality	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and Increased of Gas Concentration (CO, CO2, NO2, SO2, H2S, and HC	- Stabilizing exposed surfaces. - Minimizing activities that potentially suspend dust particles. - Apply dust control measures such as water spraying for heavily transport areas such as access roads to active construction areas, disturbed areas (e.g. land clearing areas), wet suppression (watering), gravel or asphalt surfacing, and equipment wash down areas etc. - Apply water to excavation areas, soil loading/unloading areas and unpaved roads; - Create a wheel wash at entrances to public roads or exit of the landfill construction site; - Locate material stockpiles as a far as practicable from and downwind of air sensitive receivers (community); - Implement speed controls on-site;	Contractor	Local Government, CPMU	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring sites and near sensitive receptors that may include dust, vehicle emission, and odour on 6 monthly basis.

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
during construction (Associated Facilities) Commissioning			- Ensure that the cab of all soil storage trucks is covered with tarpaulins; - Water spraying regularly for dusty static construction areas/ materials/ operations; - Controlling lorries and barges loading capacity to avoid spillage. - Cover soil stockpiles with erosion control blankets; - Use hoarding to attenuate winds and therefore reduce likelihood of wind-blown dust; - To apply good practice in construction in sequencing the construction works in phases that minimize scatter impacts that are difficult to control.			
- Construction of access road (Associated Facilities) - Land Preparation	Noise	Noise pollution	- Maintain site roads in good condition to reduce noise and vibration from vehicle movements. - Utilize the vehicle that has pass the emission test. - Scheduling vehicle movement to avoid accumulated noise from vehicles.	Contractor	Local Government, CPMU	Noise monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
- Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)			Adopt good practice for construction site –regular maintenance of vehicles and machinery proper training to operators.			months, or as and when required. The noise standard should ensure compliance with the relevant provisions of Minister of Environment Decree (Kepmen LH) No 48 of 1996 on Noise Standards and EHS Guideline 48 hour
	Vibration	Increased vibration	- Using a foundation method that produces little vibration (drill pile foundation) - Regular maintenance of heavy equipment machinery. - Conducting socialization related to activities that can cause vibration - Repair buildings damaged by increased vibration	Contractor	Local Government, CPMU	Vibration monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The noise standard should ensure compliance with the relevant provisions of

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
						Minister of Environment Decree (Kepmen LH) No 49 of 1996 on Vibration Standard
	Hydrology	Increased run off	• Removing all construction waste from construction sites and surrounding water bodies in a systematic manner. • Minimise the duration of stockpiling • Protect water bodies from sediment load by using sediment traps or other barriers. • It is recommended to conduct construction activities during the dry season • Construct and rehabilitate adequate drainage channels to accommodate surface runoff. • Maintain water conservation by making biopore infiltration holes in green open spaces or parks. • Not dumping rubbish in drainage channels • Maintain drainage channels from rubbish and mud	Contractor	Local Government, CPMU	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
	Soil	Increased Soil Erosion	- Building sediment traps - Using geo-bags, rocks, and concrete to build protective walls; - Planting vegetation that functions to reduce surface soil erosion and increase soil stability.	Contractor	Local Government, CPMU	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out.
- Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Soil	Soil contamination	- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only. - Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable; - Provision of effective construction site run-off controls such as controlled discharge and temporary drains;	Contractor	Local Government, CPMU	Any complaints as to the management of soil quality will be directed to the management as soon as practical. Complaints and any actions arising from a complaint are recorded in grievances register to be maintained by site management. All scheduled monitoring is reported or as required by environmental regulator.
	Groundwater quality	The leachate of temporary disposal site could infiltrate to the groundwater and potentially pollute it if the environmental protection and	- Proper management of refuelling activities, waste storage and disposal; - Hard surfaced with perimeter drain at re-fuelling areas;	Contractor	Local Government, CPMU	Monitor groundwater quality from monitoring wells every 3 months.

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
		landfill membranes does not meet the standard.	- Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident; - In-place spill response and clean-up procedures; and - Temporary fuel storage tanks constructed with adequate secondary containment/bunded.			
- Construction of access road (Associated Facilities) - Base Camp and Workshop - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - TPA Rehabilitation - Commissioning	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	- Implement the landfill rehabilitation plan. - Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). - Implement proper hazardous waste and hazard substances storage and management at construction site. - Hazardous waste and hazard substances shall be stored at concrete area with roof and secondary containment to prevent spillage to waterbodies.	Contractor	Local Government, CPMU	Regular monitoring for surface water management plan will be conducted by contractor at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of 2021 Appendix VI on Management of Water Quality and Water Pollution Control.

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)		Contractor	Local Government, CPMU	
- Land Preparation - Construction of Base Camp and Workshop - Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during	Waste Management	Increased Construction Waste	- Construction waste to be disposed accordingly. - General construction waste can be disposed into the existing landfill. - Segregate hazardous waste for proper storage and collection by licensed hazardous waste collectors.	Contractor	Local Government, CPMU	Any complaints as to the management of on-site waste are forwarded to the Director of TPA Sanggrahan as soon as practical. Complaints and any actions arising from a complaint are recorded in a complaints register maintained by site management. Use TPA Sanggrahan SOP to maintain documentation of waste generation, storage, and disposal.

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
construction (Associated Facilities)						
Construction of Base Camp and Workshop	Waste Management	Increased Domestic Waste (include Hazardous Waste		Contractor	Local Government, CPMU	
		Increased domestic wastewater	Establish domestic wastewater management system.	Contractor	Local Government, CPMU	Regular monitoring at established points and report to related agencies every 3 months.
Land clearing, use of heavy machinery.	Biodiversity	Loss of habitat, impact on local flora and fauna, potential fatalities of species, forced relocation of wildlife.	Conduct land clearing based on sub-project design, refrain from opening areas outside designated boundary, conduct greening with fast-growing/local species.	Contractor	Local Government, CPMU	Monitoring terrestrial biota at establish site and near sensitive receptor during construction phase.

Environmental Management and Monitoring During Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Operation						
• Operation of TPST • Operation of Residual Landfill	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5)	• Establishing frequent waste collection schedules. • Optimize waste collection routes to minimize travel distance and overall fuel use and emissions. • Develop and implement a standard operation procedure to control and minimize emission of dust and bio-aerosol during loading/unloading. • Include landfill gas collection system designed and operated in accordance with the applicable national requirements.	Local Government/LPMU	CPMU	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring points and near sensitive receptors that may include dust, vehicle emission and odour on 6 monthly basis.
• Operation of TPST • Operation of Residual Landfill	Air Quality	Increased of Gas Concentration (NO ₂ , SO ₂ , H ₂ S, and HC)		Local Government/LPMU	CPMU	Monitoring sites near sensitive receptors, 6-monthly during operation, and closure. Submit a monitoring report to related agencies every 6 months.
• Operation of TPST • Operation of Residual Landfill	Soil	Soil contamination	• Develop and implement drilling management plan. • Properly store chemicals and hazard substances in sheltered area and provide kerb or secondary containment to prevent spillage.	Local Government/LPMU	CPMU	Document and report soil quality management activities, maintain grievances register.

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
- Operation of TPST - Operation of Residual Landfill	Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)	- Develop and implement transportation management plan that includes usage of material cover during material transportation and/or perform dust control by spraying water on the streets & roads when mobilization is performed during a particular hot day (dry season) twice a day (noon and afternoon). - Conduct the application of speed limit. - Minimize the daily exposed working face and use perimeter drains and landfill cell compaction, slopes and daily cover materials to reduce infiltration of rainfall into the deposited waste. - Prevent run-on of precipitation into the active area.	Local Government/LPMU	CPMU	Regular monitoring for surface water management plan will be conducted by landfill operators at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of 2021 Appendix VI on Management of Water Quality and Water Pollution Control.
- Operation of TPST - Operation of Residual Landfill	Water Quality	Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	- Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). - Regular monitoring of effluent quality to ensure leachate treatment plant operates well. - Direct the wastewater from truck/vehicle wash to the drainage channel.	Local Government/LPMU	CPMU	Record leachate effluent discharge and pH on daily basis; Monitor leachate effluent quality every month; Monitor groundwater quality from monitoring well every 3 months. During operation stage, the result for scheduled monitoring should be

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
						reported to related agency every 3 months.
• Operation of TPST • Operation of Residual Landfill	Waste management	Increased Domestic Waste Generation (Including Hazardous Waste)	• Collect hazardous waste into the Hazardous Waste Temporary Storage and dispose the hazardous waste through the licensed hazardous waste disposal. • Applied the ERP for oil spill.	Local Government/LPMU	CPMU	Document and report waste management activities, maintain waste disposal records.
• Operation of TPST • Operation of Residual Landfill	Wastewater Management	Increased Domestic Wastewater	Establish domestic wastewater management	Local Government/LPMU	CPMU	Regular monitoring at established points, report to related agencies every 3 months.
Facility operation, leachate discharge	Biodiversity	Ongoing impact on aquatic biota and biodiversity from potential leachate discharge	Maintain the effectiveness of leachate treatment plant.	Local Government/LPMU	CPMU	Monitor aquatic biota at established sites and near sensitive receptors every 6 months during construction, operation, and closure. Report to related agencies every 6 month

Social Management and Monitoring During Pre-Construction & Construction

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Pre Construction						
Land acquisition	Social Economic	Land user income disruption	• Monitor replacement land use • Establish a grievance redress mechanism (GRM	Contractor	Local Government/LPMU	• Reports on land usage by affected users • Continuous monitoring of GRM implementation to address issues
Stakeholders Socialization	Social Cultural	Increase of community concerns	• Conduct public consultation • Develop a grievance redress mechanism • Establish a dedicated complaints team • Prepare traffic management • Conduct regular air quality and odour monitoring	Contractor	Local Government/LPMU	• Monitor number and frequency of consultations • Regular grievance tracking • Odour and air quality reports every quarter
Construction						
Recruitment Activities	Socio-economic	Workforce Opportunity	• Prioritise local recruitment. Ensure that the majority of workers hired during the operational phase are from the surrounding villages.	Contractor	Local Government/LPMU	• Monthly recruitment reports • Grievance log updates

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
			- Establish a transparent recruitment process. Publicly advertise job opportunities and ensure fair selection. - Provide training to local workers. Provide skills training, including health and safety protocols, to improve skills. - Prioritise employment for vulnerable groups, such as local waste pickers. - Establish a grievance mechanism. Provide easy access for local people to raise concerns about recruitment and employment.			Training completion reports
Workforce release	Socio-economic	Decrease Job Opportunity	- Conduct a desktop review about the gender-disaggregated number and human resources required by the project compared to the gendered availability of local Manpower - Prepare workforce release plan	Contractor	Local Government/LPMU	- Workforce transition plan completion - Monitoring of released workers' employment status
Construction of Base Camp and Workshop	Socio-economic	Business Opportunity	Conduct a desktop review about the number of businesses near the project area	Contractor	Local Government/LPMU	Quarterly reports on engagement with local businesses
Temporary disposal site construction	Socio-economic	Waste picker Relocation	- Conduct socialization - Conduct socio-economic impact assessments with GSI lend to evaluate	Contractor	Local Government/LPMU	Monitoring of displaced waste pickers

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Waste disposal handling during construction (Associated)			- potential displacement impacts, provide GSI-aware livelihood restoration plans - Develop livelihood restoration plans specifically targeting women and elderly waste pickers, ensuring gender sensitive and inclusive approaches. - Ensure compensation mechanisms consider the vulnerability of these groups.			- Bi-annual socio-economic impact reports - Monitoring of compensation and livelihood programs
Land Preparation	Socio-economic	Disruption of waste pickers' livelihoods	- Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans - Implement targeted livelihood restoration programs with a focus on women and elderly waste pickers. - Offer skill development and alternative income opportunities tailored to their needs. - Engage with waste picker groups to ensure inclusive participation in decision-making.	Contractor	Local Government/LPMU	- Quarterly socio-economic assessments - Monitoring of livelihood restoration program participation
Mobilization of Equipment and Materials	Socio-cultural	Cultural resources	Conduct prior mapping and demarcation of the cultural resources and establish a protective buffer zone	Contractor	Local Government/LPMU	Monitor implementation of buffer zone and

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
TPA Rehabilitation			- Install signage and barriers to prevent entry of construction equipment and personnel into sensitive areas - Coordinate with local cultural/religious leaders to align construction activities with local customs and ceremonial schedule - Conduct awareness training for workers on respecting cultural heritage - Ensure restricted access and traffic control near the cultural resources			physical protection measures - Document any community complaints related to cultural resources disturbance - Monthly verification of contractor compliance with access restrictions - Hold coordination meetings with community and cultural representatives - Visual inspection and photo documentation of site integrity
- Recruitment - Construction of access road	Socio-cultural	Indigenous People	Conduct regular consultation and communication with IPs.	Contractor	Local Government/LPMU	Bi-annual community surveys

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
(Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)			- Map customary territories and cultural resources to define work areas and material placement boundaries. - Ensure IP retain access to their livelihoods and cultural resources. - Develop a grievance mechanism specifically for IPs.			Regular grievance mechanism updates
• Recruitment • Construction of access road	Socio-cultural	Community concern	Conduct a baseline survey to identify community expectation and concern to the project.	Contractor	Local Government/LPMU	Bi-annual community surveys

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
(Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)			- Review of community grievances about the project activity. - Prepare Grievance redress mechanism			Regular grievance mechanism updates
Mobilization of Equipment and Materials	Transportation	Disruption to Land Traffic	- Conduct a traffic impact assessment - Implement a traffic management plan	Contractor	Local Government/LPMU	Monthly traffic monitoring reports

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
						Review traffic incidents and impact
Mobilization of Equipment and Materials	Transportation	Increase in Traffic Accidents	- Assess the road safety risks - Implement traffic control measures	Contractor	Local Government/LPMU	- Monthly accident reports - Road safety audits
- Construction of access road (Associated Facilities) - Land Preparation - Base Camp and Workshop - Mobilization of Equipment and Materials - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Health and Safety	Increase in work accidents Hazards exposure (e.g. hazardous materials, moving heavy equipment, electricity, and dangerous gases) Additional factors (i.e. fatigue, insufficient training, and lack of supervision)	- Conduct comprehensive risk assessments - Implement a thorough Occupational Health and Safety (OHS) program - Ensure proper use of Personal Protective Equipment (PPE) - Establish safety zones - Provide regular training and necessary licenses - Implement a buddy system - Rotate tasks and provide drinking water	Contractor	Local Government/LPMU	- Conduct a toolbox meeting before starting work. - Track workplace accidents involving construction workers throughout the construction process. - Prepare hazard identification and risk assessment, and prepare the work procedures.

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
• Construction of access road (Associated Facilities) • Land Preparation • Base Camp and Workshop • Mobilization of Equipment and Materials • Temporary disposal site	Health and Safety	• Increase in community risks • Increase in vulnerable populations	• Identify potential interactions • Create a buffer zone or high-security fence • Install warning signs and traffic signals • Regularly monitor air and water quality • Conduct outreach and education • Manage drainage effectively	Contractor	Local Government/LPMU	• Prepare hazard identification and risk assessment, and prepare the work procedures. • Build a buffer zone or high security fence. • Installation of safety signs and traffic signals. • Evaluate the air and water quality. • Conduct community engagement and feedback with meeting and/or events • Collaborate with local educational parties and community groups

Social Management and Monitoring During Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Operation						
- TPST/Residual Landfill Recruitment - Operation of TPST	Socio-economic	Workforce Opportunities	- Prioritise local recruitment. - Establish a transparent recruitment process. - Provide training to local workers. - Prioritise employment for vulnerable groups, such as local waste pickers. - Establish a grievance mechanism.	Local Government/ LPMU	CPMU	- Monthly recruitment reports - Monitoring of vulnerable group employment - Review of grievance mechanism updates
- Operation of TPST - Operation of Residual Landfill	Socio-economic	Disruption of waste pickers' livelihoods	- Develop livelihood restoration programs. - Provide social security and health benefits. - Ensure transparent communication. - Monitor income levels.	Local Government/ LPMU	CPMU	- Quarterly livelihood restoration monitoring - Reports on income levels of waste pickers - Evaluation of social security and health benefits
- Operation of TPST - Operation of Residual Landfill	Socio-cultural	Cultural resources	- Conduct prior mapping and demarcation of the cultural resources and establish a protective buffer zone - Install signage and barriers to prevent entry of construction equipment and personnel into sensitive areas - Coordinate with local cultural/religious leaders to align construction activities with local customs and ceremonial schedule	Local Government/ LPMU	CPMU	- Annual review of community grievance regarding the cultural resources - Assess the cultural resources conditions and community activities at the cultural resources to

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
			- Conduct awareness training for workers on respecting cultural heritage - Ensure restricted access and traffic control near the cultural resources			maintain the condition of the cultural resources and see if there is any disturbance from the project
- Operation of TPST - Operation of Residual Landfill	Socio-cultural	Indigenous People	- Conduct meaningful consultation and participation based on the principle of Free, Prior, and Informed Consent (FPIC). - Provide information in a language and format that is easily understood by IPs. - Carry out participatory mapping of customary land before the project begins. - Develop a grievance mechanism specifically for IPs.	Local Government/ LPMU	CPMU	- Bi-annual community surveys - Regular grievance mechanism updates
- TPST/ Residual Landfill Recruitment - Operation of TPST	Socio-cultural	Community Concern	- Conduct a baseline survey to identify community expectation and concern to the project. - Review of community grievances about the project activity. - Prepare Grievance redress mechanism	Local Government/ LPMU	CPMU	- Quarterly grievance mechanism report - Monitoring community satisfaction levels and feedback through surveys
Operation of TPST	Health and Safety	Increase in work accidents	- Conduct routine risk assessments - Audit and develop work procedures - Monitor past accidents	Local Government/ LPMU	CPMU	Track workplace accidents involving construction workers throughout the

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
Operation of Residual Landfill		Hazardous working conditions Disorganised work environment	- Implement a comprehensive safety training program - Maintain strict supervision - Install safety signs and markers - Ensure cleanliness and organisation - Establish an effective communication system			construction process. - Prepare hazard identification and risk assessment and prepare the work procedures. - Build a policy, organisation chart and responsibility, work programmes. - Prepare safety report to local government in every 3 months, and annual report for internal progress evaluation.
- Operation of TPST - Operation of Residual Landfill	Health and Safety	Increase in community risks Increase in vulnerable populations	- Identify potential interactions - Conduct regular public health monitoring in coordination with local health authorities, including tracking of respiratory illnesses, skin infections, or other potential symptoms linked to waste operations - Establish a community health baseline and track changes over time to inform adaptive management	Local Government/ LPMU	CPMU	- Review disease prevalences monthly and annual reports - Conduct regular (annual) health check-ups for communities near TPST and TPA

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring
				Implementation	Supervision	
		Changes in Community Disease Changes in Environmental Sanitation	• Create a buffer zone or high-security fence • Install warning signs and traffic signals • Regularly monitor air and water quality • Conduct outreach and education • Manage drainage effectively			• Monitor complaints related to odor, pests, and water pollution • Check condition and placement of safety signs and warning boards at access roads and gates Annual public health monitoring • Evaluate the air and water quality. • Conduct community engagement and feedback with meeting and/or events • Collaborate with local educational parties and community groups

7 Institutional Arrangements

7.1 Roles and responsibilities of the agency/ies involved

7.1.1 The Environmental and Social Management Plan (ESMP) implementation involves a multi-tiered approach, engaging several key institutions to ensure the comprehensive management of environmental and social impacts.

7.1.2 The roles and responsibilities of each institution are outlined as follows:

- **Asian Infrastructure Investment Bank (AIIB):** As a funding entity, the AIIB is involved in the oversight and evaluation of the project to ensure it meets the required environmental and social standards. The AIIB provides financial support and may also offer technical assistance to strengthen the implementation capacity of the client.
- **Central Project Management Unit Ministry of Public Works and Housing (CPMU MPWH):** CPMU has the following duties:
 - Project-level monitoring and evaluation
 - Coordination, supervision, and technical guidance/support to CPIUs/LGs
 - Provide support, supervision, and quality control to field staff working on environmental and social risk management
 - Collect, review, and provide quality assurance and approval of relevant Screening Forms and ESMPs. Maintain documentation of all progress
 - Supervise overall implementation and monitoring of environmental and social mitigation and management activities, prepare progress reports from the local/sub-project level, and report to the AIIB
 - Train staff and contractors who will be responsible for implementing the ESMP
 - If contracts are centrally managed, ensure that all bidding and contract documents include all relevant E&S management provisions in accordance with the screening forms, and ESMPs
 - Submit project reports to the AIIB
- **Central Project Implementation Unit (CPIU):** This ministry is responsible for overarching policy guidance, strategic planning, monitoring, evaluation, and coordination at the national level ((Ministry of Public Works and Housing (MPWH), National Development Planning Agency (Bappenas), Ministry of Home Affairs (MoHA), Ministry of Health (MoH)).
 - Sub-project mentoring and review
 - Support CPMU to manage project operations in accordance with institutional responsibilities
 - Provide technical guidance and assist PPIU in developing technical instruments (DED, E&S Instruments, etc.) and monitoring project implementation through consultant
 - Review the grievance recapitulation prepared by consultant and report to CPMU
- **Ministry of Environment and Forestry (MoEF):** The MoEF is the central authority for environmental management and policy formulation. It oversees the implementation of

environmental regulations and ensures compliance with national standards. The MoEF also provides technical guidance and support to local governments.

- **Local Government/ Local Project Management Unit (LPMU):** The City/Regency LGs, often established within the local government structure, is responsible for the day-to-day management and implementation of the ESMP. This includes coordinating with contractors and consultants, ensuring compliance with environmental and social safeguards, and reporting to the MoEF or Provincial Environmental Service Department for national safeguards compliance. The City/Regency LGs acts as the primary point of contact for stakeholders and the local community. In this project, the LGs within the local government structure are the Regional Planning and Development Agency (Bappeda), the Environmental Agency (DLH), and Public Works Agency (PU).
 - Sub-project level implementation and monitoring
 - Ensure project activities are not included in the Negative List. Complete the Screening Form for relevant sub-project activities and submit the form to the national level.
 - If relevant, complete the site-specific ESMP for sub-project activities and submit to the national level.
 - Oversee the daily implementation and monitoring of environmental and social mitigation measures, and report progress and performance to the national level on a monthly basis.
 - Provide training to contractors and local communities on relevant environmental and social mitigation measures, roles and responsibilities.
 - If the contract is managed regionally, ensure that all bidding documents and contracts include all relevant E&S management provisions in accordance with the screening form and ESMPs.
 - To disclose information to the public, conduct public consultations
 - Review the complaint summary and report to the CPIU
- **Provincial Project Implementation Unit (PPIU):** In this project, the PPIUs within the local government structure are the Regional Settlement Infrastructure Agency (BPPW) and the Public Works Agency (PU).
 - Supervise activities and conduct work assessments from the Regency/City level and facilitator staff;
 - Make progress reports on the implementation of physical and financial activities;
 - Assist and provide full support in the process of making evaluations of activity implementation;
 - Prepare and assist with related mission smoothness programs;
 - Provide technical guidance to the Regency/City Coordination Team and District Project Management Unit to record the progress of the projects;
 - Prepare annual procurement plans;
 - Create good working relationships with the Central Project Management Unit (CPMU);
 - Coordinate and disseminate information on project progress, including physical and financial reports and others;
 - Monitor and evaluate program implementation through visits to the Regency/City and

- Monitors the activities of the Provincial Advisory Consultant and District Advisory Consultant.
- **National Project Management Consultant (NPMC):**
 - Support CPMU to manage the project through the project cycle;
 - Ensure substantial risk environmental & social documents prepared by PPIUs and consultant before submission to the AIIB;
 - Review and approve medium & low risk environmental & social documents prepared by PIUs and consultant;
 - Provide training and capacity building, including training on ESMP and other relevant topics for project agencies (CPMU, CPIU, PPIU, NPMC, consultant);
 - Provide evaluation of ESMP implementation for Mid-Term Project Review and Completion of Implementation (MTR and ICR)
 - Monitor project implementation and prepare project consolidated reports twice a year for CPMU;
 - Oversee the overall implementation of the project including the management of environmental and social risks and impacts.
- **Contractor / Consultant:** Contractors and consultants are engaged to carry out specific tasks related to the project, including construction activities, environmental monitoring, and impact assessments. They must adhere to the mitigation measures outlined in the ESMP and report on their progress to the PPIU.

7.1.3 The ESMP implementation organigram defining the lines of communication is provided below:

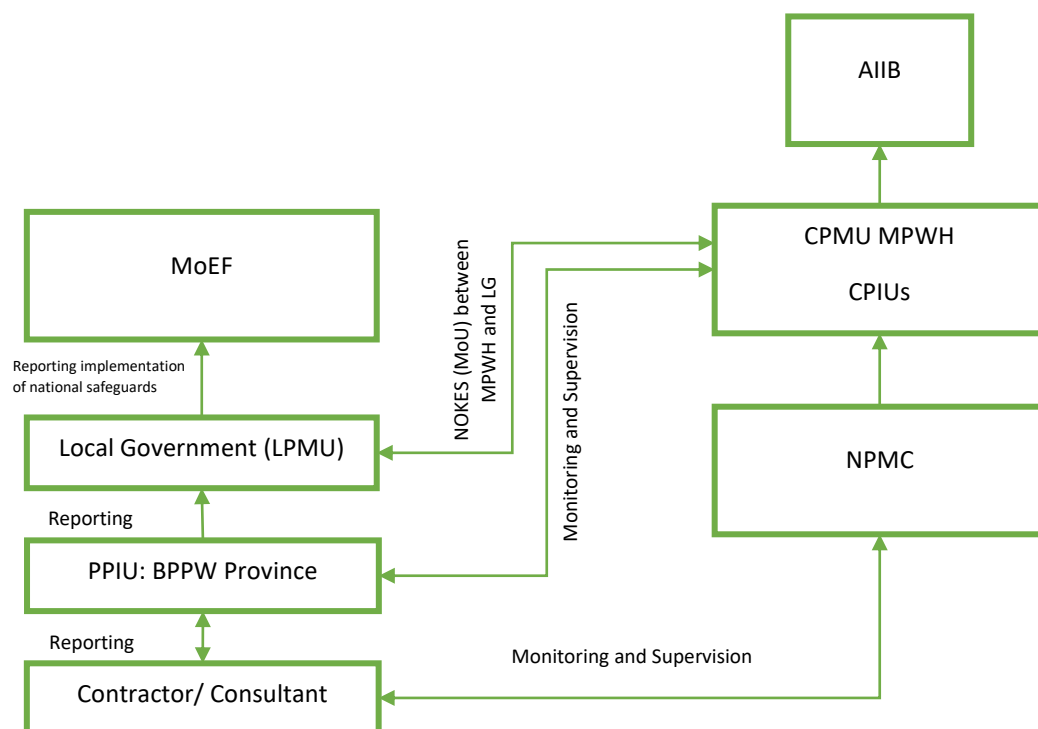


Figure 7-1 Institutional Arrangement for ESMP Implementation on Construction Stages

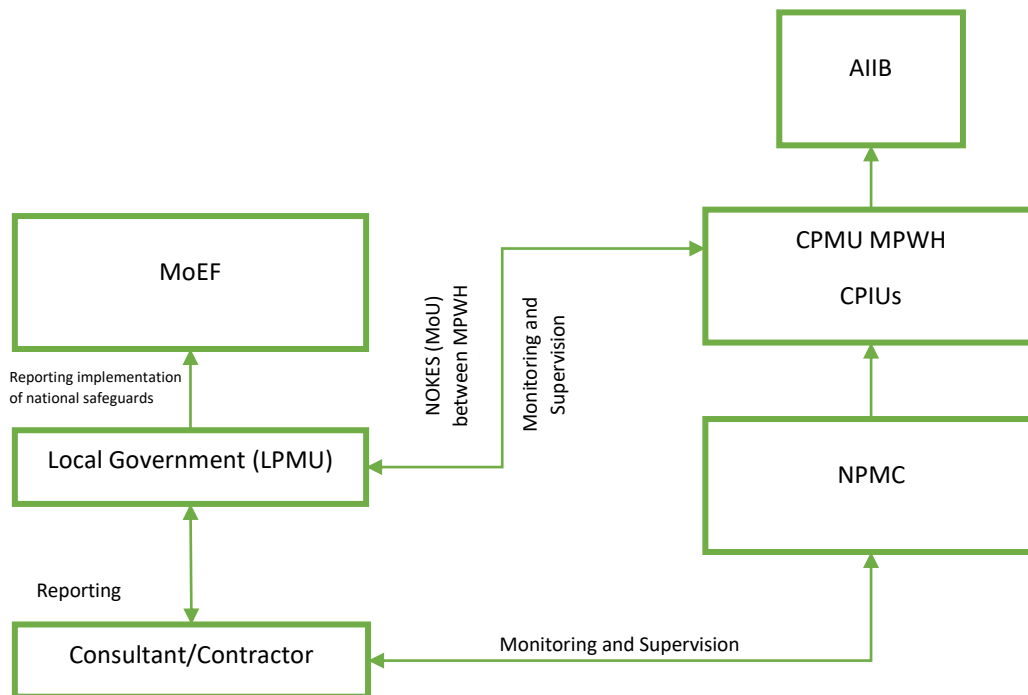


Figure 7-2 Institutional Arrangement for ESMP Implementation on Operation Stages

- 7.1.4 The draft memorandum of agreement already includes monitoring, evaluation, and reporting activities. These activities are carried out by CPIU and LG at least twice a year and include monitoring, evaluation, and reporting activities for landfill, TPST, LTP operations, and groundwater monitoring. The results of monitoring and evaluation are compiled in the form of a Monitoring and Evaluation Report Document to become a joint report as input for planning further synergies programs.

7.2 Capacity building and training requirements

- 7.2.1 The Central Project Implementation Unit (CPIU) and AIIB will ensure that the level of delivery organization expertise is sufficient to undertake the identified sub-project implementation tasks. Once prepared and approved, the ESIA will also contain details, specifications, and requirements for staff training and obligations for project staff working at sub-project sites to be inducted into the environmental and social awareness training process.
- 7.2.2 Delivery organizations (e.g., consultants, contractors, NGOs, etc.) are responsible for ensuring systems are in place so that relevant employees, contractors, and other workers are aware of the environmental and social requirements for project implementation contained within the ESMPF.
- 7.2.3 All project personnel will be required to attend an induction that covers relevant ESMPF requirements, including health, safety, environment and cultural requirements.
- 7.2.4 All sub-project workers, particularly involved during the construction and/or operations phases, engaged in any activity with the potential to cause serious social and/or environmental harm (e.g. handling of hazardous materials) will receive task specific training and certification (as required).

- 7.2.5 The draft memorandum of agreement Article 8 regulates the financing for SWM-SUD activities. In general, the financing for this activity will come from the APBN, APBD, and other financing (Loan and Grant). For capacity building and training activities, the financing is planned to come from loans or grants.
- 7.2.6 The CPMU is responsible for ensuring that the capacity of all parties, especially field implementers, in implementing the ESMPF, has met the minimum requirements. Capacity building will be provided to staff appointed by the CPMU and facilitated by NPMC environmental and social specialists. Key topics for the capacity building program may be reviewed during project implementation. The training will be conducted after the Loan Agreement is signed and the NPMC has been formed. The capacity-building activities of the SWM-SUD program are as follows.

Table 7-1 Proposed Training Program

Proposed Program	Target Participant	Facilitator	Scope of Training	Activity Timeline		
				Y1	Y2	Y3
Training of Trainers	NPMC	AIIB Safeguard Specialist	Development of training modules and materials, required standards and guidelines.			
General implementation of ESMPF	CPMU CPIU LG/LPMU PPIU Contractor/ Consultant	Environment and Social safeguard expert NPMC	Components and subcomponents of SWM-SUD activities ESMPF, SEP, ESIA, and National Safeguard (AMDAL, UKL/UPL, SPPL) Key points/rules/procedures (screening), assessment, management, and monitoring of environmental and social risk and impact management.			
Environmental and social risk screening	CPMU LG/LPMU PPIU Contractor/ Consultant	Environment and Social safeguard expert NPMC	Risk screening and scoping, including the application of negative lists and risk assessment tools when developing sub-project activities.			
Environmental and social risk and impact management		Environment and Social safeguard expert NPMC	Development of environmental and social instruments and their implementation and monitoring arrangements			
Environment, health and safety during civil works		Environment and Social safeguard expert NPMC	Construction management related to environmental and social aspects and how to use ESMPF, GRM, K3, and Public Health and Safety Management (including C-ESMP for Contractor)			

Proposed Program	Target Participant	Facilitator	Scope of Training	Activity Timeline		
				Y1	Y2	Y3
Social risk management		Environment and Social safeguard expert NPMC	Community participation approaches especially related to affirmative action and promotion of social inclusion for vulnerable groups, gender mainstreaming, socio-cultural engagement approaches Grievance management and communication skills for project implementers. Other context-specific issues such as access restrictions, development of livelihood plans for waste pickers, prevention and response to gender-based violence, where skills and resource requirements can be tailored to the complexity of these issues.			

Proposed Program	Target Participant	Facilitator	Scope of Training	Activity Timeline		
				Y1	Y2	Y3
Training of Trainee	NPMC	AIIB Safeguard Specialist	Development of training modules and materials, required standards and guidelines.			
General implementation of ESMF	CPMU CPIU LG/LPMU PPIU Contractor/Consultant	Environment and Social safeguard expert NPMC	Components and subcomponents of SWM-SUD activities ESMPF, SEP, ESIA, and National Safeguard (AMDAL, UKL/UPL, SPPL) Key points/rules/procedures (screening), assessment, management, and monitoring of environmental and social risk and impact management.			

Environmental and social risk screening	CPMU LG/LPMU PPIU Contractor/Consultant	Environment and Social safeguard expert NPMC	Risk screening and scoping, including the application of negative lists and risk assessment tools when developing sub-project activities.			
Environmental and social risk and impact management		Environment and Social safeguard expert NPMC	Development of environmental and social instruments and their implementation and monitoring arrangements			
Environment, health and safety during civil works		Environment and Social safeguard expert NPMC	Construction management related to environmental and social aspects and how to use ESMPF, GRM, K3, and Public Health and Safety Management (including C-ESMP for Contractor)			

8 Consultation and Disclosure Plan

8.1 Consultation and Stakeholder Engagement

- 8.1.1 Public consultation is an activity involving relevant stakeholders, including the government, other organizations/agencies, and the community, to provide information about an issue, policy, or project in order to obtain feedback, suggestions, input, and responses from these stakeholders. Public consultations are conducted throughout the project cycle to ensure that decisions made are more inclusive, transparent, and aligned with the needs and desires of the stakeholders who will be affected. The mechanism for disseminating information must be simple and accessible to everyone.
- 8.1.2 Identification and categorization of stakeholders is the initial process before conducting public consultations. This involves identifying individuals, groups, local communities, and other relevant parties who are directly and indirectly affected by the project, including disadvantaged or vulnerable groups. Stakeholder identification also aims to identify interested parties who may influence the project's outcomes as well as those who support the project.
- 8.1.3 In general, stakeholders are categorized into three groups:
- **Directly Affected Stakeholders**, these are individuals, groups, or entities directly impacted by the project. This includes the affected communities, such as residents living in or near the project site, waste pickers, collectors, off-takers, village heads, community and religious leaders, sub-district heads, and other local, provincial, or central government officials, as well as vulnerable groups such as people with disabilities, women, children, the elderly, or ethnic minorities.
 - **Indirectly Affected Stakeholders**, these are individuals or entities that may be indirectly affected by the project. Indirect stakeholders include NGOs, Community-Based Organizations (CBOs), technical agencies, professional bodies, and labor unions.
 - **Other Relevant Stakeholders**, these are individuals or entities interested in the project or capable of influencing its operations, such as other companies working in the same sector, the media, and academics.
- 8.1.4 Information related to the project must be communicated to the relevant stakeholders, including the affected community. The aspects, issues, and activities that must be disclosed include the following:
- Project scope
 - Location and design of project
 - Impacts of the project
 - Management measure to mitigate the impact
 - Grievance redress mechanisms
- 8.1.5 The methods used to disseminate information about the project are varied and must be tailored to the target audience. The various methods that can be used to disseminate information include the following:
- **Direct methods:** face to face meeting, group discussion, presentation, webinars, etc
 - **Print media:** newspaper, brochures, pamphlets, posters, banners, etc
 - **Electronic media:** television, radio, etc

- **Social media:** websites, social media platforms such as facebook, twitter, linkedin, etc
- **Others:** public announcements in the strategic area, etc

- 8.1.6 The frequency of public consultations is determined based on agreements with stakeholders. This depends on the needs of the affected parties as well as the project's requirements for disseminating the latest information. The location of the consultations also depends on the disclosure method used. Locations can include the nearest area to the affected parties, notice boards in front of offices, social media, announcements in strategic places, etc.
- 8.1.7 Affected parties can sometimes be frustrated if companies show up on their doorstep to consult on an issue and then are not heard from again – or at least not until the next time they come. It is good practice to follow up with stakeholders who have been consultant with, to let them know what has happened and what the next steps in the process will be. There are also practical benefits of follow-up, such as Apart from this, there are also practical benefits of follow-up, such as double-checking information, and testing or refining proposed approaches and mitigation measures before implementing them. In addition, the process of reporting back to stakeholders on which of their concerns will be addressed and how, as well as explaining what suggestions were not taken on board and the reasons why, can help establish credibility, manage expectations, and reduce consultation fatigue or cynicism. All of these are important when taking a long-term view of stakeholder engagement. Implementation of public consultations is the responsibility of CPIU (Central Project Implementation Unit), which can be assisted by consultants or other third parties during its implementation.

8.2 Information Disclosure

- 8.2.1 Each project material disclosed will include provisions for affected parties to provide suggestions, opinions, and feedback in the form of a suggestion box, contact person in charge (PIC), or direct comments. Suggestions, opinions, and feedback will be formally documented by the project developer. Links to the project's web page or social media contacts must be included in all printed materials distributed to stakeholders for further information.
- 8.2.2 The distribution of materials to be disclosed will be conducted both online and offline. Online distribution will be carried out through the project's website, social media and local news. Offline distribution will involve disseminating announcements, pamphlets, brochures, banners, and other materials at the project site and in locations frequently visited by the public or places that are easily accessible to the community without obstacles. Disclosure should also be considered at the city-level / kabupaten-level, through the local office of the environment agency and the specific landfill site offices.
- 8.2.3 The ESIA, ESMPF, and ESMP documents will be uploaded on the official AIIB website (<https://www.aiib.org>), the project website and in relevant government agencies' websites (for example MPWH). To ensure meaningful and effective consultation, the draft ESIA/ESMP must be prepared and ready before the finalization of the Bidding Document or at least during the negotiation or consultation phase with the contractors. The ESIA and ESMP must be disclosed to the public on local government websites and the PUPR website. These mechanisms aim to facilitate stakeholders' direct access to information regarding the project development process and allow for timely feedback.
- 8.2.4 Project information and ES instruments will be disclosed in both Bahasa Indonesia and English where suitable and this will be detailed out in the SEP.

- 8.2.5 Mechanisms to facilitate suggestions, opinions, and feedback will be disclosed to stakeholders and other interested parties.

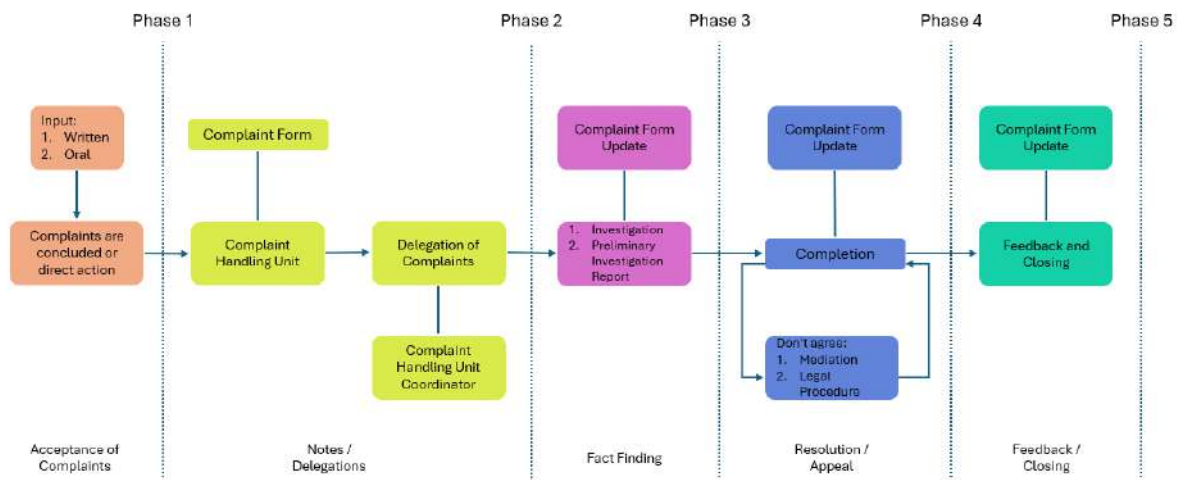
8.3 Grievance Redress Mechanism

- 8.3.1 According to Section VII.C Grievances of the AIIB ESF, the Bank required the Client to establish a suitable Project-level GRM to receive and facilitate resolution of the concerns and complaints of people who believe they have been adversely affected by the Project's environmental or social impacts, and to inform Project-affected people of its availability.
- 8.3.2 Specific project sites will also require a GRM to supplement the project-level GRM; these will be provided as part of the specific project site ESIA and SEP.
- 8.3.3 The GRM ensures that all complaints from stakeholders, both internal and external to the project, are received and addressed promptly and appropriately. Grievance handling must be responsive, transparent, proactive, and involve the relevant stakeholders. Records and documentation of complaints are created as part of the grievance handling process. This process is regularly monitored by the Complaint Handling PIC to ensure that no issues or complaints remain outstanding that could pose a risk to the project's operations.

Grievance Mechanism Procedure

- 8.3.4 The procedures should be disseminated to stakeholders, including affected parties, in a language that is easily understood by the public, without imposing any fees or sanctions on those who report. Complaints can be submitted directly to the project PIC (Person in Charge) or indirectly through the websites such as <https://www.lapor.go.id/> for the national level, project hotline, email, official letter, or through community leaders/representatives to be directly forwarded to the project PIC.
- 8.3.5 Information on how to submit a complaint must be available on the project website, in affected village offices, and in the project office. Anyone can submit suggestions, opinions, or complaints to the project openly, and anonymous complaints are also encouraged to be accepted, though their veracity must be verified. The project PIC will regularly inform the complainant about the progress of the complaint handling and provide feedback.

Figure 8-1 Grievance Redress Mechanism Chart



8.3.6 **Figure 8-1** illustrates the flowchart of the Grievance Redress Mechanism. There are five phases in the complaint handling mechanism: the first phase is acceptance of complaint; the second phase is notes/delegation; the third phase is fact-finding; the fourth phase is resolution/appeal; and the fifth phase is feedback/closing. A summary for each stage is presented in **Table 8-1**.

Table 8-1 Summary of Stages of grievance Process

Stage	Description	Responsibility	Timeline
Stage 1 : Acceptance of Complaints	- Comments and Questions (verbal and/or in writing) are received, analyzed and registered as part of the standard feedback process. - All communication are subject to the feedback process, which ensure that feedback is documented incorporated and responded to as needed - When a grievance is identified, stage 2 of the grievance procedure is initiated	GRU Field Team/officer	-
Stage 2 : Notes/Delegations	- When a grievance is identified, it is officially registered in a grievance log (see Appendix 12 for template of grievance log) and given a unique identification number. - It is categorized based on the type of complaint and its severity. Grievances are categorized into two (2) categories - Low significance grievance, with the following characteristics : - It involves individual affected people only; - One-off grievance, less probability it will attract media attention; - Does not require immediate intervention from managerial level. - High significance grievance, indicated by the following characteristics: - The complaint involves a large group of affected people; - The complaint has not been resolved during the time specified in this mechanism; - Recurring and potentially affecting the project activities schedule; - Potentially attracting media attention; - Requiring immediate intervention from managerial level. - An initial response is sent to the person who raised the grievance within six working days, acknowledging their feedback and describing the next steps in the grievance process, time estimates for these steps and a contact person. - The issue will be delegated to relevant unit/department to be follow up.	GRU Field Team/officer or GRU Database Administration GRU Manager (Grievance Mechanism Coordinator) for high significance grievance	Three days after receipts of grievance
Stage 3 : Fact Finding	- The project will investigate grievance and their surrounding in a timely manner. Investigation may include photographs and other evidence, witness statements, interviews with affected stakeholders and other parties, review of site register and other information gathering activities - The results of the investigation will be reviewed and a resolution will be proposed. The development of the resolution may involve consultation with the person involved. The proposed resolution will then be formally communicated to all parties	GRU Field Team/officer	Six days
Stage 4 : Resolution/Appeal	If the resolution is accepted by all parties, it will be documented, implemented and the grievance is closed.	GRU Manager (Grievance Mechanism Coordinator)	Six days

Stage	Description	Responsibility	Timeline
	2. If the resolution is not accepted, it will be reconsidered and the following resolution may be proposed : a. If complainant is not satisfied with the proposed resolution either party resorts to a mediator/arbitrator b. Mediator/arbitrator then review the grievance and seeks resolution; c. Mediator/arbitrator proposes resolution d. If both parties are satisfied with the proposed resolution it will be documented. Implemented and the grievance is closed 3. If both parties are not satisfied with the proposed resolution, then the complainant or project will resort to the courts.	GRU Field Team/officer	
Stage 5 : Feedback/Closing	After the accepted resolution has been implemented, it will be monitored and its effectiveness will be evaluated. All parties will be notified that the resolution has been implemented and will have the opportunity to provide feedback on the grievance process and its implementation	GRU Manager (Grievance Mechanism Coordinator) GRU Field Team/officer	Ten days

Grievance Monitoring and Feedback

- 8.3.7 Complaints need to be tracked and monitored as they are processed through the system. Effective tracking and documentation serve several purposes, including ensuring that specific individuals are responsible for overseeing each complaint—from receipt and registration to resolution; promoting timely resolution; informing all relevant parties (the complainant and appropriate project support personnel) about the case status and progress toward resolution; documenting the project's support responses and efforts to promote fairness and consistency; and recording stakeholder responses and determining if further research or consultation is needed.
- 8.3.8 The complaint handling team will create a centralized complaint record and tracking system. This database allows all registered complaints to be tracked and retrieved as needed. The team's performance in managing and resolving complaints is reviewed as part of both internal and external monitoring. A Complaint Form is attached to each complaint to facilitate the transfer of information.
- 8.3.9 After the complaint is resolved, the complainant will be invited to provide feedback on the resolution process and asked to indicate their level of satisfaction with the mitigation measures once they have been implemented. In all cases, the affected party must be informed of the outcome of their complaint. If the complainant remains anonymous, information about the complaint resolution will be posted on the relevant village notice board.

Grievance Log

- 8.3.10 The complaint log contains notes on the person responsible (assigned) for each complaint, including the date the complaint was reported; the date the complaint record was updated; the date information about the proposed corrective action was sent to the complainant (if applicable); the date the complaint was closed; and the date the response was sent to the complainant.
- 8.3.11 Informal complaints and criticisms, whether written or verbal, made against the project staff of the Dinas are recorded in the same manner as formal complaints and grievances against the project initiator as a company. In cases of serious complaints, the issues are tracked and addressed as deemed appropriate by the project initiator's management. The sample of grievance record form is attached in **Appendix M**.

Roles and Responsibilities

- 8.3.12 Table 8-2 presents a description of the proposed roles and responsibilities related to the grievance mechanism within the grievance redress unit team.

Table 8-2 Proposed Roles and Responsibilities in the GRM

Proposed Role	Position in Project	Description of The Responsibilities
Grievance Redress Unit Manager (Grievance Coordinator)	To be determined (TBD) by local government/project proponent	The GRU Manager (Grievance Coordinator) is responsible for allocating the necessary resources to ensure that the grievance mechanism is implemented in accordance with the guidelines. The GRU Manager also serves as the main point of contact for the resolution of community complaints and grievances, and oversees the overall processing of grievances, including: The GRU Manager is responsible for the following: • Dissemination or publicising of the Grievance Mechanism • Logging and acknowledging receipt of grievances • Delegating responsibility for redress • Coordinating the GRU field team fact-finding mission • Facilitating decisions on resolution actions with aggrieved parties • Closing out grievances • Tracking and monitoring of all grievances • Generating reports of grievance activities
GRU Field Team/Officer (Grievance Contact)	To be determined (TBD) by local government/project proponent	GRU Field Officers and Grievance Contacts serve as the primary points of contact between the project and external stakeholders. They report to the GRU Manager. The GRU Field Officers are responsible for: • Publicise the Grievance Mechanism in project-affected communities and communicate its purpose and how to use it. • Attempt to mitigate grievances before they become formal complaints/disputes. • Obtain contextual data about a grievance from the aggrieved parties, community members, and through first-hand observational data (fact finding). • Receive grievances directly from stakeholders. • Log grievances in the Grievance Log or database. • Assisting the GRU Manager in evaluating grievances; • Assisting in identifying appropriate corrective action; • Communicating with stakeholders who have lodged grievances, advising them on status and eventually informing them of the decision taken; • Assisting in tracking the status of all grievances; and • Maintaining dialogue with external stakeholders on grievances received and how these are being resolved.
GRU Database Administrator	To be determined (TBD) by local government/project proponent	The GRU Database Administrator shall ensure the quality of all log entries into the GM database, and shall help the GRU Manager to stay aware of dates and deadlines for grievance redress actions.
Informal Grievance Recipient	To be determined (TBD) by local government/project proponent	All project personnel such as direct employees, as well as contractor and subcontractors employees are informed about the Grievance Mechanism and if approached by community members for a grievance obliged to report this grievance to the GRU Field Officer or Manager in a timely manner. It is every project personnel's responsibility to report grievances, and to ensure that these are filed correctly with the GRU Field officer and/or GRU Manager so that it can be dealt with through the designated process.

Proposed Role	Position in Project	Description of The Responsibilities
Third Party Appointed Grievance Recipient	To be determined (TBD) by local government/project proponent	Local Government/ Project Proponent may appoint third party individual to receive complaint from external affected stakeholders. The assigned individual will record the grievance and complaint and convey it to GRU Field office (Grievance Contact) or to GRU Manager.

Training

8.3.13 Training is required for personnel involved in the team that documents and manages external stakeholder complaints. The training participants consist of the grievance team including both field officers and managers, all Environment Agency project staff including contractors, and the community affected by the project. The goal of the training is for the participants to understand the grievance mechanism and be able to implement them effectively. The initial training required, and its participants are presented in the following table.

Table 8-3 Training for Complaint Handling Unit, Environment Agency Project Staff, and PAPs

Participant	Training	Timing
Grievance redress unit field officers and manager	- How to deal with grievances and how to manage grievance mechanism and processes. - Training of Trainers (ToT) to provide training about grievance procedures to any staff at any facility, supply chain, contractors, and community. - Data entry to database.	At the beginning of the position assignment or two months after assignment and first training has been attended.
All project staff including contractor	Learn about the grievance procedure	At induction and regularly
Project affected communities	Learn about the grievance procedure	When updated or new and then yearly/half yearly

9 Environmental and Social Baseline Implementation Monitoring and Reporting

9.1 Implementation and monitoring requirements

- 9.1.1 This section outlines various environmental and social issues that require management plans due to the potential impacts of project activities. The management plans are structured to address specific issues, with detailed objectives, management strategies, monitoring plans, responsibilities, and performance indicators. Below is a high-level tabulated format summarizing the potential impacts, proposed mitigation measures, and responsibilities during both the construction and operation phases.
- 9.1.2 Monitoring activities will be carried out at every stage of the project, starting from pre-construction, construction, operation, and post-operation. At the pre-construction and construction stages, monitoring will be carried out by the contractor. While at the operation and post-operation stages, it will be carried out by DLH. Monitoring activities will be carried out every 3 - 6 months. Data collected and provided will be gender-disaggregated as much as possible. For more details per stage of activity can be seen in the following **Table 9-1**.

Table 9-1 E&S Monitoring Management and Monitoring Plan

Environmental Management and Monitoring During Construction

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
- Construction of access road (Associated Facilities) - Land Preparation - Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities) - Commissioning	Ambient Air Quality	Air Quality: Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5) and Increased of Gas Concentration (CO, CO2, NO2, SO2, H2S, and HC	- Stabilizing exposed surfaces. - Minimizing activities that potentially suspend dust particles. - Apply dust control measures such as water spraying for heavily transport areas such as access roads to active construction areas, disturbed areas (e.g. land clearing areas), wet suppression (watering), gravel or asphalt surfacing, and equipment wash down areas etc. - Apply water to excavation areas, soil loading/unloading areas and unpaved roads; - Create a wheel wash at entrances to public roads or exit of the landfill construction site; - Locate material stockpiles as a far as practicable from and downwind of air sensitive receivers (community); - Implement speed controls on-site; - Ensure that the cab of all soil storage trucks is covered with tarpaulins; - Water spraying regularly for dusty static construction areas/ materials/ operations; - Controlling lorries and barges loading capacity to avoid spillage.	Contractor	Local Government, CPMU	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring sites and near sensitive receptors that may include dust, vehicle emission, and odour on 6 monthly basis.	20,400,000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
			- Cover soil stockpiles with erosion control blankets; - Use hoarding to attenuate winds and therefore reduce likelihood of wind-blown dust; - To apply good practice in construction in sequencing the construction works in phases that minimize scatter impacts that are difficult to control.				
- Construction of access road (Associated Facilities) - Land Preparation - Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction	Noise	Noise pollution	- Maintain site roads in good condition to reduce noise and vibration from vehicle movements. - Utilize the vehicle that has pass the emission test. - Scheduling vehicle movement to avoid accumulated noise from vehicles. - Adopt good practice for construction site –regular maintenance of vehicles and machinery proper training to operators.	Contractor	Local Government, CPMU	Noise monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The noise standard should ensure compliance with the relevant provisions of Minister of Environment Decree (Kepmen LH) No 48 of 1996 on Noise Standards and EHS Guideline 48 hour	4,800,000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
(Associated Facilities)							
- Construction of access road (Associated Facilities) - Land Preparation - Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Vibration	Increased vibration	- Using a foundation method that produces little vibration (drill pile foundation) - Regular maintenance of heavy equipment machinery. - Conducting socialization related to activities that can cause vibration - Repair buildings damaged by increased vibration	Contractor	Local Government, CPMU	Vibration monitoring plan will be undertaken by contractor at established monitoring sites and near sensitive receptors on 6 monthly basis. All scheduled monitoring shall be reported to related agencies every 6 months, or as and when required. The noise standard should ensure compliance with the relevant provisions of Minister of Environment Decree (Kepmen LH) No 49 of 1996 on Vibration Standard	
- Construction of access road (Associated Facilities) - Land Preparation	Hydrology	Increased run off	- Removing all construction waste from construction sites and surrounding water bodies in a systematic manner. - Minimise the duration of stockpiling	Contractor	Local Government, CPMU	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out	1.000.000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
- Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)			- Protect water bodies from sediment load by using sediment traps or other barriers. - It is recommended to conduct construction activities during the dry season - Construct and rehabilitate adequate drainage channels to accommodate surface runoff. - Maintain water conservation by making biopore infiltration holes in green open spaces or parks. - Not dumping rubbish in drainage channels - Maintain drainage channels from rubbish and mud				
- Construction of access road (Associated Facilities) - Land Preparation - Construction of Base Camp and Workshop - Mobilization of Equipment and Materials - Construction of TPST Facilities - TPA Rehabilitation	Soil	Increased Soil Erosion	- Building sediment traps - Using geo-bags, rocks, and concrete to build protective walls; - Planting vegetation that functions to reduce surface soil erosion and increase soil stability.	Contractor	Local Government, CPMU	Once every 3 months during the construction phase especially during the rainy season. In the event of rain observation of drainage channels should be carried out	1.000.000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)							
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Soil	Soil contamination	- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only. - Exposed site areas should be kept to a minimum during the construction of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable; - Provision of effective construction site run-off controls such as controlled discharge and temporary drains; - Proper management of refuelling activities, waste storage and disposal; - Hard surfaced with perimeter drain at re-fuelling areas; - Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident; - In-place spill response and clean-up procedures; and	Contractor	Local Government, CPMU	Soil monitoring conducted at the temporary landfill location after the temporary landfill is finished. Result of soil monitoring should be evaluated against Ministry of Health Regulation No. 2/2023. All scheduled monitoring is reported or as required by environmental regulator. Any complaints as to the management of soil quality will be directed to the management as soon as practical. Complaints and any actions arising from a complaint are recorded in grievances register to be maintained by site management.	16.000.000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
			Temporary fuel storage tanks constructed with adequate secondary containment/bunded.				
- Construction of access road (Associated Facilities) - Base Camp and Workshop - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) - TPA Rehabilitation - Commissioning	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)	- Implement the landfill rehabilitation plan. - Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). - Implement proper hazardous waste and hazard substances storage and management at construction site. - Hazardous waste and hazard substances shall be - stored at concrete area with roof and secondary containment to prevent spillage to waterbodies.	Contractor	Local Government, CPMU	Regular monitoring for surface water management plan will be conducted by contractor at established monitoring point in water body every 3 months. The monitoring result will be compared against threshold limit value as stipulated in Government Regulation No 22 of 2021 Appendix VI on Management of Water Quality and Water Pollution Control.	21,000,000
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Water Quality	Surface Water Pollution (TSS, TDS, pH, BOD, DO, and COD)		Contractor	Local Government, CPMU		10,000,000
Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)	Groundwater quality	The leachate of temporary disposal site could infiltrate to the groundwater and potentially pollute it if the environmental protection and landfill membranes	- All hazardous substances to be collected and stored accordingly based on their characteristics, and to be disposed of by certified contractors only. - Exposed site areas should be kept to a minimum during the construction	Contractor	Local Government, CPMU	Monitor groundwater quality from monitoring wells every 3 months.	10,000,000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
		does not meet the standard.	of the new facilities and completed areas should be hard surfaced/re-vegetated as soon as practicable; - Provision of effective construction site run-off controls such as controlled discharge and temporary drains; - Proper management of refueling activities, waste storage and disposal; - Hard surfaced with perimeter drain at re-fueling areas; - Drip collection devices to be readily available for use anywhere in the site in case of a spillage incident; - In-place spill response and clean-up procedures; and - Temporary fuel storage tanks constructed with adequate secondary containment/bunded.				
- Land Preparation - Construction of Base Camp and Workshop - Construction of TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Waste Management	Increased Construction Waste	Construction waste to be disposed accordingly. General construction waste can be disposed into the existing landfill. Segregate hazardous waste for proper storage and collection by licensed hazardous waste collectors.	Contractor	Local Government, CPMU	Any complaints as to the management of on-site waste are forwarded to the Director of TPA Sanggrahan as soon as practical. Complaints and any actions arising from a complaint are recorded in complaints register maintained by site management. Use TPA Sanggrahan SOP to maintain documentation	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
- TPA Rehabilitation - Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)						of waste generation, storage, and disposal.	
Construction of Base Camp and Workshop	Waste Management	Increased Domestic Waste (include Hazardous Waste)		Contractor	Local Government, CPMU		TBC
Construction of Base Camp and Workshop	Wastewater management	Increased domestic wastewater	Establish domestic wastewater management system.	Contractor	Local Government, CPMU	Regular monitoring at established points and report to related agencies every 3 months.	2,500,000
Land clearing, use of heavy machinery.	Biodiversity	Loss of habitat, impact on local flora and fauna, potential fatalities of species, forced relocation of wildlife	Conduct land clearing based on sub-project design, refrain from opening areas outside designated boundary, conduct greening with fast-growing/local species.	Contractor	Local Government, CPMU	Monitoring terrestrial biota at establish site and near sensitive receptor during construction phase.	Rp. 15.000.000 - 20.000.000 per Monitoring .

Environmental Management and Monitoring During Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
- Operation of TPST - Operation of Residual Landfill	Air Quality	Increased Concentration of Particulate Matter (TSP, PM10 and PM2.5)	- Establishing frequent waste collection schedules. - Optimize waste collection routes to minimize travel distance and overall fuel use and emissions. - Develop and implement a standard operation procedure to control and minimize emission of dust and bio-aerosol during loading/unloading. - Include landfill gas collection system designed and operated in accordance with the applicable national requirements.	Local Government	CPMU	Air quality and odour monitoring plan will be undertaken by landfill management at established monitoring points and near sensitive receptors that may include dust, vehicle emission and odour on 6 monthly basis.	20,400,000
- Operation of TPST - Operation of Residual Landfill	Air Quality	Increased of Gas Concentration (NO ₂ , SO ₂ , H ₂ S, and HC)		Local Government	CPMU	Monitoring sites near sensitive receptors, 6-monthly during operation, and closure. Submit a monitoring report to related agencies every 6 months.	
- Operation of TPST - Operation of Residual Landfill	Soil	Soil contamination	- Develop and implement drilling management plan. - Properly store chemicals and hazard substances in sheltered area and provide kerb or secondary containment to prevent spillage.	Local Government	CPMU	Periodic monitoring to be undertaken by LG at established monitoring points i.e., close or at the baseline points and near to the updated sensitive receptors. All scheduled monitoring shall be reported to related agencies as required. The monitoring should comply with the relevant regulations.	28,000,000
- Operation of TPST - Operation of Residual Landfill	Water Quality	Surface Water Quality Pollution (TSS, TDS, pH, BOD, DO, and COD)	Develop and implement transportation management plan that includes usage of material cover during material transportation and/or perform	Local Government	CPMU	Regular monitoring for surface water management plan will be conducted by landfill operators at established monitoring point in water body every 3 months. The monitoring result will be	21,000,000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
			dust control by spraying water on the streets & roads when mobilization is performed during a particular hot day (dry season) twice a day (noon and afternoon).			compared against threshold limit value as stipulated in Government Regulation No 22 of 2021 Appendix VI on Management of Water Quality and Water Pollution Control.	
- Operation of TPST - Operation of Residual Landfill	Water Quality	Groundwater Quality Pollution (TSS, N total, pH, BOD, DO, COD, Mercury, Cadmium)	- Conduct the application of speed limit. - Minimize the daily exposed working face and use perimeter drains and landfill cell compaction, slopes and daily cover materials to reduce infiltration of rainfall into the deposited waste. - Prevent run-on of precipitation into the active area. - Maintain the effectiveness of the leachate treatment plant in order to ensure that effluent of LTP is in compliance with the quality standards (Minister of Environment and Forestry No. 59 Year 2016). - Regular monitoring of effluent quality to ensure leachate treatment plant operates well. - Direct the wastewater from truck/vehicle wash to the drainage channel.	Local Government	CPMU	- Record leachate effluent discharge and pH on daily basis; - Monitor leachate effluent quality every month; - Monitor groundwater quality from monitoring well every 3 months. - During operation stage, the result for scheduled monitoring should be reported to related agency every 3 months.	10,000,000

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget Estimate
				Implementation	Supervision		
- Operation of TPST - Operation of Residual Landfill	Waste management	Increased Domestic Waste Generation (Including Hazardous Waste)	- Collect hazardous waste into the Hazardous Waste Temporary Storage and dispose the hazardous waste through the licensed hazardous waste disposal. - Apply the ERP for oil spill.	Local Government	CPMU	Document and report waste management activities, maintain waste disposal records.	TBC
- Operation of TPST - Operation of Residual Landfill	Wastewater Management	Increased Domestic Wastewater	Establish domestic wastewater management	Local Government	CPMU	Regular monitoring at established points, report to related agencies every 3 months.	2,500,000
Facility operation, leachate discharge	Biodiversity	Ongoing impact on aquatic biota and biodiversity from potential leachate discharge	Maintain the effectiveness of leachate treatment plant.	Contractor	Local Government, CPMU	Monitor aquatic biota at established sites and near sensitive receptors every 6 months during construction, operation, and closure. Report to related agencies every 6 month	Rp. 15.000.000-20.000.000 per Monitoring

Social Management and Monitoring During Pre-Construction & Construction

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility Implementation	Supervision	Monitoring	Budget
Pre Construction							
Land acquisition	Social Economic	Land Owner, land user or squatter income disruption	- Monitor replacement land use - Establish a grievance redress mechanism (GRM)	Contractor	Local Government/LPMU	- Reports on land usage by affected users - Continuous monitoring of GRM implementation to address issues	TBC
Stakeholders Socialization	Social Cultural	Increase of community concerns	- Conduct public consultation - Develop a grievance redress mechanism - Establish a dedicated complaints team - Prepare traffic management - Conduct regular air quality and odour monitoring	Contractor	Local Government/LPMU	- Monitor number and frequency of consultations - Regular grievance tracking - Odour and air quality reports every quarter	TBC
Construction							
Recruitment Activities	Socio-economic	Workforce Opportunity	- Prioritise local recruitment. Ensure that the majority of workers hired during the operational phase are from the surrounding villages. - Establish a transparent recruitment process. Publicly advertise job opportunities and ensure fair selection. - Provide training to local workers. Provide skills training, including health and safety	Contractor	Local Government/LPMU	- Monthly recruitment reports - Grievance log updates - Training completion reports	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
			protocols, to improve skills. • Prioritise employment for vulnerable groups, such as local waste pickers. • Establish a grievance mechanism. Provide easy access for local people to raise concerns about recruitment and employment.				
Workforce release	Socio-economic	Decrease Job Opportunity	• Conduct a desktop review about the gender-disaggregated number and human resources required by the project compared to the gendered availability of local Manpower • Prepare workforce release plan	Contractor	Local Government/LPMU	• Workforce transition plan completion • Monitoring of released workers' employment status	TBC
Construction of Base Camp and Workshop	Socio-economic	Business Opportunity	• Conduct a desktop review about the number of businesses near the project area	Contractor	Local Government/LPMU	• Quarterly reports on engagement with local businesses	TBC
Temporary disposal site construction - Waste disposal handling during construction (Associated)	Socio-economic	Waste picker Relocation	• Conduct socialization • Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans • Develop livelihood restoration plans	Contractor	Local Government/LPMU	• Monitoring of displaced waste pickers • Bi-annual socio-economic impact reports • Monitoring of compensation and livelihood programs	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
			specifically targeting women and elderly waste pickers, ensuring gender sensitive and inclusive approaches. Ensure compensation mechanisms consider the vulnerability of these groups.				
Land Preparation	Socio-economic	Disruption of waste pickers' livelihoods	- Conduct socio-economic impact assessments with GSI lend to evaluate potential displacement impacts, provide GSI-aware livelihood restoration plans - Implement targeted livelihood restoration programs with a focus on women and elderly waste pickers. - Offer skill development and alternative income opportunities tailored to their needs. - Engage with waste picker groups to ensure inclusive participation in decision-making.	Contractor	Local Government/LPMU	- Quarterly socio-economic assessments - Monitoring of livelihood restoration program participation	TBC
- Recruitment - Construction of access road (Associated Facilities) - Land Preparation - Base Camp and Workshop	Socio Cultural	Cultural resource disturbance	- Conduct prior mapping and demarcation of the cultural resource and establish a protective buffer zone - Install signage and barriers to prevent entry of construction equipment and	Contractor	Local Government / LPMU	- Monitor implementation of buffer zone and physical protection measures - Document any community complaints related to	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
• Mobilization of Equipment and Materials • TPST Facilities (basic facilities, environmental protection facilities and supporting facilities) • Temporary disposal site construction - Waste disposal handling during construction (Associated Facilities)			• personnel into sensitive areas • Coordinate with local cultural/religious leaders to align construction activities with local customs and ceremonial schedule. • Conduct awareness training for workers on respecting cultural heritage • Ensure restricted access and traffic control near the cultural resource			• cultural resource disturbance • Monthly verification of contractor compliance with access restrictions • Hold coordination meetings with community and cultural representatives • Visual inspection and photo documentation of site integrity	
	Socio-cultural	Community concern	• Conduct a baseline survey to identify community expectation and concern to the project. • Review of community grievances about the project activity. • Prepare Grievance redress mechanism	Contractor	Local Government/LPMU	• Bi-annual community surveys • Regular grievance mechanism updates	TBC
Mobilization of Equipment and Materials	Transportation	Disruption to Land Traffic	• Conduct a traffic impact assessment • Implement a traffic management plan	Contractor	Local Government/LPMU	• Monthly traffic monitoring reports • Review traffic incidents and impact	TBC
Mobilization of Equipment and Materials	Transportation	Increase in Traffic Accidents	• Assess the road safety risks • Implement traffic control measures	Contractor	Local Government/LPMU	• Monthly accident reports • Road safety audits	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
- Construction of access road (Associated Facilities) - Land Preparation - Base Camp and Workshop - Mobilization of Equipment and Materials - TPST Facilities (basic facilities, environmental protection facilities and supporting facilities)	Worker Health and Safety	- Increase in work accidents - Hazards exposure (e.g. hazardous materials, moving heavy equipment, electricity, and dangerous gases) - Additional factors (i.e. fatigue, insufficient training, and lack of supervision)	- Conduct comprehensive risk assessments - Implement a thorough Occupational Health and Safety (OHS) program - Ensure proper use of Personal Protective Equipment (PPE) - Establish safety zones - Provide regular training and necessary licenses - Implement a buddy system - Rotate tasks and provide drinking water	Contractor	Local Government/LPMU	- Conduct a toolbox meeting before starting work. - Track workplace accidents involving construction workers throughout the construction process. - Prepare hazard identification and risk assessment, and prepare the work procedures.	TBC
- Construction of access road (Associated Facilities) - Land Preparation - Base Camp and Workshop - Mobilization of Equipment and Materials - Temporary disposal site	Community Health and Safety	- Increase in community risks - Changes in Community Disease - Increase in vulnerable populations - Undetected or late response to health risks among workers and nearby communities	- Identify potential interactions - Create a buffer zone or high-security fence - Install warning signs and traffic signals - Conduct outreach and education - Evaluate the air and water quality. - Manage drainage effectively - Implement a long-term health monitoring program in collaboration with local clinics or hospitals - Include both male and female workers in periodic health screenings	Contractor	Local Government/LPMU	- Conduct community engagement and feedback with meeting and/or events - Collaborate with local educational parties and community groups - Collaborate with health agency - Records of health check-ups (gender-disaggregated) - Health reports from clinics/hospitals - Minutes from coordination with health authorities - Attendance and feedback from health	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
			- Coordinate with public health offices to assess community health impacts, if necessary - Conduct health education and awareness sessions			education sessions Regularly monitor air and water quality	

Social Management and Monitoring During Operation

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
- TPST/Residual Landfill Recruitment - Operation of TPST	Socio-economic	Workforce Opportunities	- Prioritise local recruitment. - Establish a transparent recruitment process. - Provide training to local workers. - Prioritise employment for vulnerable groups, such as local waste pickers. - Establish a grievance mechanism.	Contractor	Local Government/LPMU	- Monthly recruitment reports - Monitoring of vulnerable group employment - Review of grievance mechanism updates	TBC
- Operation of TPST - Operation of Residual Landfill	Socio-economic	Disruption of waste pickers' livelihoods	- Develop livelihood restoration programs. - Provide social security and health benefits. - Ensure transparent communication. - Monitor income levels.	Contractor	Local Government/LPMU	- Quarterly livelihood monitoring - Reports on income levels of waste pickers - Evaluation of social security and health benefits	TBC
- TPST/ Residual Landfill Recruitment - Operation of TPST	Socio-cultural	Community Concern	- Conduct a baseline survey to identify community expectation and concern to the project. - Review of community grievances about the project activity. - Prepare Grievance redress mechanism	Contractor	Local Government/LPMU	- Quarterly grievance mechanism report - Monitoring community satisfaction levels and feedback through surveys	TBC
- Operation of TPST - Operation of Residual Landfill	Health and Safety	Increase in work accidents	- Conduct routine risk assessments - Audit and develop work procedures - Monitor past accidents	Contractor	Local Government/LPMU	Track workplace accidents involving construction workers throughout the construction process.	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
		- Hazardous working conditions - Disorganised work environment	- Implement a comprehensive safety training program - Maintain strict supervision - Install safety signs and markers - Ensure cleanliness and organisation - Establish an effective communication system			- Prepare hazard identification and risk assessment and prepare the work procedures. - Build a policy, organisation chart and responsibility, work programmes. - Prepare safety report to local government in every 3 months, and annual report for internal progress evaluation.	
- Operation of TPST - Operation of Residual Landfill	Socio Cultural	Cultural resource disturbance	- Establish and maintain a physical buffer zone around the cultural resources, clearly marked with signage and fencing - Restrict access to the cultural resources area by operational staff and vehicles - Conduct periodic coordination with local community leaders and cultural custodians to respect ceremonial schedules - Install noise and odour control measures if the cultural resources is within 500 meters - Provide training for operational staff on cultural sensitivity and community engagement - Prohibit any waste-related activities, storage, or access	Contractor	Local Government/LPMU	- Conduct quarterly inspections to verify the integrity of the buffer zone and signage - Maintain a log of complaints or feedback from the community regarding the cultural resources - Schedule and document regular meetings with community or religious leaders - Prepare photographic documentation of the site condition - Include cultural resources considerations in annual social audit and operational reports	TBC

Activity/Aspect	Receptor	Potential Impact	Mitigation	Mitigation and Implementation Responsibility		Monitoring	Budget
				Implementation	Supervision		
			roads within or near the cultural resources boundaries				
- Operation of TPST - Operation of Residual Landfill	Community Health and Safety	Undetected or delayed response to long-term health risks due to prolonged exposure to operational activities populations	- Implement a long-term health monitoring program in collaboration with local clinics or hospitals - Include both male and female workers in regular health check-ups - Coordinate with local health offices to monitor broader community health trends - Conduct regular health education and awareness sessions targeting workers and nearby residents	Contractor	Local Government/LPMU	- Prepare and regularly update health risk identification and assessment documents - Maintain gender-disaggregated records of medical check-ups and follow-up actions - Conduct quarterly coordination meetings with local clinics or health centers - Organize community health awareness campaigns in collaboration with local stakeholders - Document feedback from affected communities regarding health concerns - Track any emerging health issues linked to operational exposure	TBC

Solid Waste Management for Sustainable Urban Development (SWMSUD) Project in Indonesia



Project-level Environmental & Social Management Planning Framework (VOLUME 2)

18 July 2025



Kementerian Pekerjaan Umum
Direktorat Jenderal Cipta Karya
Direktorat Sanitasi

APPENDICES

Appendix A	Indonesian Laws and Regulations for Solid Waste Management
Appendix B	Screening Form for Potential Environmental and Social Safeguards Issues
Appendix C	Rapid Environmental Assessment Checklist for Solid Waste Management
Appendix D	Table of Contents for Cumulative Impact Assessment
Appendix E	Terms of Reference for Procurement
Appendix F	Template of Environmental and Social Code of Practice
Appendix G	Resettlement Planning Framework
Appendix H	Exclusion list
Appendix I	Example of Memorandum of Agreement (<i>Nota Kesepakatan</i>)
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Appendix A Indonesian Laws and Regulations for Solid Waste Management

Regulation	Summary	Requirement
Law		
Law No. 32 of 2009 Concerning management and protection of the environment.	This regulation focuses on environmental protection and management defining the planning, utilization, control, maintenance, supervision and law enforcement. The provision for environmental protection in general is regulated by this regulation.	Article 12: a. The utilization of natural resources carried out based on Environmental Management and Protection Plan (<i>Rencana Perlindungan dan Pengelolaan Lingkungan Hidup</i> or PPLH); b. In the case Environmental Management and Protection Plan referred to in paragraph (a) has not been arranged, the utilization of natural resources carried out based on the carrying capacity and the capacity by paying attention to: - Sustainability of the processes and functions of the environment; - Sustainability of environmental productivity; and - Safety, quality of life, and well-being of society. Article 13: a. Control of pollution and/or environmental damage done in the framework of environment conservation; b. Control of pollution and/or damage to the environment as referred to in paragraph (a) shall include prevention, countermeasures and recovery; and c. Control of pollution and/or damage to the environment as referred to in paragraph (a) shall be implemented by the Government, local government, and the person in charge of the business and/or activity in accordance with the authority, roles, and responsibilities of each. Article 20: a. Determination of environmental pollution measured through environmental quality standards; b. Environmental quality standards include: - Water quality standards; - Waste water quality standards; - Sea water quality standard; - Ambient air quality standard; - Emission standards; - Interference standards, and - Another quality standard in accordance with the development of science and technology. c. Every person is allowed to dispose the waste into the environment with the following requirements: - Meet environmental quality standards; and Permission of the Minister, governor or mayor in accordance with the authority.

Regulation	Summary	Requirement
Law No. 18 of 2008 Concerning waste management	This law emphasizes the principles of waste reduction and the environmentally sound handling of waste.	This regulation is the principles for public SWM services, providing incentive and disincentive mechanisms, defining how responsibilities for SWM are shared between the various levels of government, facilitating community-based SWM systems and private sector participation in SWM and setting out the penalties for disobeying the law. There is another type of waste that should be managed called, specific waste. The specific waste includes: 1. Specific waste from household containing hazardous waste; 2. Disaster waste; 3. Demolition and Construction Waste; 4. Waste that technology cannot be processed; and 5. Waste that is not periodically generated. The SWM consists of two main activities: waste reduction and waste handling. Waste reduction can be done through the limitation of waste generation (reduce), reuse of waste (reuse), and recycling of waste (recycle). While waste handling can be done through waste separation, collection, transportation, treatment, and final waste processing. There are few types of waste facilities such as Solid Waste Processing Site with the Principle of 3R (TPS3R), Integrated Solid Waste Processing Site (TPST), and Final Processing Site (TPA). Each facility has a specific function in order to implement waste reduction and waste handling activity. The waste management encourages waste management from the source with the main goal of creating a clean and healthy environment also utilization of waste management result in the form of energy, fertilizer or industry raw materials as added value.
Government Regulation No. 22 of 2021 Concerning Environmental Protection and Management Implementation	The Regulation defines the following relevant terms: living environment; environmental protection and management; environmental approval; environmental impact analysis; environmental management efforts; environmental management and monitoring plans; environmental pollution; damages to the environment; protection and management of water quality; watersheds; groundwater basin; water bodies; water pollution; water	Concerning Waste Management, the Regulation distinguishes hazardous and poisonous wastes from non-hazardous and poisonous wastes: the two categories are better explained in the attached schedules. The following waste management activities are defined: reduction, storage, collection, transportation, utilization, treatment and processing, landfill, dumping, and transboundary movement of waste. The Guarantee Fund is intended to restore environmental damages caused by companies and their business activities. The other matters concern the obligation of the government to develop an environmental information system; the duties and obligation of the government to provide assistance and guidance for involved parties concerning the implementation of environmental protection and management policy; governmental authority to impose administrative sanctions on violations of the content of the Regulation.

Regulation	Summary	Requirement
	quality standard; wastewater and wastewater quality standard; air quality protection and management; air pollutants; emissions; protection and management of sea water quality; sea; sea water quality standard; standard criteria for damage to the environment; marine pollution; coral reef; mangrove; seagrass; hazardous and toxic materials; waste; non-hazardous and toxic waste; toxicity; waste labelling; export of waste; waste management; waste reduction; waste disposal; utilisation of waste; waste treatment; emergency response system; technical approval; operational eligibility letter.	
Government Regulation No. 27 of 2020 Concerning Specific Waste Management	The governmental regulation aims to implement the Article 23, chapter 2 of the Law No. 18 of 2008 on Waste Management, which defines the term of “specific wastes” that require special management, the scope of practice, and requirements imposed on each stakeholder.	Specific waste regulated in the Government Regulation includes: a. Waste containing hazardous and toxic waste; b. Waste containing hazardous and toxic liquid waste; c. Waste from disasters; d. Building demolition debris; e. Waste that cannot be technologically processed; and/or f. Non-periodic waste. “Specific waste not stipulated by the provisions referred to in paragraph (1) shall be regulated by a Ministerial Regulation,” Article 2 paragraph (2) of the Regulation reads. Based on the regulation, the central government, provincial governments, and regions/municipalities should conduct specific waste management in accordance with their authority. “The specific waste management is conducted through: a. reduction; and/or b. handling,” article 4 of the Regulation reads.

Regulation	Summary	Requirement
		“Waste management containing hazardous and toxic waste is carried out in the following stages: a. sorting; b. collecting; c. transporting; d. processing; and e. final processing. Article 14 of the Regulation states. According to the Regulation, the Government Minister should support specific waste management implemented by provincial areas. The support is conducted through: a. granting norms, standards, procedures and criteria for specific waste management; b. dissemination of Laws and Regulations on specific waste management; c. education and training on specific waste management; d. Facilitating dispute resolution between regions; e. facilitation of cooperation between regency/municipality governments, business entities and communities in the administration of facilities and infrastructure for specific waste management; and/or f. facilitation of technical assistance in organizing the development of facilities and infrastructure for specific waste management.
Government Regulation Number 101 Year 2014 about Hazardous Waste (B3) Management.	This regulation focuses on Determination of B3 waste, B3 Waste Reduction, B3 Waste Storage, B3 Waste Collection, Transport of B3 Waste, Utilization of B3 Waste, Waste Treatment B3, B3 Waste Landfill, Dumping (Disposal) of B3 Waste, Exemption of B3 waste, Transboundary movement of B3 waste, Environmental Pollution Control and/or Environmental Damage and Recovery Environmental Functions, Emergency Response System in B3 Waste Management, Coaching, Supervision, Financing and Administrative sanctions.	The regulation stipulates: A. Determination of B3 waste; B. B3 Waste Reduction; C. B3 Waste Storage; D. B3 Waste Collection; E. Transport of B3 Waste; F. Utilization of B3 Waste; G. Waste Treatment B3; H. B3 Waste Landfill; I. Dumping (Disposal) of B3 Waste; J. Exemption of B3 waste; K. Transboundary movement of B3 waste; L. Environmental Pollution Control And/or Environmental Damage and Recovery Environmental Functions; M. Emergency Response System in B3 Waste Management; N. Coaching; O. supervision; P. financing; and Q. Administrative sanctions.

Regulation	Summary	Requirement
Government Regulation No. 81 of 2012 Concerning Waste Management of Household Waste and Similar Household Waste Including Waste Management Policy and Strategy and Its Implementation as An Enforcement Order of the No. 18/2008.	This regulation focuses on preserving environmental standards through the management of waste as a resource. The regulation allows for targets to be set for waste reduction, emphasizes waste segregation at source and requires consideration to be given to recycling and reuse in the design of products and packaging.	Government Regulation includes: a. Policy and strategy of waste management; b. Implementation of waste management; c. Compensation; d. Development and application of treatment technology; e. Information system; f. Role of communities; and g. Training. Implementation of waste management includes waste reduction and waste handling. Waste reduction includes reduce, reuse and recycling. Waste handling includes segregation, collection, transportation, treatment and final disposal.
Presidential Regulation No. 35 of 2018 Concerning Acceleration of Waste-to-Energy Plant Construction Based on Environmentally Sound Technology.	It is mandated by Law 18/2018 and Law 30/2007. This regulation directs the government to advance technology capable of converting waste into electrical energy, ultimately aiming to diminish the overall volume of waste. This regulation determines efforts to establish PLTSa in 12 selected cities and provinces in Indonesia.	Article 2 paragraph 1 states that waste management aims to improve public health and environmental quality, reduce the volume of generated waste, and the beauty of the city and water resources. In paragraph 2, it is stated that waste management is carried out in an integrated manner from upstream to downstream, and in paragraph 3, explains that the resources referred to in paragraph 1 are carried out to obtain added value as electrical energy
Presidential Regulation No. 83 of 2018 Concerning Details of the Marine Debris Management plan, particularly on plastic waste.	This legislation governs 16-line ministries to collaborate in combating marine debris. it also sets national target of marine debris reduction by 70% by 2025.	Through the Regulation, the 18 ministries form the National Coordination Team for Marine Debris Handling, coordinated by the Secretariat for National Coordination Team (operationalization and funding are supported by UNDP). The 2018–2025 action plan pledges to reduce plastic and other marine waste by 70% by 2025, which is strongly linked to overall 100% urban collection targets on land. There are close to 60 actions ⁸ to combat marine debris, including raising stakeholder awareness, managing waste generated on land, managing coastal and ocean waste, strengthening monitoring and law enforcement, and research and development, etc. (ERIA 2019; TKN PSL 2021). Together, they have already achieved a 15.3% reduction (TKN PSL 2021).
Presidential Regulation No. 97/2017 Concerning the National Policy & Strategy on Managing Household Waste	President Regulation No. 97/2017 is a roadmap towards the 2025 Clean-from-	It sets a target of 30% waste reduction and 70% waste handling by 2025. Indicators for waste reduction include decreasing waste generation per capita, reducing waste at source (e.g., plastic bag restriction), and reducing waste leakage to the environment. For the “70% handling” target mentioned above, the indicators include increasing waste to be treated (recycling, composting,

Regulation	Summary	Requirement
and Household-like Waste (JAKSTRANAS) directs waste management strategies and targets.	Waste Indonesia (Indonesia Bersih Sampah 2025).	biogas, thermal recovery, etc.) and reducing waste to be landfilled (MoEF 2020). Through these targets, the Ministry of Environment and Forestry aims to reduce 70% marine plastic by 2025.
Presidential Regulation No. 59/2017 Concerning Implementation of Achieving Sustainable Development Goals	This regulation aims to fulfill the government's commitment to implementing the achievement of Sustainable Development Goals	This regulation mandates that to achieve the TPB/SDGs targets, 3 (three) planning documents will be prepared, namely: TPB/SDGs Road Map, TPB/SDGs National Action Plan (RAN), and Provincial TPB/SDGs Regional Action Plan (RAD).
Minister of Home Affairs Regulation No. 7 of 2021 concerning Procedures for Calculating Retribution Rates in Implementing Waste Handling.	This regulation is a mandate from the provisions of Article 29 paragraph (4) Government Regulation Number 81 of 2012 concerning Management of Household Waste and Waste Similar to Household Waste.	It is stated in Article 2, paragraph (1) of the Minister of Home Affairs Regulation that in carrying out waste management, the regional government levies a levy on each person for the services provided. The subjects of the levy include individuals or entities who use/enjoy waste services. Meanwhile, the waste as intended, according to the provisions of Article 2 paragraph (2) of the Minister of Home Affairs Regulation, consists of: a. household waste; And b. household waste. It is stated in Article 2 of the Minister of Home Affairs Regulation that the objects of retribution include: a. collection or collection of waste from the source to a temporary disposal location; b. transporting waste from its source and/or temporary disposal location to the final waste disposal/disposal location; And c. Providing a location for final disposal or destruction of waste
Minister of Home Affairs Regulation No 33/ 2010 on Guidelines for Waste Management	This regulation describes guidelines on waste management, including local government responsibilities, institutional arrangement, incentives and disincentives, cooperation and partnership, waste service retribution, compensation, community involvement, monitoring and development, reporting, and financing.	a. The local government has to develop a plan of waste reduction and waste management; b. Providing incentives and disincentives; c. Cost recovery (Retribution); d. The local government can cooperate with local governments or partner with business entities in waste management and e. Provision of compensation to the community as the negative impact of the final processing of waste.

Regulation	Summary	Requirement
Minister of Finance Regulation No. 26/PMK.07/2021 Concerning Funding Support from the State Budget for Waste Management in the Regions.	The Central Government can support APBN funding for waste management in the regions. APBN funding support includes Central Government Expenditures, Transfers to Regions, and/or Budget Financing. APBN funding support is provided by considering the state's financial capacity, fiscal sustainability, fiscal risk management, and the performance of Regional Governments and/or Business Entities. Waste Management includes limiting, reusing, sorting, collecting/recycling, transporting, processing, and final processing/destruction. Regional Governments prioritize those that meet the criteria of having regional regulations or regional head regulations that regulate Waste Management, allocating adequate funding for Waste Management in the APBD, having planning documents containing regional policy directions and strategies in implementing Waste Management, having regional apparatus that tasked with implementing Waste Management, implementing Waste Management that meets the criteria as determined by the relevant state ministries/technical institutions, and/or collaborating on Waste Management with other regions. The Ministry of Finance, Ministry of National Development Planning/National Development Planning Agency, Ministry of Home Affairs, and	Article 2, the government supports waste management regional through APBN funding. APBN Financing Support includes: a. Central Government Expenditure; B. Transfer to Regions; and/or c. Budget Financing. Recipients of APBN funding include: a. Local government; and b. Business entity (Badan Usaha). Article 6, the government can provide support through transfers to regions in the form of: a. DID; b. Physical DAK (Article 8, Physical DAK consist of: a. environmental sector; b. sanitation sector; and/or c. other fields in accordance with the provisions of statutory regulations); and c. Non-physical DAK (Article 10, Non-physical DAK consist of: a. Waste Management Service Fee Assistance Fund; and/or b. Other types of non-physical DAK are in accordance with statutory provisions).

Regulation	Summary	Requirement
	related state ministries/institutions can carry out monitoring and evaluation of APBN funding support for Waste Management in the regions every year, either individually or jointly under their authority.	
Minister of Public Work Regulation No 03/2013 on Implementation of Waste Infrastructure in Household and Similar Household Type Waste Management	This regulation focuses on the planning for, and implementation of, holistic municipal solid waste (MSW) master plan solutions at a regional or local level and covers the general planning of MSW services, landfill infrastructure design standards, the provision of MSW processing/disposal facilities and the closure/rehabilitation of landfills.	This regulation aims to: a. Realize the implementation of waste infrastructure that is effective, efficient, and environmentally sound; b. Increase the coverage of waste management services; c. Improve public health and environmental quality; d. Protect water resources, land, and air pollution as well as climate change mitigation; and e. Making waste as a resource. General plan implementation of waste infrastructure includes: a. Master plan; b. Feasibility studies; and c. Technical planning and waste management General planning for the implementation of waste infrastructure for big and metropolitan cities consists of: a. Master plan; and Feasibility study. Waste management activities include: a. Sorting, at least for 5 types of waste; - Waste containing hazardous and toxic materials; - Degradable waste; - Waste that can be reused; - Waste that can be recycled; and - Others. b. Performance sorting: - Every person at the source; - Management of residential areas, commercial areas, industrial areas, special areas, public facilities, social facilities, and other facilities; and - The regency/city. c. Waste Container:

Regulation	Summary	Requirement
		- Given a label or mark; - Differentiated materials, shape and/or colour of the container; and - Using a container that covered with lid. d. Waste collection, consists of: - Direct individual system; - Indirect individual system; - Direct communal system; - Indirect communal system; and - Street sweeping. Means of waste collection: - Motorcycle cart waste; - Hand cart waste; and/or - Bicycle cart waste. e. Waste transportation, with: - Dump truck/tipper truck; - Arm-roll truck; - Compactor truck; - Street sweeper vehicle; and - Trailer. f. Waste treatment, include; - Compaction; - Composting; - Recycling of waste materials; and - Turning waste into energy sources. g. Final waste processing is done using: - Control landfill methods; - Sanitary landfill methods; and/or - Environmentally friendly technology. Household waste, similar household type waste and waste residues can be disposed of to landfill until 2025. After 2025 only residue that can be disposed of to landfill.
Minister of Public Work Regulation No 19/2012 on Regional Spatial Arrangement	This Ministerial Regulation aims to realize the spatial arrangement area around the landfill that is more orderly and controlled.	Article 2 (1) This Ministerial Regulation is intended as a reference for the government District / municipality, waste management, and community

Regulation	Summary	Requirement
Guideline around Final Waste Processing Facility		In the arrangement of space around the landfill area. (2) This Ministerial Regulation aims to create a more orderly and controlled spatial arrangement around the landfill. (3) The scope of this Ministerial Regulation shall include: a. Determination of area around TPA; b. Determining the distance of subzona in the area around TPA; and c. Technical provisions of spatial arrangement of the area around TPA.
Minister of Public Works Regulation No 21/2006 on National Policy and Strategy of Waste Management System Development (KSNP-SPP)	This regulations outlines National Policy and Strategy of Waste Management System Development (KSNP-SPP) as guidelines for arrangement, implementation and development of environmental friendly solid waste management system.	Based on the Minister of Public Works regulation (21/PRT/M/2006), the Government of Indonesia issued a new guideline Law in 2008 that outlines the local governments' solid waste management responsibilities. The Government of Indonesia and the local governments must ensure that waste management is implemented properly, based on environmentally sound management practices, and in line with the law's objective. Key guideline components in the law include implementing activities/programs that concentrate on the 3R approach. Focusing on generation, collection, and disposal, the Law proposes a number of activities/programs to be implemented, including: a. Public awareness; b. Institutional strengthening; c. MSW collection improvement; and d. Improved disposal, recovery and reuse.
Minister of Environment and Forestry Regulation No. 21 of 2022 Concerning Procedures for Implementing Carbon Pricing	This Ministerial Regulation regulates general provisions, procedures for implementing carbon trading, performance-based payments, levies on carbon, other NEK implementation mechanisms, measurement, reporting and verification of NEK implementation, implementation of SRN PPI, certification of greenhouse gas emission reductions,	Article 2 mentions that implementing Climate Change Mitigation Actions can be carried out through implementing NEK. The implementation of NEK is carried out in the sectors: a. energy; b. waste; c. industrial processes and product use; d. agriculture; e. forestry; and/or f. Other sectors are in line with developments in science and technology. The implementation of NEK is carried out in sub-sectors:

Regulation	Summary	Requirement
	management of funds for trading carbon, stakeholder participation, monitoring and evaluation and closing provisions.	a. generator; b. transportation; c. building; d. solid waste; e. wastewater; f. waste; g. industry; h. rice fields; i. farm; j. plantation; k. forestry; l. peat and mangrove management; and/or m. Other sub-sectors are under development in science and technology. Article 3, The implementation of the NEK is carried out by: a. ministries/institutions; b. local government; c. private sector; And d. public. The implementation of NEK is carried out through the following mechanisms: a. Carbon Trading; b. Performance Based Pay; c. Levy on Carbon; and/or d. other mechanisms under development in science and technology. Based on article 39, private sector and/or government, regional government, and the community as NEK implementers have the mandate to: a. preparation of planning documents; And b. implementation results report. Preparation of planning documents should at least contain: a. general data on NEK implementers; b. emission measurements against the GHG Emission Baseline; c. measuring GHG Emission and GHG Absorption reduction targets; And d. need for financial resources, capacity building and technology transfer.
Minister of Environment and Forestry Regulation No.6 of 2022 National Waste Management Information System (SIPSN)	This regulation aims to support the implementation of waste management by the government and regional governments and encourage community participation in waste management. Therefore, it is necessary to build a waste management information system that is connected as a network of information systems.	Article 2 establishes a National Waste Management Information System that contains information provided by the provincial and regency/city governments regarding sources, generation, composition, and characteristics of waste, as well as facilities and other information related to managing household waste and household-like waste. It explains that the required waste composition information is in the form of physical components.

Regulation	Summary	Requirement
Minister of Environment and Forestry Regulation No. 6 of 2021 concerning Procedures and Requirements for Hazardous and Toxic Waste Management	This regulation aims to implement the provisions of Article 449 letters a to letter q of Government Regulation Number 22 of 2021 concerning the Implementation of Environmental Protection and Management and to integrate technical approvals and/or operational feasibility letters for the management of hazardous and toxic waste into the Environmental Approval	Article 2, this Ministerial Regulation regulates the procedures and requirements: a. determination of B3 Waste status; b. Reducing B3 Waste; c. B3 Waste Storage; d. B3 Waste Collection; e. Transport of B3 Waste; f. Utilization of B3 Waste; g. B3 Waste Processing; h. Hazardous Waste Landfill; i. Dumping (Disposal) of Waste; j. cross-border movement of hazardous waste; And k. application and issuance of PLB3 and SLO-PLB3 Technical Approval.
Minister of Environment and Forestry Regulation No. 14 of 2021 concerning Waste Management at the Waste Bank	This regulation is designed to ensure that waste management is carried out in a comprehensive and integrated manner from upstream to downstream with a circular economy approach by the central government, regional government, and the community so that it provides economic benefits, is healthy for the community, and is safe for the environment. Waste management can be carried out synergistically through the waste bank.	Based on Article 7, the waste received by the Waste Bank is waste sorted at source. Based on Article 11, Waste Bank Facilities as referred to in Article 3 letter b are differentiated based on the type of Waste Bank, which includes: a. BSI (Bank Sampah Induk); or b. BSU (Bank Sampah Umum). The BSI type Waste Bank facility must meet the requirements: a. have the means to group Waste based on the type of Waste; b. equipped with labels or signs on the facilities as intended in letter a; c. location area and Waste Management capacity according to needs; d. easy to access location; e. does not pollute the environment; f. have waste processing facilities; And g. have waste collection transportation means. BSU type Waste Bank facilities must meet the requirements: a. have the means to group Waste based on the type of Waste; b. equipped with labels or signs on the facilities as intended in letter a; c. location area and Waste Management capacity according to needs; d. easy to access location; And e. does not pollute the environment.

Regulation	Summary	Requirement
Minister of Environment and Forestry Regulation No. P.26/MENLHK/SETJEN/KUM.1/12/2020 concerning Handling of Bottom Ash and Fly Ash from Thermal Waste Processing	This regulation is designed to ensure that: - Bottom ash and fly ash resulting from thermal processing of waste can potentially have health impacts on the community and the environment, so it is necessary to develop guidelines for handling bottom ash and fly ash; - To provide legal certainty for those responsible for businesses and/or activities in handling bottom ash and fly ash resulting from the thermal processing of waste, it is necessary to develop norms, standards, procedures, and criteria for waste management as regulated in Law Number 18 of 2008 concerning Management Rubbish.	Based on Article 5, Final processing of Bottom Ash return activities is carried out at the facilities: - Sanitary landfill - Controlled landfill Based on Articles 6 and 7, advanced and final processing of Fly Ash return activities is carried out at the facilities: a. Advanced Processing - Chelate - Acid Extraction - Solidification - Smelting - Sintering; and/or - other ways in accordance with developments in science and technology. b. Final Processing
Minister of Environment and Forestry Regulation No. 75 of 2019 Concerning Road Map of Waste Reduction by Producer	This regulation is designed to guide and facilitate producers (brand owners, manufacturers, importers, retailers, and the food and beverage service industry, etc.) in implementing their EPR on reducing the waste generated from their goods, packaging, and services in plastics, paper, aluminum cans, and glass.	The regulation contains three components: (1) To prevent and limit the potential of waste generation as much as possible by implementing design for sustainability in the form of redesigned products and packaging, by phasing out single-use plastics, eliminating unnecessary and excessive packaging, making packaging more recyclable and reusable, creating packaging out of more recycled content, and producing more durable, returnable, rechargeable, and refillable goods; (2) To take back post-consumer products and packaging for reuse; and (3) To take back post-consumer products and packaging for recycling.

Regulation	Summary	Requirement
Minister of Environment and Forestry Regulation No. P.76/MENLHK/SETJEN/KUM.1/10/2019 concerning ADIPURA	This regulation aims to: - create districts/cities with a clean, shady, and sustainable living environment. The government and regional governments carry out waste management and green open spaces - implementing waste management and green open space, each district/city is required to develop regional policies and strategies for waste management and the establishment of green open space	Article 2 mentions that ADIPURA is a tool for monitoring waste management performance. The Minister supervises the performance of Regional Governments (district/city) in implementing Waste Management and Green Open Space. ADIPURA is carried out in stages: - planning - implementation - providing incentives and/or disincentives; and - coaching
Minister of Environment and Forestry Regulation No. P.10/2018 concerning JAKSTRADA	The MoEF was created to ensure uniformity in formulating provincial and district/city regional policies and strategies for managing household and household-like waste.	Article 5 mentions steps to conduct JAKSTRADA, as follows: - Waste generation identification - Collect and waste management - Conduct waste management mass balance - Setting strategies and targets for reduction and waste handling. Article 10 sets the target for waste reduction and handling as follows: - Waste reduction and handling targets Household and Household-Like Waste in JAKSTRANAS; And - Potential for waste generation as intended in Article 6 paragraph (1) à The potential for waste generation as referred to in Article 5 letter a is obtained from calculating the population multiplied by the waste generation estimation factor of 0.70 kg (seventy percent of kilo grams) per capita and/or using local estimation factors. The target for reducing household and household-like waste in JAKSTRANAS will be 30% by 2025.

Regulation	Summary	Requirement
		The target for Handling household and household-like waste in JAKSTRANAS is 70% by 2025.
Minister of Environment and Forestry Regulation No 59/2016 on Leachate Threshold Limit Value for Waste Final Disposal Activity	This regulation sets the threshold limit value for effluent of leachate treatment plant and the obligation to monitor groundwater and leachate effluent regularly from waste final disposal activity.	Key requirements stipulated: A. All waste final disposal activities must have an Environmental Permit. B. All leachate generated must be treated in leachate treatment plant (LTP) and meet threshold limit value before being discharged to the environment. C. Leachate effluent must be monitored at least once every month in an accredited laboratory. D. Monitoring well must be installed in the upstream and downstream of final disposal. E. Groundwater must be monitored at least once every three months and following the parameters as shown in the Appendix of this regulation. F. Report to the regent/mayor, copy to governor, minister and related institutions at least once every 3 months regarding leachate discharge and pH, daily waste input, climatology data, groundwater analysis and leachate analysis.
Minister of Environment Regulation No 13/2012 on Guidelines for Implementation of Reduce, Reuse and Recycle through Waste Bank	This regulation provides guidelines on implementation of 3R activities through waste banks, including requirements of waste banks, mechanism of waste banks, implementation of waste banks, institutional arrangement of waste banks and integration of extended producer responsibility (EPR) into waste banks.	Waste Bank is a place to collect and segregate the waste that can be reused/recycled that have economic value. Extended Producer Responsibility, hereinafter abbreviated as EPR is a strategy that was designed in order to integrate the environmental cost into the whole process of production of the goods until the product can no longer be used so that the environment becomes part of the cost component of the market price of the product. The scope of this regulation include: a. Waste Bank requirements; b. Mechanism of action of the Waste Bank; c. Implementation of the Waste Bank; and d. Who implementing the Waste Bank. Waste Bank requirements may include: a. Construction of buildings; and b. Management system of Waste Bank. Mechanism of action of Waste Bank referred to in include: a. Waste segregation; b. Delivery of waste to the Waste Bank; c. Weighing waste; d. Recording/archiving; e. Proceeds from sales of delivered waste put into savings books; and

Regulation	Summary	Requirement
Minister of Energy and Mineral Resources Regulation No. 4 of 2020 Concerning the Utilization of Renewable Energy for the Provision of Power amends Government Regulation No. 50/2017 on Utilization of Renewable Energy Sources for Power Supply	It establishes a framework for purchasing electricity generated from renewable energy sources. It mandates that PLN will conduct the procurement of electricity, including from WtE.	f. Revenue sharing between savers and Waste Bank management. This regulation stipulates that PLN must purchase electricity from Waste Power Plants (PLTSa) from power generation companies designated by the regional government as PLTSa developers in accordance with statutory provisions (Article 10). PLTSa can use the method of collecting and utilizing methane gas with sanitary landfill technology, anaerobic digestion, or something similar from the results of landfilling or through the use of heat or thermals using environmentally friendly technology.
Minister of Health Regulation No. 18 of 2020 concerning Medical Waste Management for Regional-Based Health Service Facilities	This regulation aims to in order to minimize the risk of environmental pollution and health impacts, misuse of Medical Waste from Health Service Facilities, and optimize the management of Medical Waste from Health Service Facilities in a region, Regional Based Medical Waste Management for Health Service Facilities is being implemented.	Article 5, Medical Waste Management for Regional-Based Health Service Facilities is carried out through the management of Medical Waste by: a. internal; and b. external. Article 6, Internal medical waste management includes the following stages: a. reduction and sorting; b. internal transport; c. temporary storage; and d. internal processing. Article 7, External medical waste management is carried out by the Manager through the following stages: a. external transport; b. collection; c. processing; And d. dumping. Article 13, Local Governments have the responsibility to facilitate the management of medical waste.

Appendix B Screening Form for Potential Environmental and Social Safeguards Issues

Streamlined Safeguards Review Process for Subsequent Subprojects

To ensure efficient safeguards compliance while maintaining rigorous risk management, the following approach will apply for subsequent subprojects:

- **Full prior review for first-time ES instruments for specific subproject.** Subprojects requiring preparation of first-time safeguards instruments, such as livelihood restoration plans (LRPs), resettlement plans (RPs), or other standalone environment and social instruments must submit complete packages/ documentation to AIIB for prior review and due diligence. This applies particularly to subprojects triggering requirements under ESS 2 (Land Acquisition and Involuntary Resettlement) or ESS 3 (Indigenous Peoples).
- **For the remaining subprojects only requiring ESIA.** For subsequent subprojects requiring only an ESIA, AIIB will conduct an initial review of the submitted completed *Screening Form for Potential Environmental and Social Safeguards Issues (Environmental and Social Screening Sheet)* presented in this Appendix of the ESMPF. The full ESIA documentation must be submitted concurrently with the completed Screening Form but will only undergo in-depth review if:
 1. The screening identifies new or high ES risks (e.g., affecting critical habitat, biodiversity, or protected areas, affecting vulnerable groups)
 2. The subproject design presents material deviations from previously approved approaches
 3. Stakeholder concerns or monitoring findings warrant closer examination

This streamlined ESIA review process assumes consistent application of lessons learned from AIIB's prior review of the ESIA of the first tranche subprojects.

Screening Form for Potential Environmental and Social Safeguards Issues

Administrative	
Project Title	
Scope of project and activity	
Local Counter Part Contact	
Site Description	
Name of Site	
Description of Site Location	
Land Ownership Status	

Question	Answer (Yes/No)	Required Documents If Yes
Is the project a landfill using a controlled/sanitary landfill system with a capacity $\geq$ 500 tons/day?		AMDAL
Is the project a landfill using a controlled/sanitary landfill system with a capacity $\leq$ 500 tons/day?		UKL-UPL
Is the project an integrated waste processing site (TPST) with physical and mechanical-biological processing with a capacity $\geq$ 500 tons/day?		AMDAL
Is the project an integrated waste processing site (TPST) with physical and mechanical-biological processing with a capacity between 50 and 500 tons/day?		UKL-UPL
Is the project an integrated waste processing site (TPST) with physical and mechanical-biological processing with a capacity $<$ 50 tons/day?		SPPL
Is the project an integrated waste processing site (TPST) involving thermal processing with a capacity $\geq$ 50 tons/day?		AMDAL
Is the project an integrated waste processing site (TPST) involving thermal processing with a capacity $<$ 50 tons/day?		UKL-UPL

Screening based Indonesia Procedure	
AMDAL type project	
UKL UPL type project	
SPPL type project	

Question	Answer (Yes/No)	AIIB Policy Triggered	Required Documents If Yes
Could the subproject lead to significant adverse environmental impacts that are sensitive, diverse, or unprecedented? Please provide a brief description:		Environmental Assessment Category A	Environmental and Social Impact Assessment (ESIA)
Do the impacts extend beyond the project sites or facilities and are they significant and irreversible? Please provide a brief description:		Environmental Assessment Category A	Environmental and Social Impact Assessment (ESIA)
Is the proposed project likely to have minimal or no adverse environmental effects? Please provide a brief justification:		Environmental Assessment Category C	No action needed beyond screening

Question	Answer (Yes/No)	AIIB Policy Triggered	Required Documents If Yes
Does the project fall into a category that is neither Category A nor Category C? Please provide a brief justification:		Environmental Assessment Category B	Limited ESIA or ESMP
Are the project impacts expected to have significant adverse social effects that are sensitive, diverse, or unprecedented? Please provide a brief description:		Environmental Assessment Category A or B	ESIA or Limited ESIA/ESMP
Will the project negatively impact physical cultural resources? Please provide a brief justification:		Physical Cultural Resources	Addressed in ESIA (ESIA with PCR Management Plan and/or Chance Find Procedures)
Will the project involve the conversion or degradation of non-critical natural habitats? Please provide a brief justification:		Habitats	Addressed in ESIA
Will the project result in the significant conversion or degradation of critical natural habitats?		Habitats	Not eligible
Does the sub-project involve involuntary land acquisition, loss of assets, access to assets, or loss of income sources or means of livelihood? Please provide a brief justification:		Involuntary Resettlement	Resettlement Action Plan
Are there any customary law communities in the sub-project area that are likely to be affected either negatively or positively by the proposed sub-project? Please provide a brief justification:		Indigenous People	Indigenous Peoples Plan
Will the project potentially impact the health and quality of forests or the rights and welfare of people dependent on forests, or does it aim to change the management, protection, or use of natural forests or plantations? Please provide a brief justification:		Forestry	Addressed in ESIA
Will the project potentially lead to significant impacts or significant conversion or degradation of critical natural forests or other natural habitats?		Forestry	Not eligible

Conclusion and Safeguards Instruments Required:

The sub project is classified as a Category _____ project as per Asian Infrastructure Investment Bank ESMPF, and the following safeguards instruments will be prepared:

1. _____
2. _____
3. _____
4. _____
5. _____

Appendix C Rapid Environmental Assessment Checklist for Solid Waste Management

Project Title:	
City	

Screening Question	Yes	No	Remarks
A. Project Siting			
Is the project area densely populated?			
Is the project area heavily developed?			
Is the project adjacent to or within any environmentally sensitive areas?			
- Cultural heritage site			
- Protected area			
- Wetland			
- Mangrove			
- Estuarine			
- Buffer zone of protected area			
- Special area for protecting biodiversity			
- Bay			
Will the project cause impacts to natural habitats, including terrestrial or aquatic ecosystems?			
B. Potential Environmental Impacts			
Will the project cause impacts associated with the transport of waste to the disposal site or treatment facility?			
Will the project cause significant impacts during the construction of access roads as an associated facility (dust, noise, land acquisition)?			
Will the project impair historical/cultural monuments/areas or cause loss/damage to these sites?			
Will the project lead to degradation of aesthetic and property value loss?			
Will the project cause nuisance to neighboring areas due to foul odor, influx of insects, rodents, etc.?			
Will the project involve the handling, transport, or disposal of hazardous waste materials?			
Will the project lead to contamination of natural water bodies due to improper hazardous waste disposal?			
Will the project result in relocation or involuntary resettlement of people?			

Screening Question	Yes	No	Remarks
Will the project disproportionately impact the poor, women, children, indigenous peoples, or other vulnerable groups?			
Will the project pose risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction and operation?			
Will the project affect or pose risks to nearby natural habitats or protected species?			
Is there personal protective equipment available at the landfill?			
Will the project pose community health hazards from odor, smoke from fires, and diseases transmitted by flies, insects, birds, and rats?			
Will the project cause deterioration of water quality as a result of contamination of receiving waters by leachate from the land disposal system?			
Will the project lead to contamination of ground and/or surface water by leachate from the land disposal system?			
Will the project lead to land use conflicts?			
Will the project cause pollution of surface and groundwater from leachate coming from sanitary landfill sites or methane gas produced from the decomposition of solid wastes in the absence of air, which could enter the aquifer or escape through soil fissures at places far from the landfill site?			
Is there an inadequate buffer zone around the landfill site to alleviate nuisances?			
Will the project cause road blocking and/or increased traffic during construction of facilities?			
Will the project cause noise and dust from construction activities?			
Will the project cause temporary silt runoff due to construction?			

Screening Question	Yes	No	Remarks
Will the project pose hazards to community health due to inadequate management of the landfill site caused by inadequate institutional and financial capabilities for the management of the landfill operation?			
Will the project cause emission of potentially toxic volatile organics from the land disposal site?			
Will the project cause surface and groundwater pollution from leachate and methane gas migration?			
Will the project lead to the loss of deep-rooted vegetation (e.g., trees) from the landfill site?			
Will the project cause an explosion or toxic response from accumulated landfill gas in buildings?			
Will the project cause contamination of air quality from incineration?			
Will the project pose health and safety hazards to workers from toxic gases and hazardous materials at the site?			
Will the project lead to social conflicts if workers from other regions or countries are hired?			
Are scavengers engaged in informally collecting recyclable wastes or organic wastes on roads, at final disposal sites, and other places, to earn income or livelihoods?			
Are scavengers subject to health risks?			
Are there ways to address the scavengers' health risks?			
Is there any organization of scavengers to increase their political voice?			
Are there any organizations that have an interest in the project?			
Will the subproject investment affect scavengers?			
Do scavengers at the landfill have other income besides scavenging?			
Do women and children play any role in the SWM system?			
Are there any political or ethnic issues associated with sharing a waste disposal site?			

Screening Question	Yes	No	Remarks
Are there any labor safety and health risks faced by SWM workers (formal and informal)?			
Have the waste transport drivers ever experienced or seen accidents inside or outside the landfill?			
Are the most vulnerable groups (e.g., households in close proximity to existing or planned waste transfer and disposal sites, scavengers, women) affected by current SWM practices?			
Are waste management service users currently satisfied with their existing solid waste collection points?			
Are service users aware of the need to manage solid waste better?			
Does the municipality/city corporation authority provide information and respond to complaints?			
Are there community safety risks due to both accidental and natural hazards, especially where the structural elements or components (e.g., landfill or incinerator) of the project are accessible to members of the affected community, or where their failure could result in injury to the community throughout project construction, operation, and decommissioning?			
Are there existing environmental contamination issues (e.g., soil, surface water, groundwater) at the project site?			
Is there a history of community grievances related to the project site?			
Do the communities around the TPA know about the project activities?			
Are there any community concerns regarding the project activities?			
Does the local community support the project?			
Are there existing impacts on local biodiversity and aquatic biota due to historical solid waste management practices?			
Is the local community currently or previously impacted by health issues related to solid waste management?			
Are there any health facilities close to the landfill?			

Screening Question	Yes	No	Remarks
Do people around the landfill have difficulty getting clean water?			
Do people have its own facilities?			
Have there been past instances of improper hazardous waste disposal at the site?			
Are there known issues with legacy waste leachate contamination in local water bodies?			
Are there unresolved legacy social impacts related to the displacement of communities for waste management facilities?			
Are there adequate environmental protection infrastructure at the project site?			
Are routine environmental monitoring carried out?			
Are there known legacy waste leachate contamination issues in local water bodies?			
Are there unresolved legacy social impacts related to the displacement of communities for waste management facilities?			
Will the project cause environmental or social impacts due to the establishment of a temporary disposal area during construction (e.g., leachate, odor, pollution)?			

Screening Questions	Score	Remarks
Location and Design of Project		
Is the siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?		
Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance		
Would weather, current and likely future climate conditions (e.g., prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity) likely affect the selection of project inputs over the life of project outputs (e.g., construction material)?		
Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?		
Performance of Project Outputs		

Screening Questions	Score	Remarks
Would weather/climate conditions, and related extreme events likely affect the performance (e.g., annual power production) of project output(s) (e.g., hydro-power generation facilities) throughout their design lifetime?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses resulting in a total score of 0 will categorize the project as low risk. If the total score is between 1 and 4, with no individual response scoring 2, the project will be assigned a medium risk category. A total score of 5 or more, or any single response scoring 2, will categorize the project as high risk.

Landfill Risk Assessment in accordance with MPWH Regulation 03/2013

No	Parameter	Weight	Sensitivity index			
			0.0-0.25	0.25-0.5	0.5-0.75	0.75-1.0
	I -Final Processing Place Criteria					
1	Distance to the nearest water source	69	>5000	2500-5000	1000-2500	<1000
2	Waste filling depth (m)	64	3	3-10	10-20	>20
3	Landfill Area (Ha)	61	<5	5-10	10-20	>20
4	Groundwater depth (m)	54	>20	10-20	3-10	<3
5	Soil permeability (1 x 10 -6 cm/sec	54	<0.1	1-0.1	1-10	>10
6	Groundwater quality	50	Not a concern	Water is drinkable	Can be taken if there is no alternative	Not drinkable
7	Distance to habitat (<i>wetlands</i> /conservation forest) (km)	46	>25	10-25	5-10	<5
8	Distance to nearest airport (km)	46	>20	10-20	5-10	<5
9	Distance to surface water (m)	41	>8000	1500-8000	500-1500	<500
10	Subsoil type (% clay)	41	>50	30-50	15-30	0-15
11	Age of location for future use (years)	36	<5	5-10	10-20	>20
12	Type of waste (urban/residential waste)	30	100% municipal waste n	75% urban waste, 25% residential	50% urban waste, 50% residential	>50% residential waste
13	Total amount of waste disposed of (tons)	30	< 104	104 -105	105 -106	>106
14	Amount of waste thrown away per day (tons/day)	24	<250	250-500	500-1000	>1000
15	Distance to the nearest settlement in the dominant wind direction (m)	21	>1000	600-1000	300-600	<300

No	Parameter	Weight	Sensitivity index			
			0.0-0.25	0.25-0.5	0.5-0.75	0.75-1.0
16	Flood return period (years)	16	>100	30-100	10-30	<10
17	Annual rainfall (cm/year)	11	<25	25-125	125-250	>250
18	Distance to city (km)	7	>20	10-20	5-10	<5
19	Community acceptance	7	It doesn't attract public attention	Receiving rehabilitation in open waste landfills	Accept closure of open waste landfills	Receive closure and remediation of open waste landfills
20	Ambient air quality CH ₄ (%)	3	<0.01	0.05-0.01	0.05-0.1	>0.1
II Characteristics of waste in landfill						
21	B3 content in waste	71	<10	10-20	20-30	>30
22	Trash fraction biodegradable(%)	66	<10	10-30	30-60	60-100
23	Waste filling age (years)	58	>30	20-30	10-20	<10
24	Waste moisture in landfill (%)	26	<10	10-20	20-40	>40
III Leachate characteristics						
25	Leachate BOD (mg/L)	36	<30	30-60	60-100	>100
26	Leachate COD (mg/L)	19	<250	250-350	350-500	>500
27	Leachate TDS (mg/L)	13	<2100	2100-3000	3000-4000	>4000

No	Risk Index (RI)	Hazard Evaluation	Recommended Action
1	601-1000	Very high	The landfill must be closed immediately due to environmental contamination or social issues.
2	300-600	Medium	The landfill should continue operating but be rehabilitated gradually into a controlled landfill.
3	<300	Low	The landfill should continue operating but be rehabilitated. The site has potential for long-term controlled landfill development.

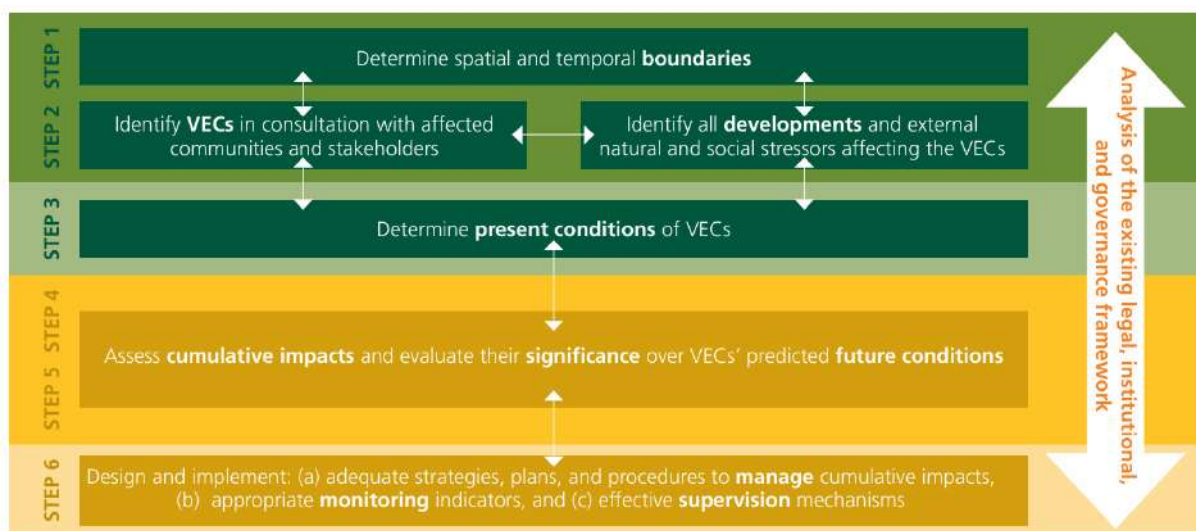
Appendix D Table of Contents for Cumulative Impact Assessment

Background

Cumulative impacts arise from the successive, incremental and/or combined effects of various project activities. Cumulative Impact Assessment (CIA) is the assessment of the impact on the environmental or social conditions, which results from the incremental impact of an action when added to other past, present or reasonably foreseeable actions, regardless of what agency or person undertakes such actions. Cumulative impact can result from individually minor but collectively significant actions taking place over a period of time.

This section will guide the sub-projects of SWM-SUD in preparing their Cumulative Impact Assessment (CIA) studies, complying the AIIB Environmental and Social Standards (ESSs) and GoI requirements.

The recommended process for implementing CIA can be taken from IFC's Good Practice Handbook: Cumulative Impact Assessment and Management and can follow a six-step approach illustrated in the diagram below:



The CIA can form an integral component of an ESIA or can be carried out as a separate process. CIA includes a desk review that, in consultation with the affected communities and other stakeholders, enables the developer to determine whether its activities are likely to significantly affect the viability or sustainability of selected valued environmental and social components (VECs). It is recommended that stakeholders are engaged as early as possible and throughout the decision-making process.

The Cumulative Impact Assessment must examine the interaction between the subproject's residual effects (i.e., those effects that remain after mitigation measures have been applied) and those associated with other past, existing, and reasonably foreseeable future projects or activities. The interaction of residual effects associated with multiple projects and/or activities can result in cumulative impacts, both positive and negative. The project's potential cumulative effects must consider both environmental and social components including:

- Potential residual project effects that may occur incrementally overtime;
- Consideration of other known relevant projects or activities within the specific study area boundaries, even if not directly related to the project;
- Potential overlapping impacts that may occur due to other developments, even if not directly related to the proposed subproject; and
- Future developments that are reasonably foreseeable and sufficiently certain to proceed

Terms of Reference for the Cumulative Impact Assessment for SWM-SUD

The following provides the Terms of Reference for the Cumulative Impact Assessment

Table of Contents for ToR	To be developed
Background of the Project	
Description of the Assignment Objectives	
Requested Services	
Required Outputs	
Expertise Required	
Implementation Arrangements	
Deliverables and Reporting	
Standard Format for the CIA Reports	

Appendix E Terms of Reference for Procurement

Appendix E Terms of Reference for Procurement

- A. **For Construction Work**, which includes all or part of activities such as construction, operation, maintenance, demolition, and reconstruction of a building

In implementing the Environmental and Social Management Planning Framework (ESMPF), the primary principle that must be adhered to is that the Employer must ensure that the Detailed Engineering Design (DED) and Technical Specifications have been prepared considering all identified environmental and social risks of the Construction Work. The Employer must also ensure that the Bill of Quantity (BoQ) and Owner Estimates (OE) include all cost items required for environmental and social management before, during, and after the construction execution.

Subsequently, during the bidding process, one of the requirements in the Request for Bids document is that the Bidders must submit a Management Strategy and Implementation Plan for Environmental, Social, Health, and Safety (ESHS) as part of their Technical Bid Documents based on the DED and Technical Specifications.

Bidders must submit the following two additional documents in their technical proposal:

1. Code of Conduct (Environmental, Social, Health, and Safety).

Bidders must provide a Code of Conduct that will be enforced for all employees and subcontractors, ensuring compliance with responsibilities towards Environmental, Social, Health, and Safety (ESHS) during the contract execution. This Code of Conduct must include risk identification and mitigation plans. The preparation of risk identification and mitigation must comply with the contract (General Conditions of Contract, Special Conditions of Contract, and Technical Specifications) and other risks as stipulated in the Environmental and Social Management Planning Framework (ESMPF).

Due to this obligation, **the Bidding Committee must attach the ESMPF document in the bidding documents or provide a link for bidders to access it.**

Risks to be identified, as regulated in the ESMPF, include but are not limited to: the influx of migrant workers, labor discrimination, the spread of infectious diseases, sexual harassment, gender-based violence, prohibited behavior, and crime, and maintaining a safe environment and other risks as required based on the scale and type of impact.

Additionally, Bidders must explain how this Code of Conduct will be implemented. This includes: how the Code of Conduct will be introduced or socialized, monitoring the understanding of employees/parties involved (suppliers and subcontractors), continuous awareness raising, training to be provided, funding, how these will be monitored, and how the Service Provider will handle any violations.

Contractors are required to implement the Employer-approved Code of Conduct during the contract execution.

2. Management Strategy and Implementation Plan (MSIP) to manage Environmental, Social, Health, and Safety (ESHS) risks

Bidders must submit a Management Strategy and Implementation Plan (MSIP) along with funding to manage the main Environmental, Social, Health, and Safety (ESHS) risks.

The Employer must specify the type of plans and specific risks in the Bidding Documents based on needs according to the type and scale of impacts, which may include:

- a. Traffic Management and Safety Plan (TMSP);

- b. Environmental Management and Monitoring Plan (EMMP);
- c. Construction Safety and Health Plan (CSHP), including prohibition of using underage and/or forced labor according to Indonesian regulations;
- d. Worker Management Plan, including recruitment plans, base camp management, worker insurance, rights and obligations, recruitment schemes, and others;
- e. Plan to obtain relevant approvals/permits as per regulations before commencing work, such as Environmental Permits, opening of Basecamp, Quarry, or Borrow Pit;
- f. Community Health and Safety Management Plan, including outreach strategies and socialization with affected communities, HIV/AIDS and Sexual Transmitted Diseases education, and prevention education for Gender-Based Violence (GBV) and Violence Against Children (VAC), demarcation of locations and access for residents with health and safety risks, pollution and waste management, and other community risks;
- g. Grievance mechanism for construction workers and affected communities;
- h. Other environmental and social risk management plans that may arise due to the execution of the work.

The above two additional documents, after the Bidder is declared the winner, must be included as **Contract Attachments**. During contract execution, the Contractor must seek the Employer's approval for the Management Strategy and Implementation Plan (MSIP) along with funding to manage the main Environmental, Social, Health, and Safety (ESHS) risks, and then implement them according to the Contract.

B. For Construction Work Supervision Consultants, i.e., companies or experts overseeing Construction Work

In implementing the Environmental and Social Management Planning Framework (ESMPF), the primary principle to adhere to is that the Employer, in preparing the Terms of Reference (ToR), must include the scope of consultant services in environmental and social management aspects, which include:

1. Ensuring that the contractor's performance complies with the two contractor documents, namely (a) Code of Conduct (Environmental, Social, Health, and Safety); and (b) Management Strategy and Implementation Plan (MSIP) to manage Environmental, Social, Health, and Safety (ESHS) risks;
2. Reviewing and approving the Contractor's Environmental and Social Management Plan, including all updates and revisions (no less than once every six months);
3. Reviewing and approving all proposals, schedules, and all contractor documents related to environmental and social aspects;
4. Reviewing and considering all environmental and social risks and impacts;
5. Conducting audits, supervision, and/or inspections at any location related to Construction Work, verifying the Contractor's compliance with all environmental and social requirements, with or without the presence of the contractor's and/or client's representatives, as necessary, but not less than once a month;

6. Auditing and examining the Contractor's accident records, community relations records, monitoring findings, and other related environmental and social documentation;
7. Agreeing on corrective actions and timeframes for their implementation in case of non-compliance with the Contractor's obligations on environmental and social aspects;
8. Attending meetings, including site meetings, project progress meetings to discuss and agree on appropriate actions to ensure compliance with environmental and social obligations;
9. Ensuring that the Contractor's environmental and social reporting (content and schedule) complies with the Contractor's obligations stated in the contract;
10. Reviewing and providing timely feedback on the Contractor's environmental and social documentation (including regular reports and incident reports) regarding the accuracy and effectiveness of the documentation;
11. Acting as a liaison, from time to time as necessary, with stakeholders to recognize and discuss actual or potential environmental and social issues;
12. Establishing and maintaining a grievance mechanism, including the types of complaints recorded and how to protect confidentiality, such as those reporting suspected gender-based violence/sexual exploitation and abuse;
13. Ensuring that any incidents of gender-based violence/sexual exploitation and abuse and complaints that concern the consultant are registered in the grievance mechanism.

Additionally, in preparing the ToR and Owner Estimates (OE), the Employer must also include the Team Composition & Qualification Requirements for the key experts in the Environmental and Social aspects. The key experts must have adequate qualifications and experience to provide Environmental and Social supervision (including gender-based violence/sexual exploitation and abuse), Health, and Safety.

Subsequently, during the bidding process, one of the requirements in the Request for Proposal document is that Bidders must submit (in their Technical Proposal) Environmental, Social, Health, and Safety Conduct Guidelines that will apply to the key experts and non-key experts of the Consultant, to ensure compliance with good Environmental, Social, Health, and Safety practices.

After the Bidder is declared the winner, the ToR and Environmental, Social, Health, and Safety Conduct Guidelines above must be included as **Contract Attachments**. The winning Consultant will be required to implement these documents according to the Contract.

Appendix E Terms of Reference for Procurement

- A. **Untuk Pekerjaan Konstruksi**, yaitu keseluruhan atau sebagian kegiatan yang meliputi pembangunan, pengoperasian, pemeliharaan, pembongkaran, dan pembangunan kembali suatu bangunan

Dalam rangka penerapan *Environmental and Social Management Planning Framework (ESMPF)*, prinsip utama yang harus dipatuhi adalah Pemberi Kerja harus memastikan bahwa *Detil Engineering Design (DED)* dan *Spesifikasi Teknis* telah disusun dengan telah mempertimbangkan seluruh identifikasi risiko lingkungan dan sosial dari Pekerjaan Konstruksi. Pemberi Kerja juga harus memastikan Bill of Quantity (BoQ) dan Owner Estimates (OE) telah mencakup seluruh item biaya yang dibutuhkan dalam rangka pengelolaan lingkungan dan sosial baik sebelum, selama dan sesudah pelaksanaan konstruksi.

Setelah itu, dalam proses lelang, salah satu yang harus dipersyaratkan dalam Dokumen Lelang (*Request for Bids*) adalah Peserta Lelang harus menyampaikan *Strategi Pengelolaan dan Rencana Pelaksanaan terhadap Lingkungan, Sosial, Kesehatan dan Keselamatan Kerja (LSK3)* pada Dokumen Penawaran Teknis berdasarkan *DED* dan *Spesifikasi Teknis*.

Peserta Lelang harus menyampaikan tambahan 2 (dua) dokumen berikut dalam penawaran teknisnya, yaitu:

1. *Kode Etik (Lingkungan, Sosial, Kesehatan dan Keselamatan Kerja)*.

Peserta Lelang harus menyampaikannya Kode Etik yang akan diberlakukan bagi seluruh karyawan dan subkontraktornya, untuk memastikan kepatuhan pada tanggung jawab terhadap Lingkungan, Sosial, Kesehatan, dan Keselamatan (LSK3) dalam pelaksanaan kontrak. Kode Etik tersebut harus dilengkapi dengan identifikasi risiko yang harus ditangani serta rencana mitigasinya. Penyusunan identifikasi risiko dan mitigasi tersebut harus sesuai dengan kontrak (Syarat-Syarat Umum Kontrak, Syarat-Syarat Khusus Kontrak dan Spesifikasi Teknis), dan risiko lainnya sesuai dengan Dokumen Environmental and Social Management Planning Framework (ESMPF).

Karena adanya kewajiban tersebut di atas, **Panitia Lelang harus melampirkan Dokumen ESMPF pada dokumen lelang atau memberikan *link* agar peserta lelang dapat mengaksesnya.**

Risiko yang harus identifikasi diatur dalam ESMPF, antara lain tetapi tidak terbatas pada: masuknya tenaga kerja pendatang, diskriminasi tenaga kerja, penyebaran penyakit menular, pelecehan seksual, kekerasan berbasis gender, perilaku terlarang dan kejahatan, dan menjaga lingkungan yang aman dan risiko lain sesuai dengan kebutuhan berdasarkan skala dan jenis dampaknya.

Selain itu, Peserta Lelang harus menjelaskan bagaimana Kode Etik ini akan dilaksanakan. Ini akan mencakup: bagaimana Kode Etik akan diperkenalkan atau rencana sosialisasi, pemantauan akan pemahaman para karyawan/ pihak yang terlibat (pemasok dan subkontraktor), dan peningkatan kepedulian secara terus menerus kepada mereka, pelatihan yang akan diberikan, pembiayaan, bagaimana hal-hal tersebut akan dipantau dan bagaimana tindakan yang akan dilakukan Penyedia Jasa untuk menangani setiap pelanggaran.

Kontraktor wajib menerapkan Kode Etik yang disetujui Pemberi Kerja pada saat pelaksanaan kontrak.

2. *Strategi Pengelolaan dan Rencana Pelaksanaan (SPRP) untuk mengelola risiko Lingkungan, Sosial, Kesehatan dan Keselamatan Kerja (LSK3)*

Peserta Lelang harus menyampaikan Strategi Pengelolaan dan Rencana Pelaksanaan (SPRP) beserta pembiayaan untuk mengelola risiko-risiko utama Lingkungan, Sosial, Kesehatan, dan Keselamatan Kerja (LSK3).

Pemberi Kerja harus mencantumkan jenis rencana dan risiko tertentu pada Dokumen Lelang sesuai dengan kebutuhan berdasarkan jenis dan skala dampak, yaitu dapat mencakup:

- a. Rencana Manajemen dan Keselamatan Lalu Lintas (RMKL);
- b. Rencana Kerja Pengelolaan dan Pemantauan Lingkungan (RKPPL);
- c. Rencana Keselamatan dan Kesehatan Kerja Konstruksi (RK3K), termasuk antara lain larangan penggunaan pekerja dibawah umur dan/atau pekerja paksa sesuai dengan peraturan perundang-undangan Indonesia
- d. Rencana Pengelolaan Pekerja, termasuk rencana perekrutan, pengelolaan basecamps, asuransi pekerja, hak-hak dan kewajiban pekerja, skema perekrutan, dan lain-lain.
- e. Rencana untuk memperoleh Persetujuan/Perizinan yang relevan sesuai peraturan perundang-undangan sebelum dimulainya pekerjaan seperti Izin Lingkungan, pembukaan Basecamp, Quarry atau Borrow Pit.
- f. Rencana Manajemen Keselamatan dan Kesehatan Masyarakat terdampak, antara lain strategi pendekatan dan sosialisasi dengan masyarakat terdampak, penyuluhan mengenai HIV/AIDS dan Penyakit Seksual Menular serta penyuluhan pencegahan Kekerasan Berbasis Gender (Gender Based Violence/GBV) dan Kekerasan Terhadap Anak (Violence Against Children/VAC), demarkasi lokasi dan akses warga yang memiliki resiko kesehatan dan keselamatan, manajemen polusi dan limbah, dan risiko lain bagi masyarakat.
- g. Mekanisme penanganan keluhan bagi pekerja konstruksi dan masyarakat yang terdampak
- h. Rencana manajemen resiko lingkungan dan sosial lain yang mungkin timbul akibat pelaksanaan pekerjaan.

Tambahan 2 (dua) dokumen berikut di atas, setelah Peserta Lelang ditetapkan sebagai pemenang lelang, harus dimasukkan sebagai **Lampiran Kontrak**. Pada saat pelaksanaan kontrak, Kontraktor harus meminta persetujuan Pemberi Kerja atas Strategi Pengelolaan dan Rencana Pelaksanaan (SPRP) beserta pembiayaan untuk mengelola risiko utama Lingkungan, Sosial, Kesehatan, dan Keselamatan Kerja (LSK3)., kemudian menerapkannya sesuai Kontrak.

B. Untuk Konsultan Pengawas Pekerjaan Konstruksi, yaitu Perusahaan atau tenaga ahli yang melakukan pengawasan atas Pekerjaan Konstruksi

Dalam rangka penerapan *Environmental and Social Management Planning Framework (ESMPF)*, prinsip utama yang harus dipatuhi adalah Pemberi Kerja dalam menyusun Kerangka Acuan Kerja (KAK) harus mencantumkan lingkup jasa konsultan pada aspek pengelolaan lingkungan dan sosial, yaitu mencakup:

1. memastikan bahwa kinerja kontraktor sudah sesuai dengan 2 (dua) dokumen milik Kontraktor yaitu (a) Kode Etik (Lingkungan, Sosial, Kesehatan dan Keselamatan Kerja); dan (b) Strategi Pengelolaan dan Rencana Pelaksanaan (SPRP) untuk mengelola risiko Lingkungan, Sosial, Kesehatan dan Keselamatan Kerja (LSK3)
2. mengkaji dan menyetujui Rencana Manajemen Lingkungan dan Sosial Kontraktor, termasuk semua pembaharuan dan revisi (tidak kurang dari sekali setiap 6 bulan);
3. mengkaji dan menyetujui semua proposal, jadwal dan semua dokumen Kontraktor yang terkait aspek lingkungan dan sosial;
4. mengkaji dan mempertimbangkan semua risiko dan dampak lingkungan dan sosial;
5. melakukan audit, supervisi, dan/atau inspeksi di lokasi manapun terkait Pekerjaan Konstruksi, mengesahkan kepatuhan Kontraktor terhadap semua persyaratan lingkungan dan sosial, dengan atau tanpa kehadiran perwakilan dari kontraktor dan/atau klien, dimana perlu, namun tidak kurang dari sekali sebulan

6. melakukan audit dan pemeriksaan pada buku catatan kecelakaan Kontraktor, catatan hubungan dengan masyarakat, memantau temuan-temuan dan dokumentasi lain terkait lingkungan dan sosial;
7. menyepakati tindakan perbaikan dan kerangka waktu untuk penerapannya di saat terjadi ketidakpatuhan pada kewajiban-kewajiban Kontraktor pada aspek Lingkungan dan Sosial;
8. menghadiri rapat-rapat termasuk rapat di lokasi proyek, rapat yang membahas perkembangan proyek untuk mendiskusikan dan menyepakati tindakan-tindakan yang sesuai untuk memastikan adanya kepatuhan pada kewajiban-kewajiban lingkungan dan sosial;
9. memeriksa bahwa pelaporan Kontraktor pada aspek lingkungan dan sosial yang sesungguhnya (isi dan jadwal) sesuai dengan kewajiban-kewajiban Kontraktor yang tercantum dalam kontrak;
10. mengkaji dan memberi masukan, pada saat yang tepat, terhadap dokumentasi Kontraktor pada aspek lingkungan dan sosial (termasuk laporan reguler dan laporan insiden) mengenai akurasi dan efektivitas dokumentasi.
11. bertindak sebagai penghubung, dari waktu ke waktu dimana perlu, dengan para pemangku kepentingan untuk mengenali dan mendiskusikan isu-isu lingkungan dan sosial yang nyata atau potensial.
12. menetapkan dan mempertahankan mekanisme penanganan keluhan termasuk jenis keluhan yang dicatat dan bagaimana melindungi kerahasiaan, misalnya dari mereka yang melaporkan dugaan kekerasan berbasis gender/eksploitasi dan pelecehan seksual.
13. Memastikan setiap kejadian kekerasan berbasis gender/eksploitasi dan pelecehan seksual dan keluhan yang menjadi perhatian konsultan terdaftar dalam mekanisme penanganan keluhan.

Selain itu, dalam penyusunan KAK dan Owner Estimates (OE), Pemberi Kerja juga harus mencantumkan Komposisi Tim & Syarat-Syarat Kualifikasi untuk para Tenaga Ahli Utama yang membidangi aspek Lingkungan dan Sosial. Para Tenaga Ahli Utama harus memiliki kualifikasi dan pengalaman memadai untuk memberikan pengawasan Lingkungan dan Sosial (termasuk kekerasan berbasis gender/eksploitasi dan pelecehan seksual), Kesehatan, dan Keselamatan.

Setelah itu, dalam proses lelang, salah satu yang harus dipersyaratkan dalam Dokumen Lelang (*Request for Proposal*) adalah Peserta Lelang harus menyampaikan (dalam Penawaran Teknis-nya) *Pedoman Perilaku Lingkungan, Sosial, Kesehatan, dan Keselamatan* yang akan diberlakukan bagi Para Tenaga Ahli Utama dan Non-Tenaga Ahli Utama Konsultan, untuk memastikan kepatuhan dengan praktik Lingkungan, Sosial, Kesehatan, dan Keselamatan yang baik.

Setelah Peserta Lelang ditetapkan sebagai pemenang lelang, KAK dan *Pedoman Perilaku Lingkungan, Sosial, Kesehatan, dan Keselamatan* di atas harus dimasukkan sebagai **Lampiran Kontrak**. Konsultan yang ditetapkan sebagai Pemenang Lelang akan diwajibkan untuk menerapkan dokumen-dokumen tersebut sesuai Kontrak.

Appendix F Template of Environmental and Social Code of Practice

Code of Ethics (Environment, Social, Occupational Health and Safety) and Public Health and Safety

The Selection Participants must submit their Code of Ethics that will apply to all employees and subcontractors to ensure compliance with their Environmental, Social, Health, and Safety (ESHS) and Public Health and Safety responsibilities during the execution of the contract. Specifically, regarding the Code of Ethics for the Prevention of Gender-Based Violence (Exploitation and Sexual Harassment/Violence and Violence Against Children), the Selection Participants are required to refer to the sample Code of Ethics

[Note: Complete and include relevant risks to be prevented and managed through the implementation of the Code of Ethics according to the contract (SSUK, SSKK, Specifications) and environmental and social documents (AMDAL, UKL-UPL, ESMF, LARAP, etc.). The Code of Ethics must be signed by the parties involved in the execution of the tendered work, including managers, employees, and subcontractors. Risks that need to be considered and included in the Code of Ethics should refer to documents such as AMDAL, UKL-UPL, the project's Environmental and Social Management Framework (ESMF), and/or other relevant risk assessments and should include but are not limited to the following aspects: a) risks related to the influx of migrant workers, labor and community discrimination, the spread of infectious diseases, sexual harassment, gender-based violence (exploitation and sexual harassment/violence), violence against children, prohibited behavior and crime, and maintaining a safe environment, etc., based on the scale and type of impact].

In addition, the Selection Participants must explain how this Code of Ethics will be implemented. This will include: how it will be introduced or the plan for socialization, understanding, and continuous awareness-raising to all employees/involved parties (suppliers and subcontractors), the training that will be provided, financing, how it will be monitored, and how the Service Provider will handle any violations or cases, such as sexual exploitation and harassment/violence and violence against children. The activities required for the implementation of the Code of Ethics must be budgeted in the quantity and price list. The Contractor is required to implement the approved Code of Ethics during the contract execution.

Management Strategy and Implementation Plan (SPRP) for managing Environmental, Social, Occupational Health and Safety (ESHS), and Public Health and Safety Risks

The Selection Participants must submit the Management Strategy and Implementation Plan (SPRP) along with the financing to manage key ESHS and Public Health and Safety risks, as follows:

- [Note: insert the name of the plan and specific risks as required based on the type and scale of impact];
- Traffic Management and Safety Plan (RMKL);
- Environmental Management and Monitoring Work Plan (RKPPL);
- Construction Occupational Health and Safety Plan (RK3K), including, among others, the prohibition of using underage and/or forced labor in accordance with Indonesian regulations and the provisions in the Labor Management Procedure (LMP) within the Environmental and Social Management Framework (ESMF);
- Worker Management Plan, including recruitment plans, basecamp management, worker insurance, worker rights and obligations, recruitment schemes, etc.;
- Plan for obtaining relevant approvals/permits according to regulations before the commencement of work, such as Environmental Permits, basecamp opening, quarry, or borrow pit;

- Management Plan for the Health and Safety of the Affected Community, including strategies for engagement and socialization with the affected community, outreach regarding HIV/AIDS and sexually transmitted diseases, as well as outreach on the prevention of Gender-Based Violence (GBV) and Violence Against Children (VAC), location demarcation, and access for residents who are at risk of health and safety, pollution, and waste management, etc. Specifically for the prevention of risks and management of impacts/cases of Gender-Based Violence (Exploitation and Sexual Harassment/Violence and Violence Against Children) arising from activities within the scope of work, the Selection Participants must explain how preventive activities and impact management will be carried out. The Selection Participants are required to explain how cooperation with Service Providers (both government and/or non-governmental organizations/NGOs) competent in managing Gender-Based Violence (Exploitation and Sexual Harassment/Violence and Violence Against Children) risks will be established (for example, a contract agreement with NGOs and/or competent government institutions, provision of experts, etc.).
- Complaint handling mechanisms for construction workers and affected communities, both directly and indirectly impacted;
- Management plan for other environmental and social risks that may arise due to the execution of the work.
- If the land acquisition process has not been completed and/or there are conflicts, the Selection Participants must refer their ESHS and Public Health and Safety planning to the Land Acquisition and Resettlement Action Plan (LARAP) document. [Note: PPK provides the LARAP document/link to the Selection Participants].
- The Contractor must submit requests for approval and then implement the aforementioned plans and risks, according to the Special Conditions of Contract (SSKK), covered in the agreed and described Management Strategy and Implementation Plan.

Code of Ethics : Environmental , Social , Health and Safety Work (LSK3) and Public Health and Safety

Participant Election must submit a Code of Ethics that will apply for employees and subcontractors from the Election Data Sheet (LDP). Code of Ethics / Guidelines Behavior intended must ensure compliance to provision aspect Environment, Social , Health and Safety (LSK3) and Public Health and Safety .

Code of Ethics need consider management risk environmental, social , health and safety work (L2K3) and Public Health and Safety , including :

1. Compliance with applicable laws and regulations. Code of Ethics need include statement that " child " is an aged person under 18 years old . Contractors and sub- contractors (incl supplier) is required For ensure No employ children and follow Management Procedures Project workers (*Labor Management* Procedure) (see document Framework Management Environmental and Social / *Environmental and Social Management Framework* / ESMF);
2. Compliance to regulation regarding K3 for protect society (incl public vulnerable) , workers from contractors and sub- contractors (example : use of Personal Protective Equipment /PPE, prevention accident work , use material friendly raw materials and materials health , etc.);
3. Prohibition use illegal materials accordingly with regulation legislation;
4. Prevention practices discriminatory to society (society (incl public vulnerable) , workers from contractors and sub- contractors) , based on social status economy , ethnicity , race , gender, religion, language, marital status , age , condition physical (mental and physical) , orientation sexual , etc .;
5. Respect to culture, tradition and order social in interaction with public around with public around ;
6. Prevention and management risk Gender Based Violence (exploitation and harassment/sexual violence), Violence Against Children (VAC) . Sanctions For every form violation.
7. Protection to children, incl No employ child, avoid interaction to child and ensure the project site safe;
8. Ensure sanitation and environment healthy work (example: availability of clean water and installations Waste Water Treatment (IPAL), proper worker basecamps, etc.) ;
9. Ensure No There is conflict interest in implementation work (example : in recruitment worker , gift contract to suppliers and sub- contractors , etc.)
10. Reporting to giver Work For violation to code ethics / guidelines behavior.
11. Ensure protection to Who just report it violation code ethics / guidelines behavior.

Code of Ethics / Guidelines Behavior must be written in simple and clear Indonesian and marked handled by everyone personnel and workers involve in implementation tendered work. Personnel and/ or worker covers worker direct good recruits directly by the contractor nor no directly by suppliers and sub-contractors.

In addition, Participants Election must provide an outline about what about the Code of Ethics This will implemented , includes plan socialization / consultation and understanding to all over employees / parties involved (suppliers and subcontractors) , training What will give ,how? That will monitored and how Contractor propose For handle every violation.

Before mobilization personnel and/ or workers, Participants Chosen selection need ensure that every personnel and/ or worker :

1. Accept copy of the Code of Ethics / Guidelines Behavior.
2. Accept explanation and training about substance and requirements contained in the Code of Ethics / Guidelines Behavior.

3. Agree For obedient to the Code of Ethics / Guidelines Conduct and sign the Code of Ethics / Guidelines Behavior that becomes unity in contract Work.
4. Understand that violation of the Code of Ethics / Guidelines Treat own sanctions, and if required can result dismissal and/ or reporting to party authorities.

Project Code of Ethics / Code of Conduct

Preventing Gender Based Violence (GBV) and Violence against Children (VAC)

The Contractor is committed to ensuring that the Project is implemented in a way that minimizes negative impacts on the local environment, communities and its workers. This project will be carried out by respecting environmental, social, health and safety (ESHS) standards, and ensuring that appropriate occupational health and safety (K3) standards are met. The company is also committed to creating and maintaining an environment where gender-based violence (GBV) and violence against children (VAC) have no place, and where such incidents will not be tolerated by employees, sub-contractors, suppliers, partners or representatives. from the contractor.

Therefore, to ensure that all involved in the project are aware of this commitment, the company is committed to the following core principles and minimum standards of conduct that will apply to all company employees, partners and representatives, including sub-contractors and suppliers, without exception

General

1. Contractor - and with This all employees, partners, representatives , sub- contractors , and suppliers - committed For comply all laws , rules and regulations relevant national.
2. Contractor committed for fully apply Plan Management Environmental and Social Their (CESMP) Contractor.
3. Contractor committed For treat women, children (people below aged 18 years), and male with respect regardless from race , color skin , language , religion, opinion political or others , origins nationality , ethnicity or social , property , disability , birth or other status . GBV and VAC acts violate commitment.
4. Companies must ensure that interaction with member public local done with respect and without discrimination.
5. Degrading, threatening, harassing, abusive language and behaviour is not proper in a way culture, or provocative in a way sexual prohibited among all employee companies , partners and representatives , including sub- contractors and suppliers .
6. Contractor will follow all instructions reasonable work (including environmental and social norms).
7. Contractor will protect and ensure use property with true (e.g., for prevent theft, carelessness , or waste).

Health and safety

1. Contractor will ensure that Plan Management safety and health work (K3) Project implemented in a way effective by staff companies, as well as sub- contractors and suppliers .
2. Contractor will ensure that everyone on site wearing clothes protector self-determined and appropriate, prevent possible accident avoided and reported condition or practices that give rise to danger safety or threaten environment .
3. Contractor will:
 - i. forbid use alcohol during activity Work.
 - ii. forbid consumption narcotics or other substances that can damage every moment.
4. Contractor will ensure that facility adequate sanitation available on site and in every accommodation, workers provided for those working on the project

Violence Gender Based and Violence Towards Children

1. The GBV/SEA or VAC action is violation heavy and therefore sentenced sanctions, which can be covers punishment and/ or termination connection work , and if required referred to the Police for action more carry on .
2. All GBV/SEA and VAC forms, incl *grooming* (building process relationships , trust and relationships emotional with child or child young so perpetrator can manipulate , exploit , and commit violence to they do not can accepted , regardless from whether matter the happened on location work , environment place work , in the camp worker or inside environment public local .
 - i. Abuse Sexual - for example, doing action sexual ones are not preferred , request on enjoyment sexual , and verbal behavior or physique others , which are of a nature sexual , incl action fine from behavior - prohibited .
 - ii. Help sexual - for example, making promise or favorable treatment based on action sexual - or another form of behavior insult , demean or exploitative , prohibited .
 - iii. Contact or activity sexual with child below 18 years old - incl via digital media - prohibited. Wrong about age child it's not defense . Agreement from neither do children defense or reason.
3. Except If There is agreement full¹ from all parties involved, workers No will do interaction sexual with member public around. Including involving relationships reject deliver / promise giving benefit actual (monetary or non- monetary) to member public with rewards sex - activity sexual sort of That considered " no consensual " in scope Guidelines Behavior This .
4. Apart from sanctions company, prosecution law for those who do GBV/SEA or VAC action will done If required.
5. All employees, incl volunteers and sub- contractors are highly encouraged For report conjecture or action actual GBV/SEA and/ or VAC by others workers , both in the same company or No . Report must made in accordance with Reporting Procedures Allegations of GBV and Project VAC.
6. Manager required For report and act For handle correct allegations and actions of GBV/SEA and VAC happen Because they own not quite enough answer For straighten up commitment company and responsibility answer on report they.

Implementation

For ensure that the principles above implemented in a way effective, contractor committed For ensure that:

1. All manager signed the ' Guidelines Behavior Managers ' Project detailing not quite enough answer they for carry out commitment company and enforce not quite enough answer in the ' Guidelines Behavior Individuals '.
2. All employee sign Guidelines Behavior Individual listed projects agreement they for comply ESHS and K3 standards, and not involved in activities included GBV/SEA or VAC category.
3. Displaying Guidelines Corporate and Individual Behavior in a way clear and visible in the camp workers, offices, and in public areas location Work. Example of a public area including waiting area, room rest and lobby, cafeteria and clinic areas health .
4. Ensure that copy Guidelines Corporate and Individual Behavior published and distributed translated to in appropriate language For used in the work area as well as for staff anywhere internationally Language original they.
5. right person nominated as the company's 'Focal point' For handle GBV/SEA and VAC issues, incl represent company in the GBV/SEA and VAC Complaints Team consisting of from representative from clients, contractors , consultants supervisor , and provider service local .
6. Ensure that GBV/SEA and VAC Action Plans implemented and revised in a way effective in accordance need.

¹ Agreement defined as choice based on underlying information intention , acceptance , or agreement voluntary individual For do something . There is n't any possible approval found when reception or agreement the obtained with use threats , coercion or form coercion other , kidnapping , fraud , or misrepresentation . In accordance with Convention United Nations on Children's Rights, the World Bank considers that agreement No can given by the children below 18 years old , even If Constitution national country of place Code of Ethics enforced own older age low . Confidence wrong about age children and consent from child it's not defense .

7. That contractor in a way effective carry out The agreed GBV/SEA and VAC Action Plan, provides bait come back to FGRM Project For appropriate fixes and updates .
8. All employee attend training orientation before start on -site work For ensure they understand commitment company to ESHS and K3 standards, and Guidelines GBV/SEA and Project VAC Behavior .
9. All employee attend training must before commencement work For strengthen understanding project ESHS and K3 standards and Guidelines GBV/SEA and VAC behavior , as well training relevant additions as reminder .

I with This confess that I has read Guidelines Behavior Contractor before, and above Name company agree For comply standards contained therein . I understand roles and responsibilities answer I For support project K3 and ESHS standards, and for prevent and respond GBV/SEA and VAC incidents . I understand that every actions that don't consistent with Guidelines Behavior of this Company or failure For act as mandated by the Guidelines Behavior of this Company can result action disciplinary.

Company name: _____

Signature: _____

ID card name: _____

Position: _____

Date: _____

Manager's Code of Conduct

Preventing Gender Based Violence (GBV) and Violence against Children (VAC)

Managers at all levels have the responsibility to uphold the company's commitment to implementing ESHS and K3 standards, as well as preventing and addressing Gender-based Violence (GBV) and Violence against Children (VAC). This means that managers have a heightened responsibility to create and maintain an environment that respects these standards and prevents GBV/SEA and VAC. Managers need to support and promote the implementation of the Company's Code of Conduct. For this reason, managers must comply with this Manager's Code of Conduct and sign the Individual Code of Conduct. This commits them to support the implementation of the CESMP and OSH Management Plan and develop systems that facilitate the implementation of the GBV/SEA and VAC Action Plans. They need to maintain safe workplaces, as well as GBV-free and VAC-free environments at work and in local communities. These responsibilities include but are not limited to:

Implementation

1. To ensure maximum effectiveness of the Contractor and Individual Code of Conduct.
 - i. Clearly display the Contractor and Individual Code of Conduct in prominent locations in worker camps, offices, and in public areas of the work site. Examples of public areas include waiting areas, break rooms and lobbies, cafeteria areas and health clinics.
 - ii. Ensure that published and distributed copies of the Code of Conduct for Contractors and Individuals are translated into languages appropriate for use in the workplace area as well as for any international staff in their native language
2. Orally and in writing, explain the Contractor and Individual Code of Conduct to all staff.
3. Ensure that:
 - i. All staff under him sign an 'Individual Code of Conduct', including a statement that they have read and agree to the Code of Conduct
 - ii. List of staff and signed copies of the Individual Code of Conduct are given to the K3 Coordinator, Complaints officer, and CPIU Manager / team environmental & social.
 - iii. Participate in training and ensure that staff also participate as outlined below.
 - iv. Put mechanisms in place for staff to:
 - (a) Report concerns about ESHS or OHS compliance; And,
 - (b) Confidentially report GBV/SEA or VAC incidents through the Grievance Redressal Mechanism (GRM)
 - v. Staff are encouraged to report suspected or actual ESHS, OSH, GBV or VAC issues, emphasizing staff responsibilities to the Company and the country in which they work, and emphasizing respect for confidentiality.
4. In accordance with applicable law and to the best of your ability, prevent perpetrators of sexual exploitation and abuse from being hired, recruited or deployed. Conduct criminal background and reference checks for all employees.
5. Ensure that when involving partnerships, sub-contractors, suppliers or similar agreements, these agreements:
 - i. Incorporates ESHS, K3, GBV/SEA and VAC Codes of Conduct as attachments.
 - ii. Use appropriate language used by the entities and individuals in those contracts, and their employees and volunteers, to comply with the Individual Code of Conduct.
 - iii. Clearly stating the failure of the entity or individual, as appropriate, in ensuring compliance with ESHS and OSH standards, in preventing GBV/SEA and VAC, in investigating allegations, or

in taking corrective action when GBV/SEA or VAC occurs, will not only be the basis for imposing sanctions and penalties in accordance with the Individual Code of Conduct but also termination of the employment contract or Project supply agreement. Give support and resources Power to the Handling Team Complaint For create and disseminate initiative internal sensitivity through improvement strategies awareness in GBV/SEA and VAC Action Plan.

6. Ensure that every GBV/SEA or VAC issues that require mix hand police reported to police, CPIU and World Bank immediately Possible.
7. Report and act in accordance with protocol response every conjecture or action correct GBV/SEA and/ or VAC incidents occurs because manager own not quite enough answer for straighten up commitment company and responsibility answer on report direct they.
8. Ensure that every major ESHS or K3 incidents quick reported to clients and supervisors.

Training

1. Managers are responsible for:
 - i. Ensure that the OSH Management Plan is implemented, with appropriate training for all staff, including sub-contractors and suppliers; And,
 - ii. Ensure that staff have an adequate understanding of C-ESMP and are trained to implement CESMP requirements
2. All managers are required to attend manager orientation training prior to commencing work on site to ensure that they understand their roles and responsibilities in enforcing the GBV/SEA and VAC elements of this Code of Conduct. This training is separate from the required orientation training for all employees and will provide managers with the necessary understanding and technical support to address GBV/SEA and VAC issues. Managers are required to attend and assist with project-facilitated training for all workers. Managers will be asked to introduce training and publicize self-evaluations, including collecting satisfaction surveys to evaluate training experiences and provide suggestions to improve training effectiveness.
3. Ensure that time is provided during working hours and staff are required to attend project orientation training before starting work on site regarding:
 - i. K3 and ESHS; And,
 - ii. GBV/SEA and VAC are mandatory for all employees.

Response

1. Managers will be required to take appropriate action to address ESHS or WHS incidents.
2. With regard to GBV/SEA and VAC:
 - i. Provide input to the GBV/SEA and VAC Action Plan as needed.
 - ii. Once the measures in question are adopted by the contractor, managers will uphold the measures set out in the GBV/SEA and VAC Action Plan to maintain the confidentiality of all employees who report or (allegedly) commit GBV/SEA and VAC incidents (unless a breach of confidentiality is necessary to protect persons or property from serious harm or as required by law).
 - iii. If a manager has concerns or suspicions regarding any form of GBV/SEA or VAC from any of their staff/subordinates, or from an employee working for another contractor in the same workplace, they are required to report the case using FGRM. Once a sanction has been determined, the relevant manager is expected to take personal responsibility for ensuring that the measure is effectively enforced, within a maximum period of 14 days from the date the sanction decision is made.
 - iv. If a Manager has a conflict of interest due to personal or family relationships with victims and/or perpetrators, they must inform their respective companies and the GBV Complaints

Team. The company will be asked to appoint another manager without any conflict of interest to respond to further complaints. Ensure that any GBV/SEA or VAC issues requiring police intervention are reported to the police, CPIU and the World Bank as soon as possible

3. Managers who fail to address ESHS or OHS incidents or fail to report or comply with GBV and VAC provisions may be subject to disciplinary action, which will be determined and enforced by the company's CEO, Managing Director or equivalent highest-ranking manager. These stages may include:
 1. Informal warning.
 2. Formal warning.
 3. Additional Training.
 4. cut for up to one week.
 5. Suspension of work (without salary payment), for a minimum period of 1 month to a maximum of 6 months.
 6. Work termination
4. Ultimately, failure to respond effectively to cases of ESHS, K3, GBV/SEA and VAC on the job site by the manager or CEO may be grounds for legal action by the authorities.

I with This confess that I has read Guidelines Manager's previous behavior , and agrees For comply standards contained therein and understand roles and responsibilities answer I For prevent and respond based on ESHS, K3 and GBV and VAC provisions . I understand that every actions that don't consistent with Guidelines Behavior Manager This or failure For act on things mandated by the Guidelines Behavior Manager This can result action disciplinary.

Signature: _____

ID card name: _____

Position: _____

Date: _____

Individual Code of Conduct

Preventing Gender Based Violence (GBV) and Violence against Children (VAC)

I, _____, declare that complying with environmental, health and social safety (ESHS) standards, following the Project's occupational health and safety (K3) requirements, and preventing Gender-Based Violence (GBV) and violence against children (VAC) are important.

Contractors (_____) consider failure to follow ESHS and K3 standards, or carry out GBV or VAC — whether on the work site, around the work site, in worker camps, in workers' homes, or in the surrounding community — as serious violations and subject to sanctions, penalties or potential termination. Police prosecution of those who commit GBV or VAC can be carried out if necessary.

I agree that while working on the Project I will:

1. Attend and actively participate in training related to ESHS, K3, HIV/AIDS, GBV/SEA and VAC as requested by my superiors.
2. Will wear personal protective equipment (PPE) at all times when on the work site or when involved in project-related activities.
3. Take all practical steps to implement the Contractor's Environmental and Social Management plan (CESMP).
4. Implementing the K3 Management Plan.
5. Do not drink alcohol or consume narcotics or other substances that may impair ability before or during work activities.
6. Allows for background checks from the police.
7. Treat women, children (under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, nationality, ethnicity or social status, property, disability, birth or other status.
8. Do not use inappropriate, harassing, rude, sexually provocative, degrading or culturally inappropriate language or behavior towards women, children or men.
9. Not engaging in sexual harassment — for example, engaging in unwelcome sexual acts, requests for sexual favors, and other verbal or physical behavior of a sexual nature, including subtle acts of such behavior (e.g. looking someone up and down; kissing, making sounds howling or hitting sounds; hanging around someone; whistling and teasing, giving personal gifts, making comments about someone's sex life etc.)
10. Do not provide sexual gifts — for example, making promises of favorable treatment based on sexual acts — or other forms of humiliating, degrading or exploitative behavior. Do not participate in sexual contact or activities with children — including grooming or contact via digital media. Misrepresentation of a child's age is not a defense. Consent from the child is also not a defense or excuse.
11. Unless there is full consent ²from all parties involved, I will not engage in sexual interactions with members of the local community. This includes relationships that involve the refusal / promise of

² Agreement defined as choice based on underlying information intention, acceptance, or agreement voluntary individual. For do something. There is not any possible approval found when reception or agreement the obtained with use threats, coercion or form coercion other, kidnapping, fraud, or misrepresentation. In accordance with Convention United Nations on Children's Rights, the World Bank considers that agreement No can given by the children below 18 years old, even If Constitution national country of place Code of Ethics enforced own older age low. Confidence wrong about age children and consent from child it's not defense.

providing actual benefits (monetary or non-monetary) to a member of the public in exchange for sex – such sexual activity is considered “non-consensual” within the scope of this Code of Conduct.

12. Report via FGRM or to my manager any suspected or actual GBV/SEA or VAC experienced by a colleague, whether employed by my company or not, or any violation of this Code of Ethics.

With regard to children under the age of 18, I will:

1. If possible, ensure there is another adult working near the children.
2. Not inviting unaccompanied children who are not related to my family to my home, unless they are in risk urgent injury or physical danger.
3. Not use computers, mobile phones, video and digital cameras or any other media to exploit or abuse children or access child pornography (see also “Use of images of children for work-related purposes” below).
4. Refrain from giving physical punishment or discipline to children.
5. Refrain from employing children for domestic work or other work under the minimum age of 14 unless national law specifies a higher age, or that places them at significant risk of injury.
6. Comply with all relevant local laws, including labor laws relating to child labor and World Bank protection policies on child labor and minimum ages.
7. Be careful when photographing or filming children.

Use of children's drawings for work-related purposes

When photographing or filming children for work-related purposes, I must:

1. Before photographing or filming children, review and comply with local traditions or restrictions regarding reproducing personal images.
2. Before photographing or filming a child, obtain consent from the child and the child's parent or guardian. As part of this I have to explain how the photo or film will be used.
3. Ensure photos, films, videos and DVDs show children in a dignified and respectful manner and do not that position show vulnerability or compliance . Children should be appropriately clothed and not in positions that could be considered sexually suggestive.
4. Ensure images are an honest representation of context and facts.
5. Ensure file labels do not reveal identifying information about children when sending images electronically.

Sanctions

I understand that if I violate this Individual Code of Conduct, my supervisor will take disciplinary action which may include:

1. Informal warning.
2. Formal warning.
3. Additional Training.
4. No salary for up to one week.
5. Suspension of work (without salary payment), for a minimum period of 1 month to a maximum of 6 months.
6. Work termination.
7. Report to the Police if necessary

I understand that it is my responsibility to ensure that environmental, social, health and safety standards are met, and that I comply with the Occupational Health and Safety Management plan. I will avoid action or behavior that can be interpreted as GBV/SEA or VAC. Every action like that will become a violation of the Guidelines Behavior Individual This. I with This confess that I have read Guidelines Behavior Individual above, and agree to comply with standards contained therein and understand roles and responsibilities. I answer to prevent and respond to ESHS, K3, GBV/SEA and VAC issues. I understand that any action anything else consistent with Guidelines Behavior Individual This or failure to act on actions may

dated by the Guidelines Behavior Individual This can result in action disciplined and able to influence work I'm the middle one taking place.

Signature: _____

ID card name: _____

Position: _____

Date: _____

Kode Etik: Lingkungan, Sosial, Kesehatan dan Keselamatan Kerja (LSK3) dan Kesehatan dan Keselamatan Masyarakat

Peserta Pemilihan harus menyerahkan Kode Etik yang akan berlaku bagi karyawan dan subkontraktornya dari Lembar Data Pemilihan (LDP). Kode Etik/Pedoman Perilaku dimaksud harus memastikan kepatuhan terhadap ketentuan aspek Lingkungan, Sosial, Kesehatan dan Keselamatan (LSK3) dan Kesehatan dan Keselamatan Masyarakat.

Kode Etik perlu mempertimbangkan pengelolaan resiko lingkungan, sosial, kesehatan dan keselamatan kerja (L2K3) dan Kesehatan dan Keselamatan Masyarakat antara lain:

1. Kepatuhan terhadap perundang-undangan dan peraturan yang berlaku. Kode Etik perlu mencantumkan pernyataan bahwa “anak” merupakan orang yang berusia dibawah 18 tahun. Kontraktor dan sub-kontraktor (termasuk pemasok) diwajibkan untuk memastikan tidak memperkerjakan anak-anak dan mengikuti Prosedur Pengelolaan Pekerja (*Labor Management Procedure*) proyek (lihat di dokumen Kerangka Pengelolaan Lingkungan dan Sosial/*Environmental and Social Management Framework/ESMF*);
2. Kepatuhan terhadap peraturan mengenai K3 untuk melindungi masyarakat (termasuk masyarakat rentan), pekerja dari kontraktor dan sub-kontraktor (contoh: penggunaan Alat Pelindung Diri/APD, pencegahan kecelakaan kerja, penggunaan bahan baku dan material yang ramah kesehatan, dll.);
3. Pelarangan penggunaan bahan-bahan illegal sesuai dengan peraturan perundang-undangan;
4. Pencegahan praktek-praktek diskriminatif terhadap masyarakat (masyarakat (termasuk masyarakat rentan), pekerja dari kontraktor dan sub-kontraktor), berdasarkan status sosial ekonomi, etnis, ras, gender, agama, Bahasa, status perkawinan, umur, kondisi fisik (mental dan fisik), orientasi seksual, dll;
5. Penghormatan terhadap budaya, tradisi dan tatanan sosial dalam interaksi dengan masyarakat sekitar dengan masyarakat sekitar;
6. Pencegahan dan pengelolaan resiko Kekerasan Berbasis Gender (eksploitasi dan pelecehan/kekerasan seksual), Kekerasan Terhadap Anak (*Violence Against Children/VAC*). Sanksi untuk setiap bentuk pelanggaran;
7. Perlindungan terhadap anak, termasuk tidak memperkerjakan anak, menghindari interaksi terhadap anak dan memastikan situs proyek aman;
8. Memastikan sanitasi dan lingkungan kerja yang sehat (contoh: tersedianya air bersih dan Instalasi Pengolahan Air Limbah (IPAL), basecamps pekerja yang layak, dll);
9. Memastikan tidak ada konflik kepentingan dalam pelaksanaan pekerjaan (contoh: dalam perekrutan pekerja, pemberian kontrak ke pemasok dan sub-kontraktor, dll.)
10. Pelaporan kepada pemberi kerja untuk pelanggaran terhadap kode etik/pedoman perilaku;
11. Memastikan perlindungan kepada siapa saja yang melaporkan pelanggaran kode etik/pedoman perilaku.

Kode Etik/Pedoman Perilaku harus ditulis dalam bahasa Indonesia yang sederhana dan jelas dan ditanda tangani oleh semua personil dan pekerja yang terlibat dalam pelaksanaan pekerjaan yang ditenderkan. Personil dan/atau pekerja mencakup pekerja langsung baik yang di rekrut langsung oleh kontraktor maupun tidak langsung oleh pemasok dan sub-kontraktor.

Selain itu, Peserta Pemilihan harus memberikan garis besar tentang bagaimana Kode Etik ini akan dilaksanakan, mencakup rencana sosialisasi/konsultasi dan pemahaman kepada seluruh karyawan / pihak-pihak yang terlibat (pemasok dan subkontraktor), pelatihan apa yang akan diberikan, bagaimana itu akan dipantau dan bagaimana Kontraktor mengusulkan untuk menangani setiap pelanggaran.

Sebelum mobilisasi personil dan/atau pekerja, Peserta Pemilihan yang terpilih perlu memastikan

bahwa setiap personil dan/atau pekerja:

1. Menerima salinan Kode Etik/Pedoman Perilaku;
2. Menerima penjelasan dan pelatihan mengenai substansi dan persyaratan yang tertuang di dalam Kode Etik/Pedoman Perilaku;
3. Menyanggupi untuk patuh terhadap Kode Etik/Pedoman Perilaku dan menandatangani Kode Etik/Pedoman Perilaku yang menjadi kesatuan dalam kontrak kerja;
4. Memahami bahwa pelanggaran Kode Etik/Pedoman Perilaku memiliki sanksi, dan apabila diperlukan dapat berakibat pemecatan dan/atau pelaporan ke pihak berwajib.

Salinan Kode Etik/Pedoman Perilaku perlu dipajang di lokasi/papan pengumuman yang mudah diakses oleh masyarakat dan pihak-pihak yang terdampak oleh pekerjaan. Kode Etik/Pedoman Perilaku perlu disajikan kedalam Bahasa Indonesia dan/atau Bahasa daerah yang dapat dipahami oleh masyarakat, personil dan/atau pekerja kontraktor dan sub-kontraktor dan pihak – pihak terdampak lainnya.

Kode Etik/Pedoman Perilaku Proyek

Mencegah Kekerasan Berbasis Gender (GBV) dan Kekerasan terhadap Anak (VAC)

Kontraktor berkomitmen untuk memastikan bahwa Proyek dilaksanakan sedemikian rupa sehingga meminimalkan dampak negatif terhadap lingkungan setempat, masyarakat, dan pekerjaannya. Proyek ini akan dilakukan dengan menghormati standar lingkungan, sosial, kesehatan dan keselamatan (ESHS), dan memastikan terpenuhinya standar kesehatan dan keselamatan kerja (K3) yang sesuai. Perusahaan juga berkomitmen untuk menciptakan dan memelihara lingkungan di mana kekerasan berbasis gender (GBV) dan kekerasan terhadap anak-anak (VAC) tidak memiliki tempat, dan di mana insiden semacamnya tidak akan ditolerir oleh karyawan, sub-kontraktor, pemasok, rekan, atau perwakilan dari kontraktor.

Oleh karena itu, untuk memastikan bahwa semua yang terlibat dalam proyek mengetahui komitmen ini, perusahaan berkomitmen pada prinsip-prinsip inti berikut dan standar perilaku minimum yang akan berlaku untuk semua karyawan perusahaan, rekanan, dan perwakilan, termasuk sub-kontraktor dan pemasok, tanpa terkecuali

Umum

1. Kontraktor - dan dengan ini semua karyawan, rekanan, perwakilan, sub-kontraktor, dan pemasok - berkomitmen untuk mematuhi semua hukum, ketentuan, dan peraturan nasional yang relevan.
2. Kontraktor berkomitmen untuk sepenuhnya menerapkan Rencana Pengelolaan Lingkungan dan Sosial Kontraktor (CESMP) mereka.
3. Kontraktor berkomitmen untuk memperlakukan perempuan, anak-anak (orang di bawah usia 18 tahun), dan laki-laki dengan hormat terlepas dari ras, warna kulit, bahasa, agama, pendapat politik atau lainnya, asal-usul kebangsaan, etnis atau sosial, properti, disabilitas, kelahiran atau status lainnya. Tindakan GBV dan VAC melanggar komitmen ini.
4. Perusahaan harus memastikan bahwa interaksi dengan anggota masyarakat setempat dilakukan dengan hormat dan tanpa diskriminasi.
5. Bahasa dan perilaku yang merendahkan, mengancam, melecehkan, kasar, tidak pantas secara budaya, atau provokatif secara seksual dilarang di antara semua karyawan perusahaan, rekanan, dan perwakilan, termasuk sub-kontraktor dan pemasok.
6. Kontraktor akan mengikuti semua instruksi kerja yang wajar (termasuk norma lingkungan dan sosial).
7. Kontraktor akan melindungi dan memastikan penggunaan properti dengan benar (misalnya, untuk mencegah pencurian, kecerobohan, atau pemborosan).

Kesehatan dan keselamatan

1. Kontraktor akan memastikan bahwa Rencana Pengelolaan keselamatan dan kesehatan kerja (K3) Proyek dilaksanakan secara efektif oleh staf perusahaan, serta sub-kontraktor dan pemasok.
2. Kontraktor akan memastikan bahwa semua orang di lokasi mengenakan pakaian pelindung diri yang ditentukan dan sesuai, mencegah kecelakaan yang dapat dihindari dan melaporkan kondisi atau praktik yang menimbulkan bahaya keselamatan atau mengancam lingkungan.
3. Kontraktor akan:
 - i. melarang penggunaan alkohol selama kegiatan kerja.
 - ii. melarang konsumsi narkoba atau zat lain yang dapat merusak setiap saat.
4. Kontraktor akan memastikan bahwa fasilitas sanitasi yang memadai tersedia di lokasi dan di setiap akomodasi pekerja yang disediakan bagi mereka yang bekerja di proyek

Kekerasan Berbasis Gender dan Kekerasan Terhadap Anak

7. Tindakan GBV/SEA atau VAC merupakan pelanggaran berat dan karenanya dijatuhi sanksi, yang dapat mencakup hukuman dan/atau pemutusan hubungan kerja, dan jika diperlukan dirujuk ke Polisi untuk tindakan lebih lanjut.
8. Semua bentuk GBV/SEA dan VAC, termasuk *grooming* (proses membangun relasi, rasa percaya dan hubungan emosional dengan anak atau anak muda supaya pelaku dapat memanipulasi, mengeksploitasi, dan melakukan kekerasan terhadap mereka) tidak dapat diterima, terlepas dari apakah hal tersebut terjadi di lokasi kerja, lingkungan tempat kerja, di kamp pekerja atau di dalam lingkungan masyarakat setempat.
 - i. Pelecehan Seksual - misalnya, melakukan tindakan seksual yang tidak disukai, permintaan atas kenikmatan seksual, dan perilaku verbal atau fisik lainnya, yang bersifat seksual, termasuk tindakan halus dari perilaku tersebut - dilarang.
 - ii. Bantuan seksual - misalnya, membuat janji atau perlakuan yang menguntungkan berdasarkan tindakan seksual - atau bentuk lain dari perilaku menghina, merendahkan atau eksploitatif, dilarang.
 - iii. Kontak atau kegiatan seksual dengan anak di bawah usia 18 tahun - termasuk melalui media digital - dilarang. Keliru tentang usia anak bukanlah pembelaan. Persetujuan dari anak juga bukan pembelaan atau alasan.
9. Kecuali jika ada persetujuan penuh³ dari semua pihak yang terlibat, pekerja tidak akan melakukan interaksi seksual dengan anggota masyarakat sekitar. Termasuk hubungan yang melibatkan menolak memberikan/ menjanjikan pemberian manfaat aktual (moneter atau non-moneter) kepada anggota masyarakat dengan imbalan seks - aktivitas seksual semacam itu dianggap "tidak konsensual" dalam lingkup Pedoman Perilaku ini.
10. Selain sanksi perusahaan, penuntutan hukum bagi mereka yang melakukan tindakan GBV/SEA atau VAC akan dilakukan jika diperlukan.
11. Semua karyawan, termasuk sukarelawan dan sub-kontraktor sangat dianjurkan untuk melaporkan dugaan atau tindakan nyata GBV/SEA dan/atau VAC oleh sesama pekerja, baik di perusahaan yang sama atau tidak. Laporan harus dibuat sesuai dengan Prosedur Pelaporan Tuduhan GBV dan VAC Proyek.
12. Manajer diharuskan untuk melaporkan dan bertindak untuk menangani dugaan dan tindakan GBV/SEA dan VAC yang benar terjadi karena mereka memiliki tanggung jawab untuk menegakkan komitmen perusahaan dan bertanggung jawab atas laporan mereka.

Pelaksanaan

Untuk memastikan bahwa prinsip-prinsip di atas diterapkan secara efektif, kontraktor berkomitmen untuk memastikan bahwa:

1. Semua manajer menandatangani 'Pedoman Perilaku Manajer' Proyek yang merinci tanggung jawab mereka untuk melaksanakan komitmen perusahaan dan menegakkan tanggung jawab dalam 'Pedoman Perilaku Perorangan'.
2. Semua karyawan menandatangani Pedoman Perilaku Perorangan proyek yang mencantumkan persetujuan mereka untuk mematuhi standar ESHS dan K3, dan tidak terlibat dalam kegiatan yang termasuk kategori GBV/SEA atau VAC.
3. Menampilkan Pedoman Perilaku Perusahaan dan Perorangan secara jelas dan terlihat di

³ Persetujuan didefinisikan sebagai pilihan berdasarkan informasi yang mendasari niat, penerimaan, atau persetujuan sukarela individu untuk melakukan sesuatu. Tidak ada persetujuan yang dapat ditemukan ketika penerimaan atau kesepakatan tersebut diperoleh dengan menggunakan ancaman, paksaan atau bentuk paksaan lainnya, penculikan, penipuan, atau penggambaran yang keliru. Sesuai dengan Konvensi Perserikatan Bangsa-Bangsa tentang Hak-Hak Anak, Bank Dunia menganggap bahwa persetujuan tidak dapat diberikan oleh anak-anak di bawah usia 18 tahun, bahkan jika undang-undang nasional negara tempat Kode Etik diberlakukan memiliki usia yang lebih rendah. Keyakinan keliru tentang usia anak dan persetujuan dari anak bukanlah pembelaan.

kamp pekerja, kantor, dan di area publik lokasi kerja. Contoh area publik termasuk area tunggu, ruang istirahat dan lobi, area kantin dan klinik kesehatan.

4. Memastikan bahwa salinan Pedoman Perilaku Perusahaan dan Perorangan yang dipublikasikan dan didistribusikan diterjemahkan ke dalam bahasa yang sesuai untuk digunakan di area kerja serta bagi staf internasional mana pun dalam bahasa asli mereka.
5. Orang yang tepat dinominasikan sebagai 'Focal point' perusahaan untuk menangani masalah-masalah GBV/SEA dan VAC, termasuk mewakili perusahaan dalam Tim Pengaduan GBV/SEA dan VAC yang terdiri dari perwakilan dari klien, kontraktor, konsultan pengawas, dan penyedia layanan lokal.
6. Memastikan bahwa Rencana Aksi GBV/SEA dan VAC diterapkan dan direvisi secara efektif sesuai kebutuhan.
7. Bahwa kontraktor secara efektif melaksanakan Rencana Aksi GBV/SEA dan VAC yang disepakati, memberikan umpan balik kepada FGRM Proyek untuk perbaikan dan pembaruan yang sesuai.
8. Semua karyawan menghadiri pelatihan orientasi sebelum memulai pekerjaan di lokasi untuk memastikan mereka memahami komitmen perusahaan terhadap standar ESHS dan K3, dan Pedoman Perilaku GBV/SEA dan VAC Proyek.
9. Semua karyawan menghadiri pelatihan wajib sebelum dimulainya pekerjaan untuk memperkuat pemahaman standar ESHS dan K3 proyek dan Pedoman Perilaku GBV/SEA dan VAC, serta pelatihan tambahan yang relevan sebagai pengingat.

Saya dengan ini mengakui bahwa saya telah membaca Pedoman Perilaku Kontraktor sebelumnya, dan atas nama perusahaan setuju untuk mematuhi standar yang terkandung di dalamnya. Saya memahami peran dan tanggung jawab saya untuk mendukung standar K3 dan ESHS proyek, dan untuk mencegah dan merespons insiden GBV/SEA dan VAC. Saya memahami bahwa setiap tindakan yang tidak konsisten dengan Pedoman Perilaku Perusahaan ini atau kegagalan untuk bertindak yang diamanatkan oleh Pedoman Perilaku Perusahaan ini dapat mengakibatkan tindakan disipliner.

Nama Perusahaan: _____

Tandatangan: _____

Nama KTP: _____

Jabatan: _____

Tanggal: _____

Pedoman Perilaku Manajer

Mencegah Kekerasan Berbasis Gender (GBV) dan Kekerasan terhadap Anak (VAC)

Manajer di semua tingkatan memiliki tanggung jawab untuk menjunjung tinggi komitmen perusahaan dalam menerapkan standar ESHS dan K3, serta mencegah dan menangani Kekerasan berbasis Gender (GBV) dan Kekerasan terhadap Anak (VAC). Ini berarti bahwa manajer memiliki tanggung jawab yang tinggi untuk menciptakan dan memelihara lingkungan yang menghormati standar-standar ini dan mencegah GBV/SEA dan VAC. Manajer perlu mendukung dan mempromosikan penerapan Pedoman Perilaku Perusahaan. Untuk itu, manajer harus mematuhi Pedoman Perilaku Manajer ini dan menandatangani Pedoman Perilaku Perorangan. Ini mengikat mereka untuk mendukung pelaksanaan CESMP dan Rencana Pengelolaan K3 dan mengembangkan sistem yang memfasilitasi pelaksanaan Rencana Aksi GBV/SEA dan VAC. Mereka perlu mempertahankan tempat kerja yang aman, serta lingkungan yang bebas GBV dan bebas VAC di tempat kerja dan dalam masyarakat setempat. Tanggung jawab ini termasuk tetapi tidak terbatas pada:

Pelaksanaan

1. Untuk memastikan efektivitas maksimum dari Pedoman Perilaku Kontraktor dan Perorangan.
 - i. Menampilkan dengan jelas Pedoman Perilaku Kontraktor dan Perorangan di lokasi yang jelas di kamp pekerja, kantor, dan di area publik dari lokasi kerja. Contoh area publik termasuk area tunggu, ruang istirahat dan lobi, area kantin dan klinik kesehatan.
 - ii. Memastikan bahwa salinan Pedoman Perilaku Kontraktor dan Perorangan yang dipublikasikan dan didistribusikan diterjemahkan ke dalam bahasa yang sesuai untuk digunakan di area tempat kerja serta bagi staf internasional mana pun dalam bahasa asli mereka
2. Secara lisan dan tertulis menjelaskan tentang Pedoman Perilaku Kontraktor dan Perorangan kepada semua staf.
3. Memastikan bahwa:
 - i. Semua staff di bawahnya menandatangani 'Pedoman Perilaku Perorangan', termasuk pernyataan bahwa mereka telah membaca dan setuju dengan Pedoman Perilaku tersebut
 - ii. Daftar staff dan salinan Pedoman Perilaku Perorangan yang ditandatangani diberikan kepada Koordinator K3, petugas Pengaduan, dan Manajer CPIU/tim lingkungan & sosial.
 - iii. Berpartisipasi dalam pelatihan dan memastikan bahwa staf juga berpartisipasi sebagaimana diuraikan di bawah ini.
 - iv. Memberlakukan mekanisme bagi staf untuk:
 - (c) Melaporkan kekhawatiran tentang kepatuhan ESHS atau OHS; dan,
 - (d) Secara rahasia melaporkan insiden GBV/SEA atau VAC melalui Mekanisme Penanganan Keluhan (GRM)
 - v. Staf didorong untuk melaporkan masalah ESHS, K3, GBV, atau VAC yang dicurigai atau yang benar terjadi, dengan menekankan tanggung jawab staf kepada Perusahaan dan negara tempat mereka bekerja, dan menekankan penghormatan terhadap kerahasiaan.
4. Sesuai dengan hukum yang berlaku dan sejauh kemampuan Anda, mencegah pelaku eksploitasi dan pelecehan seksual untuk dipekerjakan, direkrut, atau dikerahkan. Melakukan pemeriksaan latar belakang dan referensi kriminal untuk semua karyawan.
5. Memastikan bahwa ketika melibatkan kemitraan, sub-kontraktor, pemasok atau perjanjian serupa, perjanjian ini:
 - iv. Menggabungkan Pedoman Perilaku ESHS, K3, GBV/SEA dan VAC sebagai lampiran.

- v. Menggunakan bahasa yang sesuai yang digunakan oleh entitas dan individu dalam kontrak tersebut, dan karyawan serta sukarelawan mereka, untuk mematuhi Pedoman Perilaku Perorangan.
 - vi. Menyatakan secara jelas bahwa kegagalan entitas atau individu, sebagaimana mestinya, dalam memastikan kepatuhan terhadap standar ESHS dan K3, dalam melakukan pencegahan terhadap GBV/SEA dan VAC, dalam menyelidiki tuduhan-tuduhan, atau dalam mengambil tindakan korektif ketika GBV/SEA atau VAC terjadi, tidak hanya akan menjadi dasar untuk menjatuhkan sanksi dan hukuman sesuai dengan Pedoman Perilaku Perorangan tetapi juga penghentian kontrak kerja atau perjanjian pasokan Proyek.
- 6. Memberikan dukungan dan sumber daya kepada Tim Penanganan Keluhan untuk membuat dan menyebarkan inisiatif kepekaan internal melalui strategi peningkatan kesadaran dalam Rencana Aksi GBV/SEA dan VAC.
 - 7. Memastikan bahwa setiap masalah GBV/SEA atau VAC yang memerlukan campur tangan polisi dilaporkan kepada polisi, CPIU dan Bank Dunia sesegera mungkin.
 - 8. Melaporkan dan bertindak sesuai dengan protokol respons setiap dugaan atau tindakan insiden GBV/SEA dan/atau VAC yang benar terjadi, karena manajer memiliki tanggung jawab untuk menegakkan komitmen perusahaan dan bertanggung jawab atas laporan langsung mereka.
 - 9. Memastikan bahwa setiap insiden ESHS atau K3 utama segera dilaporkan kepada klien dan pengawas.

Pelatihan

- 1. Manajer bertanggung jawab untuk:
 - iii. Memastikan bahwa Rencana Pengelolaan K3 dilaksanakan, dengan pelatihan yang sesuai untuk semua staf, termasuk sub-kontraktor dan pemasok; dan,
 - iv. Memastikan bahwa staf memiliki pemahaman yang memadai tentang C-ESMP dan telah terlatih untuk menerapkan persyaratan CESMP
- 2. Semua manajer diharuskan untuk mengikuti pelatihan orientasi manajer sebelum memulai pekerjaan di lokasi untuk memastikan bahwa mereka memahami peran dan tanggung jawab mereka dalam menegakkan unsur GBV/SEA dan VAC dari Pedoman Perilaku ini. Pelatihan ini terpisah dari pelatihan orientasi yang disyaratkan untuk semua karyawan dan akan memberikan para manajer pemahaman yang diperlukan dan dukungan teknis untuk mengatasi masalah GBV/SEA dan VAC.
- 3. Manajer diharuskan untuk menghadiri dan membantu pelatihan yang difasilitasi proyek untuk semua pekerja. Manajer akan diminta untuk memperkenalkan pelatihan dan mengumumkan evaluasi diri, termasuk mengumpulkan survei kepuasan untuk mengevaluasi pengalaman pelatihan dan memberikan saran untuk meningkatkan efektivitas pelatihan.
- 4. Memastikan disediakannya waktu selama jam kerja dan staf wajib menghadiri pelatihan orientasi proyek sebelum memulai pekerjaan di lokasi tentang:
 - iii. K3 dan ESHS; dan,
 - iv. GBV/SEA and VAC wajib untuk semua karyawan.

Respons

- 1. Manajer akan diminta untuk mengambil tindakan yang sesuai untuk mengatasi insiden ESHS atau K3.
- 2. Berkenaan dengan GBV/SEA dan VAC:
 - v. Memberikan masukan terhadap Rencana Aksi GBV/SEA dan VAC sesuai kebutuhan.
 - vi. Setelah tindakan yang dimaksud diadopsi oleh kontraktor, manajer akan menjunjung tinggi langkah-langkah yang ditetapkan dalam Rencana Aksi GBV/SEA dan VAC untuk menjaga kerahasiaan semua karyawan yang melaporkan atau (diduga) melakukan

- insiden GBV/SEA dan VAC (kecuali jika pelanggaran kerahasiaan diperlukan untuk melindungi orang atau properti dari bahaya serius atau jika diharuskan oleh hukum).
- vii. Jika seorang manajer memiliki kekhawatiran atau kecurigaan mengenai segala bentuk GBV/SEA atau VAC dari salah satu staff/ bawahannya, atau dari seorang karyawan yang bekerja untuk kontraktor lain di tempat kerja yang sama, mereka diharuskan melaporkan kasus tersebut menggunakan FGRM.
 - viii. Setelah sanksi ditentukan, manajer yang relevan diharapkan bertanggung jawab secara pribadi untuk memastikan bahwa tindakan tersebut ditegakkan secara efektif, dalam jangka waktu maksimum 14 hari dari tanggal keputusan sanksi dibuat.
 - ix. Jika seorang Manajer memiliki konflik kepentingan karena hubungan pribadi atau memiliki hubungan keluarga dengan korban dan/atau pelaku, mereka harus menginformasikan hal tersebut kepada perusahaan masing-masing dan kepada Tim Pengaduan GBV. Perusahaan akan diminta untuk menunjuk manajer lain tanpa adanya konflik kepentingan untuk menanggapi pengaduan lebih lanjut.
 - x. Memastikan bahwa setiap masalah GBV/SEA atau VAC yang memerlukan campur tangan polisi dilaporkan kepada polisi, CPIU dan Bank Dunia sesegera mungkin
3. Manajer yang gagal menangani insiden ESHS atau K3 atau gagal melaporkan atau mematuhi ketentuan GBV dan VAC dapat dikenakan tindakan disipliner, yang akan ditentukan dan diberlakukan oleh CEO, Direktur Pelaksana perusahaan atau manajer peringkat tertinggi yang setara. Tahap-tahap tersebut dapat meliputi:
1. Peringatan informal.
 2. Peringatan formal.
 3. Pelatihan Tambahan.
 4. Pemotongan gaji hingga satu minggu.
 5. Penangguhan pekerjaan (tanpa pembayaran gaji), untuk periode minimal 1 bulan hingga maksimal 6 bulan.
 6. Pemutusan hubungan kerja
4. Pada akhirnya, kegagalan untuk merespons secara efektif kasus ESHS, K3, GBV/SEA dan VAC di lokasi kerja oleh manajer atau CEO dapat menjadi alasan untuk diberikannya tindakan hukum oleh pihak berwenang.

Saya dengan ini mengakui bahwa saya telah membaca Pedoman Perilaku Manajer sebelumnya, dan setuju untuk mematuhi standar yang terkandung di dalamnya dan memahami peran dan tanggung jawab saya untuk mencegah dan merespons berdasarkan ketentuan ESHS, K3 dan GBV dan VAC. Saya memahami bahwa setiap tindakan yang tidak konsisten dengan Pedoman Perilaku Manajer ini atau kegagalan untuk bertindak atas hal yang diamanatkan oleh Pedoman Perilaku Manajer ini dapat mengakibatkan tindakan disipliner.

Tandatangan: _____

Nama KTP: _____

Jabatan: _____

Tanggal: _____

Pedoman Perilaku Perorangan

Mencegah Kekerasan Berbasis Gender (GBV) dan Kekerasan terhadap Anak (VAC)

Saya, _____, menyatakan mematuhi standar lingkungan, kesehatan dan keselamatan sosial (ESHS), mengikuti persyaratan kesehatan dan keselamatan kerja (K3) Proyek, dan mencegah Kekerasan Berbasis Gender (GBV) dan kekerasan terhadap anak (VAC) adalah penting.

Kontraktor (_____) menganggap kegagalan untuk mengikuti standar ESHS dan K3, atau melakukan GBV atau VAC — baik itu di lokasi kerja, di sekitar lokasi kerja, di kamp pekerja, di rumah pekerja, atau di masyarakat sekitar — adalah pelanggaran berat dan dapat dijatuhi sanksi, hukuman atau potensi pemutusan hubungan kerja. Penuntutan oleh polisi terhadap mereka yang melakukan GBV atau VAC dapat dilakukan jika diperlukan.

Saya setuju bahwa saat mengerjakan Proyek saya akan:

13. Hadir dan berpartisipasi aktif dalam pelatihan terkait ESHS, K3, HIV/AIDS, GBV/SEA dan VAC seperti yang diminta oleh atasan saya.
14. Akan mengenakan alat pelindung diri (APD) setiap saat ketika di lokasi kerja atau ketika terlibat dalam kegiatan terkait proyek.
15. Melakukan semua langkah praktis untuk menerapkan rencana Pengelolaan Lingkungan dan Sosial Kontraktor (CESMP).
16. Melaksanakan Rencana Pengelolaan K3.
17. Tidak meminum alkohol atau mengonsumsi narkoba atau zat lain yang dapat mengganggu kemampuan sebelum atau selama kegiatan kerja.
18. Mengizinkan pemeriksaan latar belakang dari polisi.
19. Memperlakukan perempuan, anak-anak (di bawah usia 18), dan laki-laki dengan hormat terlepas dari ras, warna kulit, bahasa, agama, pendapat politik atau lainnya, kebangsaan, etnis atau sosial, properti, disabilitas, kelahiran atau status lainnya.
20. Tidak menggunakan bahasa atau perilaku tidak pantas, melecehkan, kasar, provokatif secara seksual, merendahkan martabat atau perlakuan tidak pantas secara budaya terhadap perempuan, anak-anak atau pria.
21. Tidak terlibat dalam pelecehan seksual — misalnya, melakukan tindakan seksual yang tidak disukai, permintaan atas kenikmatan seksual, dan perilaku verbal atau fisik lainnya, yang bersifat seksual, termasuk tindakan halus dari perilaku tersebut (misalnya memandangi seseorang dari atas ke bawah; mencium, bersuara melolong atau suara memukul; berkeliaran di sekitar seseorang; bersiul dan menggoda, memberikan hadiah pribadi, membuat komentar tentang kehidupan seks seseorang; dll)
22. Tidak memberikan hadiah seksual — misalnya, membuat janji perlakuan yang menguntungkan berdasarkan tindakan seksual — atau bentuk-bentuk perilaku penghinaan, merendahkan atau eksploitatif lainnya.
23. Tidak berpartisipasi dalam kontak atau aktivitas seksual dengan anak-anak — termasuk grooming atau kontak melalui media digital. Kekeliruan tentang usia anak bukanlah pembelaan. Persetujuan dari anak juga bukan pembelaan atau alasan.
24. Kecuali jika ada persetujuan penuh⁴ dari semua pihak yang terlibat, saya tidak akan melakukan interaksi seksual dengan anggota masyarakat sekitar. Termasuk hubungan yang melibatkan penolakan/ janji memberikan manfaat aktual (moneter atau non-moneter)

⁴ Persetujuan didefinisikan sebagai pilihan berdasarkan informasi yang mendasari niat, penerimaan, atau persetujuan sukarela individu untuk melakukan sesuatu. Tidak ada persetujuan yang dapat ditemukan ketika penerimaan atau kesepakatan tersebut diperoleh dengan menggunakan ancaman, paksaan atau bentuk paksaan lainnya, penculikan, penipuan, atau penggambaran yang keliru. Sesuai dengan Konvensi Perserikatan Bangsa-Bangsa tentang Hak-Hak Anak, Bank Dunia menganggap bahwa persetujuan tidak dapat diberikan oleh anak-anak di bawah usia 18 tahun, bahkan jika undang-undang nasional negara tempat Kode Etik diberlakukan memiliki usia yang lebih rendah. Keyakinan keliru tentang usia anak dan persetujuan dari anak bukanlah pembelaan.

kepada anggota masyarakat dengan imbalan seks - aktivitas seksual semacam itu dianggap "tidak konsensual" dalam lingkup Pedoman Perilaku ini.

25. Melaporkan melalui FGRM atau ke manajer saya segala GBV/SEA atau VAC yang dicurigai atau yang benar dialami oleh rekan kerja, baik yang dipekerjakan oleh perusahaan saya atau tidak, atau terjadinya setiap pelanggaran dari Kode Etik ini.

Berkenaan dengan anak-anak di bawah usia 18 tahun, saya akan:

1. Jika memungkinkan, memastikan ada orang dewasa lain yang bekerja di dekat anak-anak.
2. Tidak mengundang anak-anak tanpa pendamping yang tidak terkait dengan keluarga saya ke rumah saya, kecuali jika mereka berada dalam risiko cedera yang mendesak atau dalam bahaya fisik.
3. Tidak menggunakan komputer, ponsel, video dan kamera digital atau media lain apa pun untuk mengeksploitasi atau melecehkan anak-anak atau mengakses pornografi anak (lihat juga "Penggunaan gambar anak-anak untuk tujuan terkait pekerjaan" di bawah).
4. Menahan diri dari pemberian hukuman fisik atau disiplin terhadap anak.
5. Menahan diri dari mempekerjakan anak-anak untuk pekerjaan rumah tangga atau pekerjaan lain di bawah usia minimum 14 tahun kecuali hukum nasional menentukan usia yang lebih tinggi, atau yang menempatkan mereka pada risiko cedera yang signifikan.
6. Mematuhi semua undang-undang setempat yang relevan, termasuk undang-undang perburuan terkait dengan pekerja anak dan kebijakan perlindungan Bank Dunia tentang pekerja anak dan usia minimum.
7. Berhati-hati saat memotret atau memfilmkan anak-anak.

Penggunaan gambar anak-anak untuk tujuan yang terkait dengan pekerjaan

Saat memotret atau memfilmkan anak untuk tujuan terkait pekerjaan, saya harus:

1. Sebelum memotret atau memfilmkan anak, mengkaji dan mematuhi tradisi atau batasan setempat terkait mereproduksi gambar pribadi.
2. Sebelum memotret atau memfilmkan anak, mendapat persetujuan dari anak dan orang tua atau wali anak tersebut. Sebagai bagian dari ini saya harus menjelaskan bagaimana foto atau film akan digunakan.
3. Memastikan foto, film, video, dan DVD memperlihatkan anak-anak dengan cara yang bermartabat dan penuh hormat dan tidak dalam posisi yang menunjukkan kerentanan atau kepatuhan. Anak-anak harus berpakaian memadai dan tidak dalam posisi yang bisa dianggap sugestif secara seksual.
4. Memastikan gambar adalah representasi jujur dari konteks dan fakta.
5. Memastikan label file tidak mengungkapkan informasi identitas tentang anak saat mengirim gambar secara elektronik.

Sanksi

Saya memahami bahwa jika saya melanggar Kode Etik Perorangan ini, atasan saya akan mengambil tindakan disipliner yang dapat meliputi:

1. Peringatan informal.
2. Peringatan formal.
3. Pelatihan Tambahan.
4. Tanpa gaji hingga satu minggu.
5. Penangguhan pekerjaan (tanpa pembayaran gaji), untuk periode minimal 1 bulan hingga maksimal 6 bulan.
6. Pemutusan hubungan kerja.
7. Pelaporan ke Polisi jika diperlukan

Saya memahami bahwa adalah tanggung jawab saya untuk memastikan bahwa standar lingkungan, sosial, kesehatan dan keselamatan terpenuhi, dan bahwa saya mematuhi rencana Pengelolaan Kesehatan dan Keselamatan Kerja. Saya akan menghindari tindakan atau perilaku yang dapat ditafsirkan sebagai GBV/SEA atau VAC. Setiap tindakan seperti itu akan menjadi pelanggaran atas Pedoman Perilaku Perorangan ini. Saya dengan ini mengakui bahwa saya telah membaca Pedoman Perilaku Perorangan tersebut di atas, dan setuju untuk mematuhi standar yang terkandung di dalamnya dan memahami peran dan tanggung jawab saya untuk mencegah dan menanggapi masalah ESHS, K3, GBV/SEA dan VAC. Saya memahami bahwa tindakan apa pun yang tidak konsisten dengan Pedoman Perilaku Perorangan ini atau kegagalan bertindak atas tindakan yang diamanatkan oleh Pedoman Perilaku Perorangan ini dapat mengakibatkan tindakan disipliner dan dapat memengaruhi pekerjaan saya yang sedang berlangsung.

Tandatangan: _____

Nama KTP: _____

Jabatan: _____

Tanggal: _____

Appendix G Resettlement Planning Framework

Solid Waste Management for Sustainable Urban Development (SWMSUD) Project in Indonesia



Resettlement Planning Framework

18 July 2025



**Kementerian Pekerjaan Umum
Direktorat Jenderal Cipta Karya
Direktorat Sanitasi**

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ABBREVIATION

AEPW	:	Alliance to End Plastic Waste
AIIB	:	Asian Infrastructure Investment Bank
		<i>Badan Perencanaan Pembangunan Nasional Republik Indonesia/ Ministry of</i>
BAPPENAS	:	National Development Planning of the Republic of Indonesia
BPJN	:	<i>Badan Pertanahan Nasional/ National Land Agency</i>
CPIU	:	Central Project Implementing Unit
DP	:	Displaced Person
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
ESP	:	Environmental and Social Performance
ESS	:	Environmental and Social Standards
JAKSTRANAS	:	<i>Kebijakan dan Strategi Nasional/National Policy and Strategy</i> <i>Kementerian Lingkungan Hidup dan Kehutanan/Ministry of Environment and</i>
KLHK	:	Forestry
LAR	:	Land Acquisition and Resettlement
LG	:	Local Government
LPMU	:	Local Project Management Unit
NGO	:	Non-Government Organization
PAP	:	Project Affected People
PIC	:	Person In Charge
PUPR	:	<i>Pekerjaan Umum dan Perumahan Rakyat/ Public Works and Public Housing</i>
RDF	:	Refuse Derived Fuel
RP	:	Resettlement Plan
RPF	:	Resettlement Planning Framework
SPI	:	<i>Standar Penilaian Indonesia/Indonesian Valuation Standard</i>
SWM	:	Solid Waste Management
SWM-SUD	:	Solid Waste Management for Sustainable Urban Development
WtE	:	Waste to Energy

1 INTRODUCTION

1.1 Project Background

- 1.1.1 The Indonesian government has established Presidential Regulation Number 97 of 2017 concerning JAKSTRANAS (*Kebijakan dan Strategi Nasional*/National Policy and Strategy) for Management of Household Waste and Similar Household Waste, which is complemented by Presidential Regulation No. 83 of 2018 concerning Management of Marine Waste (Marine Plastic Waste Action Plan 2017–2025). Presidential Decree Number 35 of 2018 also emphasizes the acceleration of the development of waste-to-energy plants based on environmentally friendly technology. The Indonesian government is pushing the Waste to Energy (WtE) initiative, and RDF is one important approach in this direction.
- 1.1.2 The Asian Infrastructure Investment Bank (AIIB) is considering providing a government-guaranteed loan to the Republic of Indonesia to fund the Solid Waste Management for Sustainable Urban Development (SWM-SUD) Project. This initiative seeks to improve waste management infrastructure in certain cities and districts in Indonesia.
- 1.1.3 The SWM-SUD Project will be managed through an Inter-ministerial committee, chaired, and coordinated by the Ministry of Planning BAPPENAS, and prepared & implemented by the PUPR.
- 1.1.4 The Alliance to End Plastic Waste (AEPW) supports the Ministry of Public Works and Public Housing (PUPR) and the Local Government (LG) to ensure project readiness by preparing a Resettlement Planning Framework (RPF).

1.2 Project Component

- 1.2.1 The proposed project includes two components, namely Solid Waste Infrastructure in Participating Cities and Districts and Capacity Building, Technical Assistance, and Implementation Support.
- 1.2.2 **Component 1: Solid Waste Infrastructure in Participating Cities and Districts.** This component will finance priority investments in waste management infrastructure in each participating city and district, including support for better utilization and upgrading existing infrastructure. Priority investments include: (i) the construction of integrated waste treatment facilities (resource recovery and refuse derived fuel (RDF) plants) and upgrading existing landfills; (ii) the provision of waste collection facilities and transport services. The latter subcomponent covers the construction and/or rehabilitation of transfer stations and the procurement of goods and equipment, including collection containers and fleets, mechanical cleaning equipment, compaction systems, tracking systems, or route optimization software with considerations for improving services in low-income areas, among others.
- 1.2.3 **Component 2: Capacity Building, Technical Assistance, and Implementation Support.** This component will finance activities related to: (i) capacity building and technical assistance for institutional strengthening including training and workshops for regulators and operators; knowledge-exchange programs and citizen engagement and awareness campaigns; waste management planning and budgeting; training on waste service costs and levies as well as its optimization, inter-regional coordination, handling the integration of waste pickers, independent aggregators, especially women, into formal SWM businesses; alternative service delivery models including private sector participation; among others, and (ii)

Implementation and Project Management Support including: procurement, financial management, monitoring and evaluation, environmental and social safeguards, and construction oversight and quality assurance. It will provide support to the relevant national and local officials for effective project implementation.

2 POLICY OBJECTIVES AND KEY PRINCIPLES

2.1 Introduction

- 2.1.1 The Bank screens each Project to determine whether or not it involves Involuntary Resettlement, (which covers both physical and economic displacement, as defined in ESS 2). Where it is not feasible to avoid Involuntary Resettlement, the Bank requires the Client to conceive and execute the Involuntary Resettlement activities as sustainable development programs, providing sufficient resources to enable the persons displaced by the Project to share in Project benefits.
- 2.1.2 If the Project involves Involuntary Resettlement, the Bank requires the Client to prepare a LARP/LAP/RP or LARPF/LAPF/RPF (as applicable) in accordance with ESS 2, which is proportional to the extent and degree of the impacts. The degree of impacts is determined by: (a) the scope of physical and economic displacement; and (b) the vulnerability of the affected people. The LARP/LAP/RP or LARPF/LAPF/RPF complements the broader coverage of social risks and impacts in the environmental and social assessment and provides specialized guidance to address the specific issues associated with the Involuntary Resettlement, including land acquisition, changes in land use rights, displacement and need for livelihood restoration.

2.2 ESS2 – Involuntary Resettlement

- 2.2.1 The Bank's Environmental and Social Standard on involuntary resettlement (ESS2) objectives are as follow:
- Avoid involuntary resettlement whenever possible
 - Minimize involuntary resettlement by exploring project alternatives
 - Enhance or at least restore the livelihoods of displaced persons in real terms relative to pre-project levels
 - Improve the overall socioeconomic status of the displaced poor and other vulnerable groups
 - Provide sufficient resources to enable the persons displaced by the project to share in project benefits
 - Conceive and implement resettlement activities as sustainable development programs
- 2.2.2 ESS 2 is applicable if the project screening process identifies that it involves involuntary resettlement, including recent or foreseeable resettlement directly connected to the project. Involuntary resettlement encompasses both physical displacement (such as relocation, loss of residential land, or shelter) and economic displacement (such as loss of land, access to land and natural resources, assets, income sources, or means of livelihood). These displacements result from either (a) the involuntary acquisition of land or (b) involuntary restrictions on land use.
- ### 2.3 Bank Policy Requirement
- 2.3.1 The Bank's ESS2 policy on Involuntary Resettlement requires Local Project Management Unit (LPMU) to take specific actions for the Project.
- 2.3.2 **Planning:** Determine the extent of involuntary resettlement through land and asset surveys, a complete census of displaced persons, and an assessment of socioeconomic conditions

related to resettlement risks and impacts. This process establishes baseline information on assets, resources, and livelihoods, considering customary rights and communal land tenure, with attention to gender and, if Indigenous Peoples are affected, following ESS 3 requirements.

- 2.3.3 **Resettlement Plan:** Develop a resettlement plan detailing displaced persons' entitlements, strategies for income and livelihood restoration, institutional arrangements, monitoring and reporting frameworks, budgets, and a time-bound implementation schedule. Engage affected persons in consultations and disclose draft resettlement documents as outlined in the Information Disclosure section. The resettlement plan complements the broader environmental and social assessment and provides specialized guidance on issues such as land acquisition, changes in land use rights, physical and economic displacement, and design adjustments to minimize resettlement. With the Bank's prior approval, resettlement actions may be integrated into a community development plan to ensure displaced persons receive appropriate benefits. If displacement is solely economic, prepare a livelihood restoration plan, including measures for resolving compensation disputes.
- 2.3.4 **Abbreviated Resettlement Plan:** If impacts on the displaced population are minor or fewer than 200 people are displaced, LPMU may, with the Bank's prior approval, prepare an abbreviated resettlement plan, covering elements specified by the Bank. Impacts are deemed "minor" if affected people are not physically displaced or lose less than 10 percent of their productive assets
- 2.3.5 **Resettlement Planning Framework (RPF):** If the Project involves involuntary resettlement but consists of activities with details not yet defined at the time of the Bank's approval, LPMU must prepare an RPF. This approved RPF will guide the preparation of specific resettlement plans or abbreviated resettlement plans.
- 2.3.6 **Proportionality:** Ensure the RPF is proportional to the impacts' extent and degree, which are determined by the scope of physical and economic displacement and the vulnerability of the displaced persons.
- 2.3.7 **Consultations:** Conduct meaningful consultations with displaced persons, host communities, and NGOs to facilitate informed participation. Discuss rights, entitlements, and resettlement options with the displaced, ensuring their involvement in planning, implementation, monitoring, and evaluation. Pay special attention to vulnerable groups, including those below the poverty line, the landless, the elderly, women, children, Indigenous Peoples, and those without legal land titles, ensuring their participation in consultations.
- 2.3.8 **Grievance Mechanism:** Establish a suitable grievance redress mechanism to address concerns of displaced persons, informing them of its availability. Scale the mechanism according to the resettlement's risks and impacts, potentially using existing formal or informal mechanisms deemed suitable by the Bank, supplemented with project-specific arrangements if necessary. Design the mechanism to address complaints promptly, with a transparent, gender-sensitive, and culturally appropriate process accessible to all affected people. Include provisions to protect complainants from retaliation and allow anonymity if requested. Disclose reports on grievance redress and outcomes as per the Information Disclosure guidelines.
- 2.3.9 **Social Support:** Support the social and cultural institutions of displaced persons and their host communities to address resettlement. For highly complex and sensitive resettlement risks and impacts, consider a social preparation phase to build the capacity of vulnerable

groups through consultation before key compensation and resettlement decisions. The cost of social preparation should be included in the resettlement budget.

- 2.3.10 **Livelihood Restoration:** Enhance or at least restore the livelihoods of all displaced persons by: (a) implementing land-based resettlement strategies where livelihoods depend on land or land is collectively owned, or providing cash compensation at replacement value for land, including transitional costs, when land loss does not harm livelihoods; (b) promptly replacing assets with those of equal or greater value; (c) providing full replacement cost compensation for assets that cannot be restored; and (d) offering capacity-building programs to improve the use of livelihood resources and access to alternative livelihoods. Include transaction costs in compensation calculations and explore additional revenue and service opportunities through benefit-sharing, as appropriate.
- 2.3.11 **Resettlement Assistance:** Provide necessary assistance to displaced persons, including: (a) securing tenure rights for relocation land and assets, ensuring proper housing at resettlement sites with comparable access to employment and production opportunities, integrating resettled persons economically and socially into host communities, and extending project benefits to host communities to facilitate resettlement; (b) offering transitional support and development assistance such as land development, credit facilities, training, or employment opportunities; and (c) providing civic infrastructure and community services as needed.
- 2.3.12 **Standards of Living:** Enhance the living standards of poor and vulnerable groups displaced by the project, including women, children, and persons with disabilities, to at least national minimum standards and ensure access to social protection systems. Provide legal and affordable access to land and resources in rural areas, and appropriate income sources and adequate housing in urban areas.
- 2.3.13 **Persons without Title or Legal Rights:** Ensure displaced persons without legal land titles receive resettlement assistance and compensation for non-land asset losses, according to cut-off dates established in the resettlement plan, and include them in the consultation process. Exclude compensation for illegally settled land and conduct early land surveys and censuses to establish clear cut-off dates and prevent encroachment. Develop procedures for addressing claims under administrative or legal review by these displaced persons.
- 2.3.14 **Negotiated Settlement:** Develop transparent, consistent, and equitable procedures for land acquisition or changes in land use rights through negotiated settlements, ensuring that affected individuals maintain or improve their income and livelihood status.
- 2.3.15 **Information Disclosure:** Disclose the draft resettlement plan, including consultation documentation, in the project area promptly and accessibly, as per paragraph 57 of the ESP, in a form and language understandable to displaced persons and stakeholders. Similarly, disclose the final resettlement plan and any updates. Any RPF should also be disclosed in the same manner. Regularly update and disclose environmental and social information, including any significant project changes.
- 2.3.16 **Implementation:** Integrate involuntary resettlement into the project design and execution, including the full resettlement costs in the project's cost-benefit analysis. For projects with significant resettlement impacts, consider implementing resettlement as a standalone project component.

- 2.3.17 **Compensation and Entitlements:** Ensure compensation and other resettlement entitlements are provided before any physical or economic displacement occurs.
- 2.3.18 **Supervision:** Closely supervise the resettlement plan's implementation throughout the project's duration.
- 2.3.19 **Monitoring:** Engage qualified and experienced experts to monitor and assess resettlement outcomes, their impact on displaced persons' living standards, and whether the resettlement plan's objectives are met, considering baseline conditions and monitoring results. Disclose monitoring reports as per the Information Disclosure guidelines and consider involving third parties for monitoring support

2.4 Rationale for Triggering ESS2

- 2.4.1 ESS2 is applicable if the project's screening reveals it involves involuntary resettlement, including recent or foreseeable resettlement linked to the project. Involuntary resettlement includes physical displacement (relocation, loss of residential land, or shelter) and economic displacement (loss of land, assets, income sources, or livelihoods) due to involuntary land acquisition. If the Screening of the proposed projects concluded that land acquisition and loss of assets would likely occur, an RPF will be required to fully address and mitigate the impoverishing effects of resettlement. The RPF must outline potential impacts, both temporary and permanent, on land use and structures, and specifies compensation and resettlement procedures. It should serve as a guide for preparing Resettlement Plans (RPs) for each subproject, based on the RPF's guidelines and procedures.

3 RESETTLEMENT PLANNING FRAMEWORK

- 3.1.1 This RPF has been developed in accordance with Indonesia's laws on land acquisition and resettlement (LAR), along with environmental, health, safety, and social regulations, and the AIIB ESP and Environmental and Social Standards (ESS). The RPF outlines the potential impacts of the Project, identifies groups of Project Affected Persons, and clarifies the principles of land acquisition and resettlement. It assesses the legal framework for land acquisition and resettlement in Indonesia and the relevant AIIB policies, explains standard procedures and complaint handling methods, and details the steps necessary to plan, ensure continuity with AIIB standards, and to implement and monitor the impacts of land acquisition and resettlement throughout the Project Phase.
- 3.1.2 This RPF applies to landowners whose property will be permanently or temporarily affected by mandatory land acquisition or access restrictions for public and municipal needs in the Project's development. It also covers individuals renting private or state-owned land, those without registered or legal rights to the land they use, and anyone adversely affected by the Project. However, it does not apply to state land transferred between state agencies or used temporarily during construction unless a third party is harmed by the transfer or use. This RPF specifically addresses new or additional requirements for future involuntary land acquisition and affirms the LPMU 's commitment to avoid negative impacts from such acquisition and resettlement whenever possible. It also aims to mitigate and manage any impacts to ensure that affected individuals can maintain, restore, or improve their livelihoods by the end of the Project.
- 3.1.3 The RPF will also address livelihood restoration for other Project Affected Peoples (PAPs) who are economically displaced by project activities for both temporary and permanent displaced persons. This document is developed based on Indonesian regulations on land acquisition and livelihood restoration and the AIIB's ESP and Environmental and Social Standards (ESS). Project activities such as land acquisition and construction may impact the livelihoods of some parties such as formal/informal scavenger, waste collector, casual landfill worker, and waste truck driver.

4 REGULATORY AND POLICY FRAMEWORK

4.1 National Regulations and Policies

4.1.1 The policy regarding land acquisition and resettlement is regulated by several regulations. The implementation of land acquisition and resettlement must be conducted fairly and appropriately, balancing development and community interests. Some of the legal frameworks relevant to the land acquisition and resettlement policy in Indonesia are as follows:

- Law No. 6 of 2023 concerning the Stipulation of Government Regulations in Lieu of Law No. 2 of 2022 concerning Job Creation into Law
- Law Number 5 of 1960 concerning Basic Agrarian Law in Indonesia
- Government Regulation No. 39 of 2023 concerning Amendments to Government Regulation No. 19 of 2021 concerning Implementation of Land Acquisition for Development in the Public Interest
- Government Regulation No. 22 of 2021 concerning Implementation of Environmental Protection and Management
- Government Regulation no. 18 of 2021 on Management Rights, Land Rights, Apartment Units, and Land Registration
- Government Regulation No. 8 of 1953 concerning State Land
- Presidential Regulation No. 78 of 2023 concerning Amendments to Presidential Regulation No. 62 of 2018 concerning Handling Social Impacts in the Context of Providing Land for National Development
- Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia No. 19 of 2021 concerning Provisions for Implementing Government Regulation No. 19 of 2021 concerning the Implementation of Land Acquisition for Development in the Public Interest
- Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency of the Republic of Indonesia No. 17 of 2016 concerning Land Management in Coastal Areas and Small Islands
- Minister of Home Affairs Regulation No. 1 of 2016 concerning Village Asset Management
- Joint Regulation of the Ministry of Home Affairs, KLHK, Ministry of Public Works and Public Housing and Head of the National Land Agency of the Republic of Indonesia No. 79 of 2014, no. PB.3/MENHUT-11/2014, No. 17/PRT/M/2014, No. 8/SKB/X/2014 concerning Procedures for Settlement of Land Tenure in Forest Areas

4.2 Process of Land Acquisition for Public Interest

4.2.1 There are 4 stages for land procurement in the public interest consisting of planning, preparation, implementation and delivery (Article 9 of Government Regulation No. 19 of 2021).

Planning

4.2.2 LPMU must provide a comprehensive set of documents detailing the plan for land acquisition in the public interest, including:

- Objectives of the development plan.
- Confirmation of compliance with the Spatial Plan and the development priorities .

- Detailed location of the land, specifying administrative areas (provincial, regency/municipality, district, and village).
- Area of land required, estimating the total land area needed per administrative area outlined in the procurement plans across villages, districts, regencies, and provinces.
- Overview of land status, providing initial data on land ownership, titles, and information about potential landowners.
- Estimated timeline for land procurement stages, from document preparation to certificate issuance.
- Project implementation timeframe estimation.
- Estimated land valuation, including compensation for land acquisition covering surface and subsurface areas, buildings, vegetation, and assessable losses, involving public appraisers or competent institutions.
- Budget plan detailing operational and support costs necessary for executing land procurement for development in the public interest.

Preparation

4.2.3 The land acquisition preparation stage begins with the formation of a Preparation Team by the Governor within a maximum of 5 days after the land acquisition planning documents are received by the Governor. The tasks of the preparation team are as follows:

- Carry out the announcement of development plans to the community
- Carry out preliminary data collection on the location of the development plan
- Carry out Public Consultations on development plans
- Prepare the Location Determination (Penlok) for development
- Announce the Determination of Development Locations (Penlok) for Public Interest; and
- Carry out other tasks related to preparation of Land Acquisition for development in the Public Interest assigned by the governor.

Implementation and Delivery

4.2.4 To determine a location for development in the public interest, LPMU must propose the land procurement to the Land Office, including:

- Conducting an inventory and identification of land possession, ownership, use, and utilization, including measuring and mapping each plot and collecting data from Eligible Parties and land procurement objects.
- Announcing the inventory and identification results as determined by the Land Office, which serves as the basis for identifying Eligible Parties entitled to compensation.
- Assessing compensation.
- The Land Office appoints an independent appraiser to evaluate the compensation amount for the Eligible Parties.
- Holding deliberations on the compensation determination with the Land Office and Eligible Parties, with the results forming the basis for compensation payments as documented in the agreement minutes.
- If a mutual agreement on compensation isn't reached, Eligible Parties can file an objection with the district court, and if necessary, appeal to the Supreme Court. The final and binding decision of the District Court/Supreme Court will be the basis for compensation payments.

- Direct payment of compensation to Eligible Parties.
- Upon compensation payment, Eligible Parties must relinquish their rights and submit proof of ownership to LPMU through the Land Office. i) Transferring the land.

4.2.5 Once a development location is determined in the public interest, Eligible Parties can only transfer their land rights to LPMU through the Land Office. The rights transfer is completed by paying compensation based on the location's determined value.

4.3 Gap Analysis between GOI and AIIB on Land Acquisition and Involuntary Resettlement

4.3.1 The gap analysis between the Government of Indonesia (GOI) regulations and the Asian Infrastructure Investment Bank (AIIB) standards on Land Acquisition and Involuntary Resettlement highlights key differences in approach, scope, and the protection of affected people's rights. Both systems provide frameworks for managing land acquisition and its social impacts, but there are notable differences in their requirements.

Table 4-1 Land Acquisition GAP Analysis

Key Areas	GOI Framework	AIIB ESS2	Key Gaps	Recommendations
Scope and Application	Law No. 2/2012 focuses on physical land acquisition and monetary compensation. There is limited coverage of economic displacement and no provisions for restoring livelihoods.	AIIB ESS2, Para 1-6 covers both physical and economic displacement , including restrictions on land use, livelihoods, and access to resources, requiring mitigation for both.	GOI law mainly addresses physical displacement and does not include the broader scope of economic displacement and restrictions on livelihoods.	Expand to cover both physical and economic displacement , in alignment with AIIB ESS2, Para 1-6 , ensuring livelihood restoration and access rights are addressed.
Avoiding and Minimizing Involuntary Resettlement	GOI regulations primarily focus on implementing land acquisition for development projects but do not emphasize minimizing displacement.	AIIB ESS2, Para 4 focuses on avoiding or minimizing resettlement wherever possible by exploring project alternatives and ensuring that resettlement is a last resort.	GOI law does not emphasize exploring alternatives to minimize displacement, while AIIB promotes avoidance and minimization of resettlement.	Incorporate a resettlement minimization strategy, as outlined in AIIB ESS2, Para 4 , by encouraging alternatives that reduce displacement.
Compensation and Livelihood Restoration	Law No. 2/2012 provides compensation for lost assets but does not mandate livelihood restoration or support measures such as skills training or job creation.	AIIB ESS2, Para 11-12, 20 requires not only compensation for lost assets but also livelihood restoration programs, including land-based resettlement and capacity-building initiatives.	GOI law focuses on monetary compensation, lacking the broader livelihood restoration required under AIIB ESS2, which includes skills development and sustainable income sources.	Implement comprehensive livelihood restoration programs in alignment with AIIB ESS2, Para 11-12, 20 , including job training, land-based resettlement, and support for affected people.
Vulnerable Groups and Gender	GOI law does not provide specific provisions for vulnerable groups (Indigenous Peoples, women, or informal settlers), leading to	AIIB ESS2, Para 16, 24 mandates protections for vulnerable groups , ensuring their participation and FPIC for Indigenous Peoples, while	GOI regulations lack specific protections for vulnerable groups , and there is no requirement for FPIC in projects involving Indigenous	Establish protections for vulnerable groups , incorporating FPIC for Indigenous Peoples and gender-inclusive planning, as outlined in AIIB ESS2, Para 16, 24 .

Key Areas	GOI Framework	AIIB ESS2	Key Gaps	Recommendations
	potential marginalization.	addressing gender-related impacts.	Peoples or gender-sensitive planning.	
Stakeholder Engagement and Consultation	Law No. 2/2012 requires public consultation, but the focus is mainly on compensation negotiation rather than active participation in planning and implementation.	AIIB ESS2, Para 17 requires meaningful consultation , ensuring active participation of affected people, particularly vulnerable groups, in planning, monitoring, and decision-making.	GOI law provides limited stakeholder engagement compared to AIIB's emphasis on inclusive, meaningful consultation, especially for vulnerable groups .	Enhance stakeholder consultation to ensure active participation throughout all project phases, in alignment with AIIB ESS2, Para 17 , with a focus on inclusivity for vulnerable groups.
Grievance Redress Mechanism (GRM)	Law No. 2/2012 includes dispute resolution mechanisms.	AIIB ESS2, Para 18 requires a transparent GRM that is accessible to all affected persons, providing prompt resolution of disputes, with specific provisions for vulnerable groups.	GOI's grievance mechanisms are lacking the accessibility required by AIIB ESS2 for vulnerable groups.	Establish an efficient GRM as per AIIB ESS2, Para 18 , ensuring prompt resolution of disputes, with special attention to vulnerable groups and transparent processes.

5 ELIGIBILITY, EVALUATION, AND ENTITLEMENT

5.1 Person eligible for compensation

5.1.1 According to this RPF, the following individuals are entitled to compensation if they are present in the Project area prior to the cut-off date:

- PAPs who are formal owners, lessees, or legal users, as well as unregistered owners and informal users of affected agricultural or construction land, whether privately or publicly owned.
- PAPs who are owners or informal users of crops affected by the Project.
- PAPs who are owners or informal users of perennial plants and trees, such as fruit-bearing trees and vegetables, affected by the Project.
- PAPs who are owners of affected non-agricultural businesses, whether the entire plot or a part of it is impacted by the Project.
- Workers, agricultural processors, scavengers, and farmers on affected property whose incomes and livelihoods are temporarily impacted due to the Project.
- Communities or households whose access to their buildings and usual resources is affected by the Project.
- PAPs who are formal owners, lessees, or legal users under Indonesian law, or unregistered owners and informal users, affected by the temporary occupation of their land due to the Project.
- Vulnerable groups (VG), including individuals below the poverty line according to national laws, women-led households, single parents, elderly, disabled persons, veterans, or those with long-term health problems affected by the Project.
- PAPs who are formal or informal owners of buildings (residential, commercial, industrial, institutional, auxiliary, etc.), lessees of buildings, or persons with occupancy rights in expropriated residential buildings or apartments, or informal users of public buildings affected by the Project.
- PAPs whose economic activities are disrupted by the Project activities, thus disrupting their livelihoods (formal/informal scavenger, waste collector, casual landfill worker, and waste truck driver).
- PAPs whose losses cannot be determined or foreseen at this stage of the Project.

5.2 Cut-off date

5.2.1 The cut-off date is the moratorium date, after which individuals who enter the Project area are not eligible for compensation or other resettlement assistance. Additionally, any investments in fixed assets (such as buildings, crops, fruit trees, timberland, etc.) initiated after the cut-off date will not be compensated. This policy does not apply to individuals who become property owners after the cut-off date based on a court judgment concerning property that existed before the cut-off date. The cut-off date aims to prevent opportunistic claims from those who move into the Project area solely to gain benefits.

5.2.2 To establish the timeline for determining eligibility for compensation and resettlement assistance, a population census and asset inventory should be conducted as soon as the sub-project is identified. This process should quantify all possible impacts and, if possible, be supported by video materials and photos. The survey report must be signed by the PAP and the LPMU 's representative. The start date of the census will be considered the cut-off date. Before the census, LPMU will inform all owners and users about the start of the expropriation process and the expropriation deadline.

Detailed Measurement Survey

- 5.2.3 Detailed Measurement Survey (DMS) is the process through which all fixed assets (i.e., lands used for residence, commerce, agriculture – including ponds, dwelling units, shops; secondary structures, such as fences, tombs, wells; trees with a commercial value, etc.) and sources of income and livelihood inside the right-of-way of each sub-project to be identified, measured, identify owners of the assets, and their exact pinpointed/ locations. It is also required to determine the severity of the Project's impacts on the affected assets and the severity of impacts on the livelihood and productive capacity of PAPs.
- 5.2.4 The Detail Measurement Survey (DMS) is required which needs to be undertaken with the participation of PAPs. The objectives of the DMS to identify the measurement of the dimensions and quantities of all affected assets, including acquired land, buildings, communal/public or cultural/religious facilities, incomes and wages that will be the basis of the assessment of the impacts to be included in the RAP. The data gathered for the DMS will be considered for preparing accurate lists of PAPs based on the socio-economic census survey. The pricing for the loss of houses and structures will be based on the precise measurement, type and quality of materials. It will be calculated based on the replacement cost, i.e., the cost of new building materials and labour

5.3 Evaluation of affected assets

- 5.3.1 The following general rules apply when evaluating assets for compensation:
- **Compensation for Buildings and Land.** Compensation for agricultural land, acquired buildings, businesses, or land can take the form of suitable replacement property that matches the value, quality, and accessibility of the original. The compensation value may include replacement costs and all related transaction expenses (e.g., land registration/cadastral fees, transfer fees, and administration fees, if applicable). Compensation will also cover any damage caused by construction activities.
 - **Compensation for Plants and Trees.** Ideally, the LPMU should access the location after annual plant residues have been harvested. No compensation will be provided for annual crops harvested before the LPMU 's arrival. For annual plants that cannot be harvested before the LPMU arrives, compensation will be provided at replacement cost. PAPs have the option to harvest crops even after the LPMU has entered the site, if feasible. Compensation for annual plants and trees will be provided at replacement cost, considering not only crop yields but also the costs of establishing the plantation (e.g., seedlings, land preparation) and lost income during the period needed to restore yields.
 - **Compensation for Affected Businesses.** If project activities negatively impact private or business income sources (e.g., scavengers), the LPMU will take necessary compensatory actions, as per this RPF, to restore or improve livelihoods to pre-project levels.
 - **Compensation for Other Losses.** If project activities result in the loss or displacement of livelihood resources (e.g., scavengers, waste collectors, waste truck drivers, or other businesses within the project site), affected individuals will be compensated for the loss of production/income for one season plus reasonable costs associated with the relocation of production resources.

5.4 Entitlements to Compensation and Assistance

- 5.4.1 Compensation and rights should ensure that project-affected people can maintain or improve their livelihoods and living standards after the project is completed. **Table 5-1** below provides entitlements for the various PAP categories and impact levels associated with the Project.
- 5.4.2 For unforeseen adverse impacts during project implementation, the LPMU will take action in accordance with the objectives of the RPF to restore the socio-economic and living conditions of the affected communities. The LPMU will conduct a socio-economic census/survey of PAPs and prepare an ARP that includes all applicable requirements in accordance with the approved RPF.
- 5.4.3 In case of cash compensation, payments will be remitted through banks based on the preferences of affected citizens, free of fees or processing charges. Costs related to the transfer of funds, and documentation requirements will be borne by the LPMU or landowner as agreed.

Table 5-1 Entitlement and Compensation Matrix

Type of Displacement/Loss	PAPs Legal Rights Status	Compensation
Economic Displacement		
Loss of agricultural land	Titled Landowner	- Replacement land of equal or higher value and similar productivity near or in the vicinity of the expropriated land along with all resettlement costs and administration costs required for the transfer of ownership rights, if any; OR - Cash compensation equal to replacement cost.
	Lessee with valid documents of the right of lease who cultivates agricultural land	- Compensation for all land development (such as irrigation). Compensation will be paid at the replacement cost; AND - Relocation and equipment installation costs; AND - Replacement land for rent, if the land is rented from the state.
	Untitled Landowner	PAP without legal rights who own land at the cut-off date will not receive compensation for the land but will be compensated for all investments made on the land including labor.
Improper land, agricultural, or construction	Property Owner	In case the remaining area of land is improper, it can be acquired upon PAPs request and compensated according to type of property
Economic Displacement	Vulnerable Groups (PWDs, women, pregnant women, senior citizens, female-headed households, households living below poverty threshold, those losing substantive % of income)	- Cash compensation equal to replacement cost for loss of assets; - Livelihood restoration assistance, including skills training - Priority in employment on the Project where possible;
Plants and Structures on Agricultural Land		
Loss of Annual Crops that cannot be harvested before land acquisition	Owner of the plants	Cash compensation which equals the value of expropriated crops including the value of time needed to produce such crop, as well as costs of possible investment (work and labor force)
Loss of perennial plants and trees (fruit/flower/etc)		- The right to collect fruit; AND - Cash compensation equal to replacement cost based on type, year and productive value, including the value of the time required to produce the crop, as well as possible investment costs (work and labor), to grow a crop until they reach their full yield potential.

Type of Displacement/Loss	PAPs Legal Rights Status	Compensation
Wood mass (mature or nearly mature)		The replacement cost determined based on the value of the dry wood volume at market value
Impact on agricultural employees, or processors	Workers	• In case of disturbance of income source compensation on a one-time basis will be paid commensurate with income loss; AND • Training for alternative jobs if possible; AND • Priority in employment on the Project, if possible and on a case by case basis (In accordance with social assessment processed).
Business (non-agriculture)		
Business structures (shops, kiosks, offices, etc.)	Owners with formal title	• Cash compensation equal to replacement cost, including taxes; AND • Costs of relocation and reinstallation of equipment and inventory; AND • One-time cash compensation (transition allowance) to be determined on a case-by-case basis during the social survey by obtaining relevant income and livelihood data. The transition allowance will then be determined commensurate with the loss; OR • At the request of the property owner, if legal requirements are met, replacement property of equal or higher value and similar features, adjacent to or in the vicinity of the expropriated building along with all resettlement costs and administration costs required for the transfer of ownership rights, if any.
	Lessee with valid documents	• Compensation for all improvements on the premises (such as reconstruction, refurbishment etc.). Compensation will be paid at replacement cost; AND • Costs of equipment and inventory relocation and re-installation; AND • Cash compensation on a one-time basis (transitional allowance) to be determined on a case-to-case basis during social survey by obtaining relevant data on income and livelihood. Transitional allowance shall then be determined commensurate with the loss; AND • Replacement premises for lease, if premises leased from state.
	Owners without formal title (building constructed without building permit on one's own plot of land, or on somebody else's land - presumably state owned)	• Cash compensation for the building at replacement cost of the structure, including taxes; AND • Costs of equipment and inventory relocation and re-installation; AND • Cash compensation on a one-off basis (transitional allowance) to be determined on a case to case basis during social survey by obtaining relevant data on income and livelihood. Transitional allowance shall then be determined commensurate with the loss.

Type of Displacement/Loss	PAPs Legal Rights Status	Compensation
Loss of non-agricultural businesses	Owner of business	- Cash compensation for relocating the business, including compensation for immovable inventory and replacement cost of investment; AND - Cash compensation on a one-time basis (transitional allowance); AND - Any registration taxes; AND - Appropriate level of support for improving the skills, if necessary, to perform restoration of income source (livelihood).
	Workers	- In case of disturbance of income source compensation on a one-time basis will be paid commensurate with income loss; AND - Training for alternative jobs if possible; AND - Priority in employment on the Project, if possible and on a case by case basis (In accordance with social assessment processed).
Physical displacement		
Buildings (residential, houses, flats etc.)	Titled / Formal Owner	- Cash compensation at replacement costs; AND - Payment for relocation costs (moving allowance) and compensation for other costs during relocation and cash compensation on a one-time basis (transitional allowance); OR - At property owner demand, if legal terms are met, replacement property of equal or higher value, in direct proximity or in the surroundings of the expropriated property together with all costs of resettlement and administrative fees needed for transfer of ownership rights, if any; AND - Payment for relocation costs (moving allowance) and compensation for other costs during relocation and cash compensation on a one-time basis (transitional allowance); If immediate accommodation/storage is unavailable, housing/storage rental allowance covering rent for at least 3 months or more if rental requirement period is longer.
	Informal owner - building constructed without building permit on one's own plot of land if subject to legalization	Payment for relocation costs (moving allowance) and compensation for other costs during relocation and cash compensation on a one-time basis (transitional allowance); If immediate accommodation/storage is unavailable, housing/storage rental allowance covering rent for at least 3 months or more if rental requirement period is longer.
	Informal owner - building constructed without building permit on one's own plot of land or constructed without building permit on someone else's or state-owned - not eligible for legalization	- Cash compensation for the building at replacement cost of the structure; AND - Payment for relocation costs (moving allowance) and compensation for other costs during relocation and cash compensation on a one-time basis (transitional allowance).
	Lessee of the affected property	Payment of resettlement costs and compensation for proven costs caused by relocation and cash compensation on a one-time basis (transitional allowance).

Type of Displacement/Loss	PAPs Legal Rights Status	Compensation
	Lessee or person with occupancy right to state owned flat	• Provide lease or occupancy rights of same kind of another equivalent, social or state-owned property in nearest vicinity; AND • Payment for relocation costs (moving allowance) and compensation for other costs during relocation and cash compensation on a one-time basis (transitional allowance) evaluated based on potential extra costs incurred by increased commuting costs.
	Owners of temporary/ movable structures	Approved site to relocate structure with the relevant permissions and access to the road, if required.
Other resettlement situations		
Loss of access to community assets, buildings and structures	Communities or households	Replacement of public ownership or conveniences (roads and the like). Access to equal conveniences or services
Impacts caused by temporary occupancy of land and any damages to the property	Property owner	• Market price of lease for duration of the occupancy. The land must be returned to original condition. Improved quality of the land due to top soiling work should not be removed, except if agreed upon differently with PAP; AND • Replacement cost in accordance with this matrix for affected crops, orchards, nurseries etc; AND • Compensation for any damages to the property evaluated at replacement costs if land cannot be restored to original status at the end of rental.
Host Population Affected by PAP Relocation	Host Community impacted by PAP resettlement	• Community infrastructure improvements (e.g., roads, water supply, drainage) to accommodate increased population; • Cash compensation for loss of access to communal lands or facilities; • Job opportunities related to resettlement housing construction or maintenance

6 IMPLEMENTATION ARRANGEMENTS

6.1 Project Implementation Arrangements

- 6.1.1 Project management at the site level will be carried out by the Local Project Management Unit (LPMU) consisting of various Provincial/Regency level agencies (depending on the scope of each sub-project). The Environmental Agency at the Province/Regency Level will be the executing agency.
- 6.1.2 The implementation arrangements for the resettlement process need to involve Central Project Implementation Unit (CPIU) and Local Project Management Unit (LPMU). The roles and responsibilities of CPIU and LPMU is presented in the Table 6-1.

Table 6-1 Roles and Responsibilities of Government

No	Party/Agencies	Roles & Responsibilities
Ministry Level (CPIU)		
1	National Research and Development Planning Agency (Bappenas)	Facilitating national development planning and budgeting
2	Ministry of Spatial Planning (ATR BPN)	Synchronization of regional spatial planning
3	Ministry of Environment and Forestry (KLHK)	Forest area use permits
4	Ministry of Finance (Kemenkeu)	Budget Submission and Reporting
5	Ministry of Public Works and Public Housing (PUPR)	Facilitating the provision of public facilities and infrastructure
Province and Regency/City Level (Local Government/LPMU)		
6	Governor/Regent	The resettlement plan approval
7	Local People's Representative Council (DPRD)	Budget Approval
8	Regional Development Planning Research and Development Agency (BAPPEDA)	Facilitate the planning of development programs and budgeting of TPST activities and coordinate the allocation of tasks among stakeholders.
9	Spatial Planning Agency (PUPR & Cipta Karya)	Synchronization of regional spatial planning and provision of public facilities and infrastructure
10	Regional Financial and Asset Management Agency (BPKAD)	Providing support and allocation of budget and land for the construction of waste management facilities
11	Land Agency (BPN)	Facilitating land acquisition activities such as land checking, land measurement, land administration and land ownership transfer.
12	Technical Agency (Agricultural/ Farm/ Fisheries/MSME/ Agency)	Provide technical training in capacity development programs and livelihood restoration program assistance

- 6.1.3 The organizational arrangements for the land acquisition process adhere to Government Regulation no. 19 of 2021 and its amendments to Government Regulation no. 39 of 2023. The regulation outlines four stages: planning, preparation, implementation, and handover

of the acquired land to the LPMU. The preparation and implementation stages are detailed below.

Planning

- 6.1.4 In this phase, the resettlement team (formed by LPMU) will work closely with the project design team (mechanical engineering) to select an appropriate location. The team will gather data, study, and assess the land to be acquired, documenting land types, suitability with spatial planning, stakeholders involved (owners, users, beneficiaries), existing infrastructure and activities, resources, and the required compensation to be paid. At this stage, the team has started to involve the sub-district government, village government, and community leaders to conduct initial identification of PAP. The PAPs identified are not only those affected by land acquisition but also those displaced economically and physically due to project activities (scavengers, collectors, waste truck drivers, etc).

Implementation

- 6.1.5 Once the Project is approved by the Bank, the LPMU will draft a RPF or an Abbreviated RPF, as needed, based on the Land Acquisition Plan and the BPN (*Badan Pertanahan Nasional*/National Land Agency) Inventory and Identification Report. The final RPF will be signed by both the regional government (Governor/Regent) and the LPMU, and the land acquisition must be completed before construction starts.
- 6.1.6 At this stage, the team began to socialize the land acquisition and resettlement plans to the community, especially to PAP. At this stage, a census was also conducted on the PAP to determine their socio-economic conditions before the project began.
- 6.1.7 The LPMU will select licensed independent appraisers through a procurement process in accordance with Indonesian regulations. The Chair of the Land Acquisition Implementation Team (from BPN) will appoint the appraiser chosen by the implementing agency. This appraiser will determine the value of physical and non-physical assets based on the SPI (*Standar Penilaian Indonesia*/Indonesian Valuation Standard) 306, which will form the basis for compensation negotiations.
- 6.1.8 The LPMU will disburse compensation as agreed during negotiations. Once all compensation has been paid or deposited in court for those disputing the amount, BPN will transfer the acquired land to the LPMU. Before consigning, the LPMU and BPN use a persuasive approach to encourage acceptance of compensation. Similarly, the court uses a persuasive approach to encourage recipients to accept compensation. Legally, once the handover is complete, the LPMU can proceed with construction. This process will involve a public notary to guarantee the correctness and legitimacy and not be legally tainted on land documents purchased.
- 6.1.9 In addition to resolving land ownership transfer matters with landowners, LPMU also provides compensation to other PAPs whose livelihoods have been disrupted, such as land users/untitled landowners, vulnerable, scavengers, workers and others. The type of compensation provided is as described in Table 5-1 Entitlement and Compensation Matrix.
- 6.1.10 The implementation of survey activities, censuses, implementation of capacity development for PAPs, implementation of livelihood restoration programs can be carried out in collaboration with NGOs/CSOs, academics from universities, private consultants, and in collaboration with CSR programs from private companies around the project location.

6.2 Project Implementation Structure

- 6.2.1 The LPMU will form a land acquisition team or maintain the existing one. This team's responsibilities include ensuring the land acquisition process for the Project is conducted in an open, transparent, and participatory manner.
- 6.2.2 The scope of work of the land acquisition team is to coordinate related agencies to ensure that the land meets readiness criteria and can be acquired (suitability of spatial planning, ownership status, permits), conduct socialization and communication with land owners, conduct censuses and collect PAP data, and report all progress of activities to the LPMU head periodically.
- 6.2.3 Each village where land needs to be acquired will have a sub team comprising:
- LPMU (Environmental agency) team members
 - Sub-district Head
 - Village Heads
 - At least two representatives from the affected communities
- 6.2.4 The LPMU will manage all aspects of resettlement planning and coordinate compensation for enclave land, with the involvement of local government authorities. The implementation of the RPF will build on the Project's implementation arrangements and the procedures for resettlement and compensation activities as per Indonesian laws and regulations.

6.3 Training

- 6.3.1 Capacity development for RPF review and approval will be done through ad hoc training and technical assistance to ensure that all stakeholders involved carry out their various responsibilities effectively.

6.4 Budget Estimates

- 6.4.1 According to Presidential Regulation No. 71 of 2012 on Procedures for Procuring Land for Development in the Public Interest, the funds allocated for land acquisition include compensation costs, operational costs, and costs to support related activities. Once site-specific economic studies are completed, detailed information about the specific impacts, individual and household incomes, the number of affected people, and other demographic data will be available to prepare precise budgets for each land acquisition. The team will manage and monitor the budget following administrative and financial management regulations, manuals, SOPs, and other activities that qualify for payment. A representative from the LPMU accounting staff will be permanently assigned to the team.
- 6.4.2 Budget related to land acquisition including costs for livelihood restoration programs/plans/activities, social preparation, resettlement preparation, relocation and displacement costs, various types of land loss (e.g., agricultural land, forest land), loss of buildings (e.g., commercial, residential), and others will be included in the LPMU (local government) budget approved by the central government.

7 PUBLIC CONSULTATIONS AND INFORMATION DISCLOSURE

- 7.1.1 Consultation and disclosure for land acquisition begin at the planning stage and continue through the preparation and implementation phases, including resettlement.
- 7.1.2 Government Regulation No. 19 of 2021 and its amendments to Government Regulation No. 39 of 2023 mandate consultations at various stages:
- **Planning Stage:** Inform PAP about the project location, development purpose, land acquisition steps and timeframe, appraiser roles in asset valuation, forms of incentives or compensation, eligible assets (both physical and non-physical, including premiums), compensation for community facilities, and PAP responsibilities and rights. These consultations will utilize public meetings, media, and information dissemination in nearby villages. The approach will be dialogical, with multiple sessions as needed, and agreements will be documented. The location for physical investments will be publicly disclosed via media, provincial and city government websites, and the LPMU website.
 - **Inventory and Identification:** The BPN will consult with asset owners during the inventory and identification of affected assets. The inventory results will be disclosed in the affected village and district offices for up to 14 days for confirmation and complaints.
 - **Asset Valuation:** Information from licensed appraisers on asset valuation will be provided to the PAP and used as a basis for negotiations.
 - **Resettlement Planning Framework:** The draft and final RPF will be disclosed in the affected villages near the project site, as well as on local government and LPMU websites.

7.2 Public Consultation and Information Disclosure during Preparation Stage

- 7.2.1 Public consultation is a crucial aspect of land acquisition preparation. Announcements about development plans must be communicated to the community at specific locations and times. These consultations should involve affected community members and respected figures from the broader community, allowing the LPMU to address public concerns related to the project. The Preparation Team will conduct public consultations within 60 working days after signing the project location plan, documenting the results in the minutes of the agreement. If there are objections, a second consultation will be held within 30 working days after the initial agreement, and this process can be repeated for another 60 days if needed.
- 7.2.2 Reaching an agreement between the LPMU and the community is essential to mitigate or prevent disputes from escalating to the Provincial level. If objections persist, the Governor must form an Objection Review Team to examine them within 14 days and issue a recommendation on whether the planned development location should be approved or rejected.
- 7.2.3 Public consultations should start as early as possible, ideally during the conceptual design phase, to ensure strategic project decisions avoid major environmental and social risks and optimize project benefits. The LPMU must conduct meaningful consultations with affected individuals and relevant stakeholders, including local authorities and NGOs. It is crucial to thoroughly identify and prioritize stakeholders, including vulnerable, disadvantaged, and voiceless groups. Stakeholders should be consulted to varying degrees based on the potential impacts they face.

7.3 Public Consultation and Information Disclosure during Implementation Stage

- 7.3.1 Public consultations during the implementation phase should address aspects, including continuation of the process, announcement to the PAP, documentation of assets, agreement on compensation, and preparation of contracts, payment of compensation, and resettlement assistance. The specific details and scope of these measures will vary based on the nature and extent of potential impacts and compensation required.
- 7.3.2 In the early stages of project planning (land acquisition), especially when selecting a project location, it is necessary to collect information about the land and its PAP. In this process, there are core stakeholders who need to be engaged to obtain the necessary information.
- 7.3.3 These stakeholders include the sub-district government, village government, and community leaders. These stakeholders are those who understand the condition/profile of the land to be acquired, such as who the land owners are, land users, cultivators, tenants, what activities are on it, and other sensitive receptor-related information (scavenger, waste collectors, etc).

Continuation

- 7.3.4 A crucial aspect of the land acquisition implementation stage is maintaining ongoing public consultation and participation. This continues from the earlier stages of site selection, screening, census, and plan development, depending on the potential impacts. The community and landholders should be informed about the approval of the RPF and its implications for land acquisition and compensation for the PAP. This approach ensures that no individual or household is unexpectedly notified of their impact. Instead, the process involves continuous engagement, aiming to keep the community informed and involved from the beginning to the end of the project in a participatory manner.

Announcement

- 7.3.5 At the earliest opportunity, the Project will announce the land acquisition to landholders and users. Notifications will be provided both in writing and verbally, especially for older individuals who may be illiterate, with the Village Head or their representatives present. Additionally, the Land Acquisition Team, along with affected landholders and users, will accompany survey teams to identify sensitive areas as needed.

Documentation

- 7.3.6 The Land Acquisition Team will organize meetings with affected individuals or households to discuss the compensation process. For each affected party, the team will compile a compensation inventory, which includes personal information, household members, total landholdings, inventory of affected assets, and information for future monitoring. This information will be supported by photographs and verified by local government representatives. Files will be kept up-to-date and include detailed documentation of the land. Each individual will receive a copy of their file during negotiations to ensure the land acquisition process can be monitored over time. All claims and assets will be documented in writing.

Agreement

- 7.3.7 The affected people or household will receive clear explanations of the compensation options available to them. The land acquisition team will prepare a contract that specifies all properties and land being relinquished, as well as the chosen compensation types (cash and/or in-kind). Those opting for in-kind compensation will fill out an order form, which will be signed and witnessed. The compensation contract will be read aloud in the presence of the affected party, the Technical Planning Team, Provincial and District Compensation Team, and village leaders before it is signed. The transfer of properties such as land and buildings, along with compensation payments, will occur in the presence of the affected party and the Land Acquisition Team.

8 GRIEVANCE REDRESS MECHANISM

- 8.1.1 The GRM in this RPF document will refer to the GRM included in the ESMPF document. The grievance mechanism flow in the RPF document will follow the same process as outlined in the ESMPF document.
- 8.1.2 The land acquisition process for this project will follow Government Regulation No. 19 of 2021 and its amendments to Government Regulation No. 39 of 2023, using the existing LPMU complaint handling system or creating a new system to manage grievances. Objections will be handled through consultations at the project site, involving relevant local institutions, and unresolved complaints will proceed to litigation as regulated in Government Regulation No. 39 of 2023. There will be no fees for whistleblowers, and the grievance mechanism will ensure cultural and gender sensitivity.
- 8.1.3 PAP will receive guidance on submitting grievances during the assessment process, with clear mechanisms included in the RPF. Information on how to submit a complaint must be available on the project website, in affected village offices, and in the project office. Anyone can submit suggestions, opinions, or complaints to the project openly, and anonymous complaints are also encouraged to be accepted, though their veracity must be verified. Complaints can be submitted directly to the PIC or indirectly through the websites such as <https://www.lapor.go.id/> for the national level, project hotline, email, official letter, or through community leaders/representatives to be directly forwarded to the project PIC. Grievances will be recorded and included in LPMU's quarterly report to the Bank. Initial complaints must be submitted to the PIC via the contact details provided and recorded in the complaints register and will escalate if not resolved in site level.
- 8.1.4 The GRM ensures that all complaints from PAP are promptly addressed in a fair and transparent manner. It facilitates a structured process for receiving grievances, ensuring that all concerns are handled proactively and involve relevant parties. The mechanism emphasizes responsiveness, transparency, and stakeholder involvement, ensuring that grievances are documented and properly tracked. A designated PIC regularly monitors the grievance process to ensure no unresolved issues remain, thus minimizing potential risks to the project's operations.

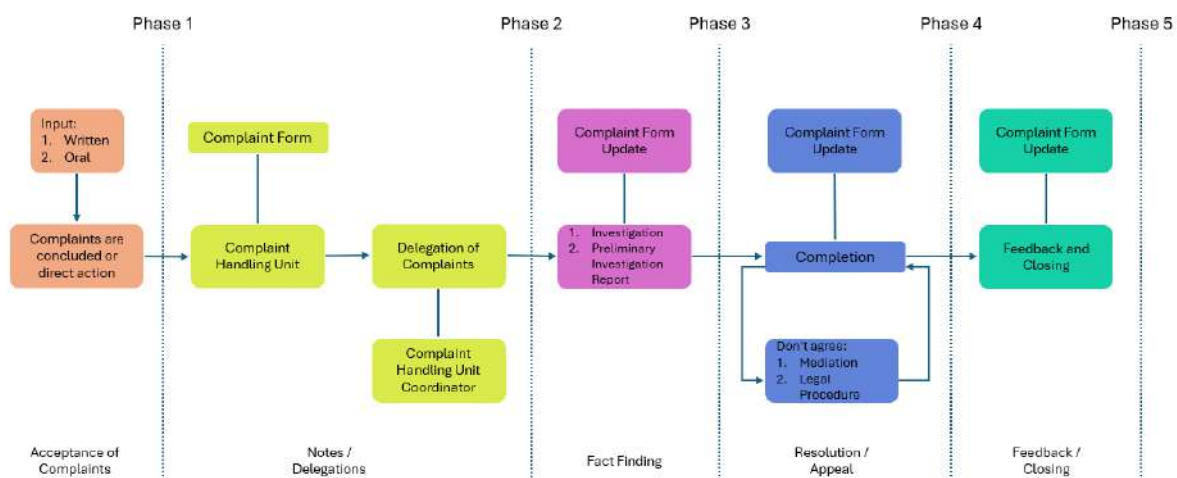


Figure 8-1 Grievance Redress Mechanism Chart

- 8.1.5 **Figure 8-1** illustrates the flowchart of the Grievance Redress Mechanism. There are five phases in the complaint handling mechanism: the first phase is acceptance of complaints; the second phase is notes/delegation; the third phase is fact-finding; the fourth phase is resolution/appeal; and the fifth phase is feedback/closing.

Table 8-1 Summary of Stages of Grievance Process

Stage	Description	Responsibility	Timeline
Stage 1 : Acceptance of Complaints	- Comments and Questions (verbal and/or in writing) are received, analyzed and registered as part of the standard feedback process. - All communication are subject to the feedback process, which ensure that feedback is documented incorporated and responded to as needed - When a grievance is identified, stage 2 of the grievance procedure is initiated	GRU Field Team/officer	-
Stage 2 : Notes/Delegations	- When a grievance is identified, it is officially registered in a grievance log (see Appendix 12 for template of grievance log) and given a unique identification number. - It is categorized based on the type of complaint and its severity. Grievances are categorized into two (2) categories - Low significance grievance, with the following characteristics : - It involves individual affected people only; - One-off grievance, less probability it will attract media attention; - Does not require immediate intervention from managerial level. - High significance grievance, indicated by the following characteristics: - The complaint involves a large group of affected people; - The complaint has not been resolved during the time specified in this mechanism; - Recurring and potentially affecting the project activities schedule; - Potentially attracting media attention; - Requiring immediate intervention from managerial level. - An initial response is sent to the person who raised the grievance within six working days, acknowledging their feedback and describing the next steps in the grievance process, time estimates for these steps and a contact person. - The issue will be delegated to relevant unit/department to be follow up.	GRU Field Team/officer or GRU Database Administration GRU Manager (Grievance Mechanism Coordinator) for high significance grievance	Three days after receipts of grievance
Stage 3 : Fact Finding	- The project will investigate grievance and their surrounding in a timely manner. Investigation may include photographs and other evidence, witness statements, interviews with affected stakeholders and other parties, review of site register and other information gathering activities - The results of the investigation will be reviewed and a resolution will be proposed. The development of the resolution may involve consultation with the person involved. The proposed resolution will then be formally communicated to all parties	GRU Field Team/officer	Six days

Stage	Description	Responsibility	Timeline
Stage 4 : Resolution/Appeal	1. If the resolution is accepted by all parties, it will be documented, implemented and the grievance is closed. 2. If the resolution is not accepted, it will be reconsidered and the following resolution may be proposed : a. If complainant is not satisfied with the proposed resolution either party resorts to a mediator/arbitrator b. Mediator/arbitrator then review the grievance and seeks resolution; c. Mediator/arbitrator proposes resolution d. If both parties are satisfied with the proposed resolution it will be documented. Implemented and the grievance is closed 3. If both parties are not satisfied with the proposed resolution, then the complainant or project will resort to the courts.	GRU Manager (Grievance Mechanism Coordinator) GRU Field Team/officer	Six days
Stage 5 : Feedback/Closing	After the accepted resolution has been implemented, it will be monitored and its effectiveness will be evaluated. All parties will be notified that the resolution has been implemented and will have the opportunity to provide feedback on the grievance process and its implementation	GRU Manager (Grievance Mechanism Coordinator) GRU Field Team/officer	Ten days

Grievance Monitoring and Feedback

- 8.1.6 The PIC will create a centralized complaint record and tracking system. Complaints from PAP regarding land acquisition, resettlement processes, compensation, or livelihood restoration must be carefully tracked. The tracking system ensures each complaint is assigned to a specific individual or team, making sure it is thoroughly investigated and resolved, with a particular focus on restoring livelihoods or ensuring proper resettlement conditions. This database allows all registered complaints to be tracked and retrieved as needed. The team's performance in managing and resolving complaints is reviewed as part of both internal and external monitoring. A GRM Form is attached to each complaint to facilitate the transfer of information.
- 8.1.7 After a complaint is resolved, soliciting feedback from the complainant and ensuring they are informed of the outcome reinforces the integrity and transparency of the grievance redress system. The feedback loop ensures that grievances are not only resolved but also that the resolution meets the complainant's expectations and contributes to improving overall project practices. For anonymous complaints, public posting provides a means of transparency while maintaining confidentiality.
- 8.1.8 Given that resettlement issues are highly sensitive and can impact the displaced communities' ability to reestablish their lives, timely resolution of grievances is critical. Complaints regarding delays in compensation or inadequate assistance for livelihood restoration (such as access to alternative employment, farmland, or training) must be prioritized to prevent further harm to the PAP.

Grievance Log

- 8.1.9 The complaint record includes details of the person responsible (assigned) for each complaint, including the date the complaint was reported, the date the complaint record was updated, the date information about the proposed corrective action was sent to the complainant (if applicable), the date the complaint was closed, and the date the response was sent to the complainant. The complaint record should also include how the complaint was reported, details of the complaint submitted by the complainant, and any evidence of the complaint, such as photos, videos, recordings, documents, letters, etc. The sample of grievance record form will refer to the ESMPF document and is attached in **Appendix B**.

Roles and Responsibilities

- 8.1.10 The recommended description of roles and responsibilities related to the grievance mechanism for the resettlement planning framework is presented in **Table 8-2**, and outlines the division of responsibilities among the grievance handling team.

Table 8-2 Proposed Roles and Responsibilities in The Grievance Redress Unit

Proposed Role	Position in Project	Description of The Responsibilities
Grievance Redress Unit Manager (Grievance Coordinator)	To be determined (TBD) by local government/project proponent	The GRU Manager (Grievance Coordinator) is responsible for allocating the necessary resources to ensure that the grievance mechanism is implemented in accordance with the guidelines. The GRU Manager also serves as the main point of contact for the resolution of community complaints and grievances, and oversees the overall processing of grievances, including: The GRU Manager is responsible for the following: • Dissemination or publicising of the Grievance Mechanism • Logging and acknowledging receipt of grievances • Delegating responsibility for redress • Coordinating the GRU field team fact-finding mission • Facilitating decisions on resolution actions with aggrieved parties • Closing out grievances • Tracking and monitoring of all grievances • Generating reports of grievance activities
GRU Field Team/Officer (Grievance Contact)	To be determined (TBD) by local government/project proponent	GRU Field Officers and Grievance Contacts serve as the primary points of contact between the project and external stakeholders. They report to the GRU Manager. The GRU Field Officers are responsible for: • Publicise the Grievance Mechanism in project-affected communities and communicate its purpose and how to use it. • Attempt to mitigate grievances before they become formal complaints/disputes. • Obtain contextual data about a grievance from the aggrieved parties, community members, and through first-hand observational data (fact finding). • Receive grievances directly from stakeholders. • Log grievances in the Grievance Log or database. • Assisting the GRU Manager in evaluating grievances; • Assisting in identifying appropriate corrective action; • Communicating with stakeholders who have lodged grievances, advising them on status and eventually informing them of the decision taken; • Assisting in tracking the status of all grievances; and • Maintaining dialogue with external stakeholders on grievances received and how these are being resolved.
GRU Database Administrator	To be determined (TBD) by local government/project proponent	The GRU Database Administrator shall ensure the quality of all log entries into the GM database, and shall help the GRU Manager to stay aware of dates and deadlines for grievance redress actions.
Informal Grievance Recipient	To be determined (TBD) by local government/project proponent	All project personnel such as direct employees, as well as contractor and subcontractors employees are informed about the Grievance Mechanism and if approached by community members for a grievance obliged to report this grievance to the GRU Field Officer or Manager in a timely manner. It is every project personnel's responsibility to report grievances, and to ensure that these are filed correctly with the GRU Field officer and/or GRU Manager so that it can be dealt with through the designated process.

Proposed Role	Position in Project	Description of The Responsibilities
Third Party Appointed Grievance Recipient	To be determined (TBD) by local government/project proponent	Local Government/ Project Proponent may appoint third party individual to receive complaint from external affected stakeholders. The assigned individual will record the grievance and complaint and convey it to GRU Field office (Grievance Contact) or to GRU Manager.

Training

8.1.11 Training is essential for personnel involved in managing and documenting external stakeholder complaints. The participants include the grievance team, which comprises both field officers and managers, as well as all Environment Agency project staff, contractors, and the community impacted by the project. The objective of the training is to ensure that all participants thoroughly understand the grievance mechanism and can apply it effectively. The initial training requirements and the specific participants are outlined in a table provided in the document.

Table 8-3 Training for Grievance Redress Unit

Participant	Training	Timing
Grievance redress unit field officers and manager	• How to deal with grievances and how to manage grievance mechanism and processes. • Training of Trainers (ToT) to provide training about grievance procedures to any staff at any facility, supply chain, contractors, and community. • Data entry to database.	At the beginning of the position assignment or two months after assignment and first training has been attended.
All project staff including contractor	Learn about the grievance procedure	At induction and regularly
Project affected communities	Learn about the grievance procedure	When updated or new and then yearly/half yearly

9 MONITORING AND REPORTING

- 9.1.1 Internal monitoring will be undertaken by the LPMU. Internal monitoring will ensure land acquisition and resettlement activities implemented as per the approved Resettlement Plans in accordance with the Resettlement Planning Framework. The LPMU, will prepare quarterly progress reports and submit to the CPIU. The CPIU will prepare semi-annual monitoring reports and submit to AIIB. These reports will describe the progress of the implementation of resettlement activities and any compliance issues and corrective actions. These reports will closely follow the involuntary resettlement monitoring indicators agreed in the approved Resettlement Plan.
- 9.1.2 Suggested internal monitoring parameters include consultation and grievances, communication and participation, delivery of entitlements, Budget and time frame, implementation details of the Livelihood Restoration Plan, and benefit monitoring. Monitoring covers, but is not limited to:
- All PAP compensation payments in various categories have been finalized in accordance with the compensation policy outlined in the RAP document.
 - Provision of a livelihood restoration program and social assistance benefits.
 - Procedures for public information dissemination and consultation.
 - Following grievance procedures and resolving unresolved concerns that require management's attention.
 - Project-provided advantages.
 - Affected households' (AHs') ability to re-establish their livelihoods and living standards.
 - Evaluate whether RP/RAP met their objectives and compare resettlement outcomes to baseline conditions.
- 9.1.3 An experienced external monitoring team will be appointed to conduct biannual reviews to ensure compliance with the approved Resettlement Planning Framework (RPF). The resettlement monitoring report will include the status of any pending issues and actions taken to resolve them, focusing on key indicators such as the consultation process, eligibility of Project Affected Persons (PAP), agreed compensation, payment and assistance delivery, livelihood recovery plans, legal follow-up on acquired land, effectiveness of grievance mechanisms, and transparency during the land acquisition process. The CPIU will submit an annual monitoring report to the Bank. The monitoring plan encompasses performance monitoring of activities like public meetings, complaint resolution, and compensation payments; impact monitoring to assess socio-economic conditions and the welfare of affected communities; and completion audits to record final achievements in land acquisition and evaluate LPMU's efforts to restore living standards.
- 9.1.4 For subprojects, the LPMU and CPIU will engage qualified and experienced external experts to verify the monitoring information. These experts will also advise the LPMU and CPIU on safeguard compliance issues. If significant non-compliance issues are identified, the LPMU and CPIU must prepare a corrective action plan to address these issues. They will document monitoring results, identify necessary corrective actions, and incorporate them into the corrective action plan.

APPENDICES

Appendix A	Outline Resettlement Plan
Appendix B	Outline Livelihood Restoration Plan
Appendix C	Grievance Form
Appendix D	Grievance Monitoring Form
Appendix E	Tentative Terms of Reference (ToR) Resettlement Plan
Appendix F	Sample Format for Monthly Progress Reports
Appendix G	Terms of Reference (ToR) for Livelihood Resettlement Plan (LRP)
Appendix H	Eligibility Requirement or Criteria for Requirement of Livelihood Restoration Plan (LRP) according to the Asian Infrastructure Investment Bank (AIIB)

Appendix A Outline Resettlement Plan

Outline Resettlement Plan

A Resettlement Plan is required for all projects that impact people affected by involuntary resettlement and livelihood restoration. The substantive aspects of the outline will guide the development of the Resettlement Plan, although they do not need to follow the order presented.

A. Introduction and Project Description

This section provides an overview of the project, outlining components that lead to land acquisition, involuntary resettlement, livelihood restoration, and identifies the project area. It details the objectives of the Resettlement Plan and explains the alternatives considered to avoid or reduce resettlement. Additionally, a table with quantified data is included, along with a justification for the final decision made.

B. Legal Framework

This section details the national and local laws and regulations applicable to the project, identifies gaps between local laws and AIIB's policy requirements, and discusses how these gaps will be addressed. It outlines the legal and policy commitments from the executing agency for all categories of displaced persons.

Additionally, it describes the principles and methodologies for determining valuations and compensation rates at replacement cost for assets, incomes, and livelihoods. The section also sets forth the eligibility criteria for compensation and assistance, as well as the process and timeline for providing them. Furthermore, it covers the land acquisition, resettlement, and livelihood restoration process and includes a schedule to meet key procedural requirements.

C. Scope of Land Acquisition and Resettlement

This section outlines the potential impacts of the project and includes maps showing the areas or zones affected by project components or activities. It covers the scope of land acquisition and explains its necessity for the main investment project. The section also summarizes the primary effects, including assets acquired and displaced individuals, and provides details on any common property resources that will be acquired.

D. Socioeconomic Information and Profile

This section summarizes the results of the social impact assessment, census survey, and other studies, providing data disaggregated by gender, vulnerability, and other social groupings. It defines and enumerates the people and communities to be displaced, assesses the impacts of land and asset acquisition on them, and considers social, cultural, and economic factors. It also addresses the project's effects on the poor, indigenous and/or ethnic minorities, and other vulnerable groups, while specifically identifying gender and resettlement impacts and analyzing the socioeconomic situation, needs, and priorities of women.

E. Entitlement, Assistance and Benefits

This section will refer to the RPF document, which defines the rights and eligibility of displaced persons and outlines all resettlement or livelihood restoration assistance measures. It details the support provided to vulnerable groups, including women and other specific groups, and highlights opportunities for displaced persons to gain appropriate development benefits from the project.

F. Relocation of Housing and Settlements / Income Restoration and Rehabilitation

This section outlines options for relocating housing and other structures, including replacement housing, cash compensation, and/or self-selection, ensuring that gender concerns and support for

vulnerable groups are addressed. It describes the alternative relocation sites considered, the community consultations conducted, and the justification for the selected sites, including location details, environmental assessments, and development needs. It provides timetables for site preparation and transfer, explains the legal arrangements to regularize tenure and transfer titles to resettled persons, and details the support measures for displaced persons in their transfer and resettlement. Additionally, it describes plans for providing civic infrastructure and explains how integration with host communities will be facilitated.

In income restoration and rehabilitation, will identify livelihood risks and provide a detailed breakdown based on demographic and livelihood data. It will outline income recovery programs, including options to restore all types of livelihoods (e.g., project benefit sharing, revenue-sharing arrangements, joint ventures for equity contributions such as land), and discuss sustainability and safety nets. It will detail measures to provide social safety nets through social insurance and/or special project funds, describe specific steps to support vulnerable groups, address gender considerations, and outline training programs.

G. Resettlement Budget and Financing Plan

A detailed budget for resettlement activities is discussed in this section, covering the resettlement unit, staff training, monitoring and evaluation, and the preparation of the Resettlement Plan during loan implementation. It explains the flow of funds, with the annual resettlement budget showing the scheduled expenditure for key items. It also provides justification for the assumptions used in calculating compensation rates and other cost estimates, considering both physical and cost contingencies, as well as replacement costs. Additionally, it includes information on the source of funding for the Resettlement Plan budget.

H. Information Disclosure, Consultation and Participation

This section identifies project stakeholders, particularly primary stakeholders, and outlines the consultation and participation mechanisms to be used throughout the project cycle. It details the efforts made to share project and resettlement information during the design and preparation phases to engage stakeholders. It summarizes the outcomes of consultations with displaced persons and host communities and explains how their concerns and recommendations were incorporated into the Resettlement Plan. The section confirms that the draft Resettlement Plan was disclosed to displaced persons and includes plans for disclosing any future updates. It also describes the planned measures for information disclosure, including the types of information to be shared, methods of dissemination, and the process for ongoing consultation with displaced persons during project implementation.

I. Grievance Redress Mechanism

This section outlines the mechanisms for receiving and resolving concerns and grievances from displaced persons. It explains how the procedures are designed to be accessible to all displaced individuals and are sensitive to gender considerations.

J. Institutional and Implementation Arrangement

This section outlines the institutional arrangements, responsibilities, and mechanisms for implementing the measures in the Resettlement Plan. It includes an institutional capacity-building program, with technical assistance if needed. It also details the role of NGOs, if involved, and the participation of organizations representing displaced persons in resettlement planning and management. Additionally, it describes how women's groups will be involved in the planning and management of resettlement.

K. Implementation Schedule

This section contains a detailed, time-bound implementation schedule for all key resettlement and rehabilitation activities. The schedule is aligned with the project's civil works construction timeline and includes the land acquisition process and its timeline, ensuring synchronization with overall project milestones.

L. Monitoring and Reporting

This section outlines the mechanisms and project-specific benchmarks for monitoring and evaluating the implementation of the Resettlement Plan. It establishes arrangements for the participation of displaced persons in the monitoring process and details the reporting procedures.

Appendix B Outline Livelihood Restoration Plan

Outline Livelihood Restoration Plan

A Livelihood Restoration Plan (LRP) is required for all projects that caused economic displacement. The indicative outline will of the Livelihood Restoration Plan is provided below:

A. Introduction and Project Description

This section provides an overview of the project, outlining components that lead to land acquisition, involuntary resettlement, livelihood restoration, and identifies the project area. This chapter also provides objectives of the resettlement. The primary target of this LRP are individuals identified as physically and/or economically displaced in the LARAP and to assist them with livelihood transitions and restoration.

B. Legal Framework

This section will detail applicable national laws and regulations to the project and international standards (AIIB ESF). The legal section will also identify gaps between local laws and AIIB's ESD requirements and discusses how these gaps will be addressed. This chapter also describe the valuations and compensation rates based on AIIB ESF.

C. Social Context, Impact, and Socioeconomic Information of Economically Displaced Person

This section describes the social context and potential impact of land acquisition on affected people, mainly economic displacement. The assessment will also identify groups that face the risk due to economic displacement and the implications of livelihood disruptions.

The chapter also listed all affected people, and their socio-economic profiles gathered from the census, including demographic profile data disaggregated by gender, livelihood assessment, asset ownership, livelihood restoration preference, vulnerability, and other social groupings.

D. Livelihood Restoration Program

This section will assess the land-based livelihood, Wage-based livelihood, and enterprise-based livelihood. The livelihood program will be developed to provide alternative livelihood to affected people, including capacity development, employment opportunities, land-based program such as agriculture/ fishery program, and enterprise support including financial and credit, as well as social community development programs.

E. Stakeholder Engagement for Livelihood Restoration Programme

Stakeholder engagement is critical to the successful implementation of the Project/ to obtain a "social license" from stakeholders, specifically for Livelihood Restoration Programme. This section highlighted the engagement that has been undertaken by the client and engagement required with stakeholder to ensure the success of Livelihood Restoration Program.

F. Livelihood Restoration Plan Budget and Financing Plan

This section highlighted a detailed budget for LRP, covering each of preparation and implementation of LRP program, staff training, monitoring and evaluation. It also provides justification for the assumptions used in calculating of cost estimates, contingencies cost, etc.

G. Institutional and Implementation Arrangement

This section outlines the institutional arrangements, responsibilities, and mechanisms for implementation of the livelihood restoration plan, including the arrangement of the resources. If outside resources are required, this section will detail the role of third parties involved.

H. Implementation Schedule

This section contains a detailed time required to implement LRP, monitoring and evaluation, as well as audit. Once the monitoring and evaluation carried out, the results considers if the frequency of activities is sufficient to meet the LRP needs and if/as necessary the frequency may be adjusted.

I. Monitoring, Evaluation and Reporting

This section outlines the mechanisms and project-specific benchmarks for monitoring and evaluating the implementation of the Resettlement Plan. It establishes arrangements for the participation of economical displaced persons in the monitoring process and details the reporting procedures.

Appendix C Grievance Form

Grievance Form

This form is provided to convey your concerns regarding our work. You can fill out this form anonymously. However, the more information you provide, including contact details, the easier it will be for us to follow up. This process is free for you. Participation in this process does not affect your right to take action under Indonesian law.

A	Grievance Identification Number	
B	Contact Information of Complaint	
1	Anonymous (Y/N)	
2	Gender	
3	Age	
4	Phone	
5	Email	
6	Address	
C	Details of Complaint	
1	What is the issue	
2	When it occurred	
3	Where it occurred	
4	How it occurred and who was involved	
5	Complaint's story and expectation	
6	Date grievance was recorded	
7	Place/method grievance was received	
D	Complaint Accepted (Y/N)	
D.1	Complaint Not Accepted	
1	Action taken	- Clearly not related to the operations of the organization – rejected - Labor related grievance – transfer to human resources - Commercial disputes – transfer to commercial dispute resolution mechanisms or civil court - Related to governmental policy and institutions – transfer to authorities - Other
2	Complainant notified (Y/N)	

3	Method of notification	
4	Date of disclosure	
D.2	Complaint Accepted	
1	Category of complaint	• Land acquisition • Resettlement • Economic displacement • Other
2	Photos and documentary evidence of legitimacy	
3	Resolution	• Internal – Responsible people/division: • Multi stakeholder oversight • Independent mediation
4	Resolution/corrective action taken	
5	Complainant notified (Y/N)	
6	Method of notification	
7	Complainant(s) satisfied or appealed	
8	Photos and documentary evidence of closure	
9	Resources spent	
10	Date of closure	
11	Number of days from complaint to closure	
E	Post Closure Monitoring Required (Y/N)	
1	Method and frequency of monitoring required	
F	Preventive Measures to Avoid Reoccurrence of Similar Grievances	
1	Suggested preventive actions	

Signature (Claimant)

Date (dd/mm/yyyy)

Signature (GRM Team)

Date (dd/mm/yyyy)

Appendix D Grievance Monitoring Form

GRIEVANCE MONITORING FORM		
Preparation Stage		
• What were the reasons for incorporating a Grievance Redress Mechanism (GRM) into your project? • Where is the GRM located, and how was this location chosen? • What factors did you consider to assess the effectiveness of the GRM? • Was the GRM developed with input from the communities it aims to serve?		
Implementation Stage		
1. Organizational Commitment	• Do the project's management and staff acknowledge the GRM process as a tool for improving public administration and increasing accountability and transparency? • Is grievance redress embedded within the project's main activities? • Are grievance redress responsibilities included in staff job descriptions? • Is the GRM adequately funded and monitored?	
2. Principle		
2.1 Legitimacy	• Does the GRM operate independently	
2.2 Accessibility	• Is the GRM accessible to all stakeholders? • Are the procedures for filing complaints and seeking action easy to understand? • Can complaints be filed anonymously? • Are there a range of contact options? • Is the GRM advertised and communicated to people affected by the project?	
2.3 Predictability	• Is the GRM responsive to the needs of all claimants? • Does the GRM offer clear procedures (periods for each stage and clarity on the types of outcomes it can (and cannot) provide?	
2.4 Fairness	• Are grievances treated	

	confidentially, assessed impartially, and handled transparently?	
2.5 Rights Compatibility	- Are the GRM's outcomes consistent with applicable national and international standards - Does it restrict access to other redress mechanisms?	
2.6 Transparency	Are the GRM's procedures and outcomes transparent enough to meet the public interest concerns at stake?	
2.7 Capability	- Do GRM officials have the necessary technical, human and financial resources, means and powers to investigate grievances? - Are there dedicated and trained staff available to handle the GRM? - Are they given learning opportunities and do they receive any systematic reviews of their performance?	
3. Processess		
3.1 Uptake	Are there multiple absorption channels?	
3.2 Sorting and processing	Is there a mechanism for categorizing, prioritizing, and directing complaints to the relevant entity	
3.3 Acknowledgement and follow-up	- Are complaints formally acknowledged in writing? - Does the acknowledgement explain the GRM process, provide contact information, and indicate the expected time frame for resolving the grievance? - Are there publicly available and clear timelines for addressing grievances?	
3.4 Verification, investigation and action	- Are grievances assessed objectively based on well-defined standards? - Are the investigators impartial, or do they have any	

	vested interest in the outcome? • Is action taken on every grievance?	
3.4 Monitoring and Evaluation	• Is there a system in place to track grievances and monitor progress towards their resolution? • Are there metrics to evaluate grievance monitoring and resolution? • If data is being collected, is it utilized to inform policy or process changes to reduce similar grievances in the future?	
3.5 Feedback	• Is there a user survey to gather feedback on the credibility of the process? • Is this feedback accessible to the public? • Is there an option to appeal, and are GRM users informed about this right?	
3.6. Analysis	• Is there a method to assess the effectiveness of the GRM? • Is a specific timeframe established for this analysis?	

Appendix E Tentative Terms of Reference (TOR) of Resettlement Plan

Tentative Terms of Reference (TOR) of Resettlement Plan

1. Background

The Asian Infrastructure Investment Bank (AIIB) is considering providing a government-guaranteed loan to Indonesia to fund the Solid Waste Management for Sustainable Urban Development (SWM-SUD) Project. This project aims to enhance waste management infrastructure in various Indonesian cities and districts. The SWM-SUD Project will be overseen by an Inter-ministerial committee chaired and coordinated by the Ministry of Planning BAPPENAS and will be prepared and implemented by the Ministry of Public Works and Public Housing (PUPR).

To support project readiness, the Alliance to End Plastic Waste (AEPW) is assisting PUPR and local governments in preparing a Resettlement Planning Framework (RPF). The Bank will screen the project to determine if it involves Involuntary Resettlement, which includes both physical and economic displacement as defined in ESS 2. If avoidance of Involuntary Resettlement is not feasible, the Bank requires the Client to develop and implement sustainable development programs to ensure displaced individuals benefit from the project.

Should Involuntary Resettlement be involved, the Client must prepare a Land Acquisition and Resettlement Plan (LARP), Land Acquisition Plan (LAP), Resettlement Plan (RP), or corresponding framework (LARPF, LAPF, RPF) in line with ESS 2. The extent of these documents depends on the scope of displacement and the vulnerability of affected populations. These plans will address specific issues related to land acquisition, land use changes, displacement, and livelihood restoration, complementing the broader social risk and impact assessment.

2. Objective

The assignment aims to effectively implement the Resettlement Plan for individuals affected by road improvement and widening under the project, ensuring their needs are addressed fairly and promptly. It focuses on fostering public involvement through meaningful consultations and conducting verification surveys to assess the impact. Additionally, the plan may be updated as needed, in line with the Resettlement Planning Framework, to ensure adaptability and compliance with established policies.

3. Scope of Services

The Tasks of The Consultant

The consultant's tasks should involve conducting thorough documentation and due diligence during direct land acquisition through negotiated settlements in accordance with existing policies. They should also identify displaced persons (DP) without land certificates and those displaced due to land acquisition activities, as well as carry out resettlement planning and implementation activities. In addition, the consultant is also responsible for the following matters:

1. Responsibilities for Implementation of the RP
2. Accompanying and Representing the DPs at The HCU Meeting
3. Carry out Public Consultation
4. Assisting the LPMU with the Project's Social Responsibilities
5. Monitoring and Reporting
6. Administrative Responsibilities of the RP Implementation

4. Qualification Requirements and Responsibilities for the Key Experts

The qualification requirements for experts must align with the specific roles, ensuring the necessary qualifications, relevant experience, and expertise in resettlement planning (RP). Experts should have a proven background in areas such as resettlement, community engagement, or land acquisition to effectively meet the project's needs. The responsibilities of each key expert must also be clearly defined to correspond with the required qualifications.

5. Reporting Requirements for Deliverables

The consultant will prepare and submit qualitative reports as specified, or other reports as required by the LPMU, presentations as and when requested, and minutes of meetings held from time to time in a format prepared by the consultant and approved by the LPMU (except for the initial report). Reports to be submitted include the inception report, monthly progress reports, quarterly progress reports, assignment completion report, and final report.

All documentation will be properly maintained, including photographs, documents, photocopies, and their digital versions, as well as any files created for the assignment. Reports will be written in English, but supporting documents may be in local languages, with summaries and outcomes provided in English. A hard copy of the report, along with digital copies in PDF format, will be submitted to the agencies/authorities listed in the table above. Additionally, if required, soft copies of the reports in MS Word, compiled data, raw data in MS Excel, and other requested formats must be provided to the LPMU.

6. Client's Input and Counterpart Personnel

The LPMU will serve as the client at the city/agency level, while the CPIU will act as the client at the state level. The Client will provide all relevant reports and documents, if applicable. Additionally, the Client will offer necessary administrative support, permissions, and certifications for the assignment. They will also supply contact details for key persons among institutional stakeholders, such as LPMU, CPIU, or contractor, and provide comments and suggestions from AIIB regarding resettlement and rehabilitation. In terms of professional and support counterpart personnel, the Social Specialist from LPMU will directly coordinate with, guide, and assist the Consultant's team. Meanwhile, the Environmental Specialist and other staff from LPMU will provide assistance to the Consultant's team as needed. **Code of Conduct to be Followed by The Consultant**

A satisfactory code of ethics will include obligations for all Consultant Experts to address issues appropriately. Additional obligations may be added to address specific issues related to the region, location, sector, or project requirements. The Code of Ethics must be incorporated into a contract and signed by each Expert to indicate that they have: 1. received a copy of the code; 2. been briefed on the code; 3. acknowledged that compliance with this Code of Ethics is a condition of employment; and 4. understood that violations of the Code of Ethics may result in serious consequences, including termination or referral to legal authorities.

Appendix F Sample Format for Monthly Progress Reports

Sample Format for Monthly Progress Reports

Monthly Progress Report	
Month:	
Prepared by:	

Overview of Activities in ((Month))

ii. Completed Key Activities

No.	Aspect	Date	Activity/Action	Participants	Outcomes & Agreed Follow-Up
1					
2					

iii. Ongoing Activities

No.	Project Aspect	Date	Activity/Action	Participants	Outcomes & Agreed Follow-Up

iv. Upcoming Activities

No.	Project Aspect	Target Date	Activity/Action	Participants	Agreed Preparation Tasks

Appendix G Terms of Reference (ToR) for Livelihood Resettlement Plan (LRP)

Terms of Reference (ToR) for Livelihood Resettlement Plan (LRP)

1. Name of the project:

Livelihood Resettlement Plan (LRP) Assessment for Solid Waste Management for Sustainable Urban Development Project-level Environmental & Social Management Planning Framework.

2. Project Brief:

Due to several sites and locations not being finalized as of current, the Environmental and Social Management Planning Framework (ESMPF) has been prepared in place of individual Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) for each subproject. This ESMPF includes a generic ESMP and a Resettlement Planning Framework (RPF), which will provide guidance for the preparation of subproject-specific ESIAs, ESMPs, and, if necessary, site-specific Resettlement Action Plans (RAPs).

3. Reference:

Reference	Criteria for LRP Assessment
AIIB Environmental and Social Framework, Approved February 2016 (Amended February 2019, May 2021, November 2022, and June 26, 2024), Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement	Land Acquisition and Resettlement Plan and Land Acquisition and Resettlement Planning Framework - Livelihood Restoration Plan (LRP) If the Project involves Involuntary Resettlement, the Bank requires the Client to prepare a LARP/LAP/RP or LARPF/LAPF/RPF (as applicable) in accordance with ESS 2, which is proportional to the extent and degree of the impacts. The degree of impacts is determined by: (a) the scope of physical and economic displacement; and (b) the vulnerability of the affected people. The LARP/LAP/RP or LARPF/LAPF/RPF complements the broader coverage of social risks and impacts in the environmental and social assessment and provides specialized guidance to address the specific issues associated with the Involuntary Resettlement, including land acquisition, changes in land use rights, displacement and need for livelihood restoration. This should elaborate on the displaced persons' entitlements, income and livelihood restoration strategy, institutional arrangements, monitoring and reporting

	framework, budget and time-bound implementation schedule and provisions for grievance redress. For land acquisition activities involving land aggregators, requirements are reflected in the agreement between the Client and the third party. The Client may require the third party to pay the costs of land acquisition and compensation; but the Client remains fully responsible for proper application of this ESS 2 and is required to assume all the other costs associated with the environmental and social impacts of the land acquisition, as required under this ESS 2, including, but not limited to, livelihood restoration and resettlement, and assumes responsibility for establishing and maintaining the Grievance Redress Mechanism (GRM).

3. Scope of Work & Deliverables:

- Desktop study on Community of the project area relevant to the regulations, reports, project activity, local wisdoms, and AIIB.
- Tools, methodology, and personnel preparation for LRP Assessment.
- Conduct a LRP Assessment on the field referring to the AIIB ESS 2 requirements – Land Acquisition and Involuntary Resettlement
- Prepare monthly progress report to client.
- Submit draft report to client as schedule below.
- Prepare and deliver presentation of draft report upon client's request.
- Submit final report to client as schedule below.
- All documents must be bilingual (English & Indonesia) and in soft file format.

4. Timeline:

- To be provided by consultant

5. Requirements:

- Has produced LRP assessment results for project financing refers to IFC.
- Must have conducted similar LRP project in the last 3 years.
- The consultant team must be competent in this field.

Appendix H Eligibility Requirement or Criteria for Requirement of Livelihood Restoration Plan (LRP) according to the Asian Infrastructure Investment Bank (AIIB)

Eligibility Requirement or Criteria for Requirement of Livelihood Restoration Plan (LRP) according to the Asian Infrastructure Investment Bank (AIIB)

Source: AIIB Environmental and Social Framework, Approved February 2016 (Amended February 2019, May 2021, November 2022, and June 26, 2024), Environmental and Social Standard 2: Land Acquisition and Involuntary Resettlement

Requirements:

- The LARP/LAP/RP complements the broader coverage of social risks and impacts in the environmental and social assessment and provides specialized requirements to address the specific issues associated with Involuntary Resettlement, including:
 - a) land acquisition;
 - b) changes in land use rights, including customary rights;
 - c) physical and economic displacement;
 - d) potential design adjustments that may reduce resettlement requirements.
- The LARP/LAP/RP takes into consideration differentiated impacts of the Involuntary Resettlement with respect to gender and vulnerable groups. In some cases, with the Bank's prior approval, resettlement actions may be part of an overall community development plan, where the Client makes special efforts to provide people who are displaced with appropriate benefits through such a plan.
- When displacement is only economic, prepare a Livelihood Restoration Plan (LRP). Provide for measures to be taken in case of disputes over compensation.

Livelihood Restoration Plan

- Improve, or at least restore, the livelihoods of all persons displaced by the Project through:
 - a) where feasible, land-based resettlement strategies when affected livelihoods are land-based or where land is collectively owned; or cash compensation at replacement value for land, including transitional costs, when the loss of land does not undermine livelihoods;
 - b) prompt replacement of assets with assets of equal or higher value;
 - c) prompt compensation at full replacement cost for assets that cannot be restored;
 - d) capacity-building programs to support improved use of livelihood resources and enhance access to alternative sources of livelihood.
 - Make equally available to all Project-affected people and in a manner adapted to their respective needs, assistance for livelihood improvement or restoration, such as skills training, access to credit, entrepreneurship and job opportunities and improvement of existing agricultural activities. Include transaction costs in determining compensation.
 - Examine the opportunities for provision of additional revenues and services through benefit-sharing, as the nature and objectives of the Project may allow
-

Appendix H Exclusion list

Proposed Exclusion List

Criteria	Description	Quantification
Natural Habitats	Projects located in or near protected natural habitats, protection forests, or other areas with high biodiversity resource value, without adequate mitigation and monitoring measures. The project shall not finance landfill upgrades or rehabilitation that require expansion into these areas.	Projects located within protected natural habitats, protection forests, or areas with high biodiversity resource value
Environmental Contamination	Projects likely to cause significant contamination of air, water, or soil, especially those involving hazardous substances, without adequate mitigation and monitoring measures. The project shall not finance landfill upgrades or rehabilitation at sites with existing environmental legacy issues that outweigh project benefits and without mitigation measures.	Project that does not have mitigation and monitoring measures commitment. Project that have more than 5% of hazardous waste/medical waste that goes to the landfill ⁵ Private or public drinking, irrigation or livestock water supply sources located downgradient should be further than 500 m away. Perennial stream should not be located within 300 m downgradient of the proposed site Groundwater and surface water quality that not met quality standards for heavy metals and ammonium ⁶
Occupational Health and Safety	Projects posing significant health and safety risks to workers without adequate mitigation and monitoring measures. The project shall ensure that the rehabilitation work does not increase risks to workers.	Project that have more than 80 accidents per year ⁷
Landfill Management	Projects with poorly managed landfills lacking adequate waste management practices and basic environmental protection infrastructure. The project shall not finance upgrades or rehabilitation at sites lacking a commitment to do proper landfill management and basic environmental protection infrastructure	Project that does not have commitment to build and operate environmental protection infrastructure Landfills that do not have or do not operate environmental protection infrastructure: Landfill liner

⁵ <https://www.sciencedirect.com/science/article/abs/pii/B9780128150603000177>

⁶ <https://www.tandfonline.com/doi/abs/10.1080/10643380290813462>

⁷ <https://journals.sagepub.com/doi/10.1177/0734242X15594247>

Criteria	Description	Quantification
		• Leachate collection and treatment • Gas ventilation • Buffer zone • Monitoring wells • Routine cover soil (every 7 days or daily) Project that does not have mitigation and monitoring measures commitment.
Environmental Permit	Projects without necessary environmental permits or in non-compliance with environmental regulations, without adequate mitigation and monitoring measures. The project shall not proceed without securing all required permits.	Projects without necessary environmental permits
Waste Legacy	Projects that have significant environmental and social legacy issues due to improper waste management practices during the past operational period, without adequate mitigation and monitoring measures. The project shall not finance landfill upgrades or rehabilitation at sites with unresolved or adequate mitigation measures for legacy waste issues.	Environmental legacy issues: • Ground water contamination • Surface water contamination • Irrigation contamination Social legacy issues: • Land conflict that can't be resolved in 3 years • Rejection from community that can't be resolved in 3 years • Displacement that can't be recover or resolved in 3 years
Land Acquisition	Projects involving unclear or disputed land acquisition processes, potentially leading to conflicts or loss of community access to land, without adequate mitigation and monitoring measures.	If 200 or more persons will experience major impacts, which are defined as (i) being physically displaced from housing, or (ii) losing 10% or more of their productive assets (income generating). ⁸

⁸ <https://www.adb.org/sites/default/files/institutional-document/31483/om-f1-20131001.pdf>

Criteria	Description	Quantification
		If it is taking more than 3 years to resolve the land acquisition issues
Involuntary Resettlement	Projects requiring significant involuntary resettlement or displacement of communities without adequate resettlement plans, compensation mechanisms, and monitoring measures.	If 200 or more persons will experience major impacts, which are defined as (i) being physically displaced from housing, or (ii) losing 10% or more of their productive assets (income generating). If it is taking more than 3 years to resolve the involuntary resettlement issues
Economic Displacement	Projects likely to cause significant economic displacement of local communities, affecting their livelihoods, without adequate compensation, livelihood restoration support, and monitoring measures.	If 200 or more persons will experience major impacts, which are defined as (i) being physically displaced from housing, or (ii) losing 10% or more of their productive assets (income generating). If it is taking more than 3 years to resolve economic displacement issues
Indigenous Peoples	Projects that negatively impact indigenous peoples' lands, rights, or cultural practices without their free, prior, and informed consent (FPIC)	Project that affects indigenous peoples and without FPIC and consent between LG and IP done in 3 years' time
Cultural Resources	Projects located in or near sites of significant value for cultural, historical, or archaeological/heritage, tourism value that could be adversely affected, without adequate mitigation and monitoring measures.	Projects within 500 m of official/legal cultural, historical, or archaeological sites), the project can still be included as long as they have appropriate mitigation measures
Vulnerable Groups	Landfill operation that involves forced labor or exploitative forms of child labor	Landfill operations that involves forced labor or exploitative forms of child labor
Community Concerns	Projects facing strong and sustained opposition from local communities and stakeholders, without adequate mitigation and monitoring measures. The project shall not proceed if existing social tensions outweigh project benefits.	Project facing strong opposition from local communities and stakeholders that can't be resolved

Criteria	Description	Quantification
Access to the site	Trucks access to site and exiting Traffic Management and Community Health and Safety	Road width sufficient for 2 waste trucks passing (travelling in opposite directions) - Bridges with capacity at least 20T - Avoiding villages, schools, markets, especially if road is not paved or improved.

Appendix I Example of Memorandum of Agreement (*Nota Kesepakatan*)

Summary of The Draft Nota Kesepakatan

Memorandum of Agreement between GOI, represented by the Director of Sanitation of the Ministry of PUPR, and the Regional Government, represented by the Regent of each district, as a legal reference in implementing the SWM-SUD program cooperation. In general, the memorandum of understanding contains:

1. Article 1: Definition of the cooperation program.
2. Article 2: Objectives of the cooperation.
3. Article 3: Object and location of planning, implementation of development, and program utilization.
4. Article 4: Scope of cooperation that consists of 1) development planning; 2) provision of TPST and temporary landfill land; 3) socialization of TPST development and TPA arrangement; 4) implementation of development; 5) handover and utilization; 6) monitoring and evaluation
5. Article 5: Tasks and responsibilities for the PUPR and LG as follows:
 - a. PUPR will prepare/review documents as enabling conditions and receive LG's program completeness requirements. It will also conduct monitoring and evaluation.
 - b. LG's duties:
 - i. Meet readiness criteria
 - ii. Provide basic facilities such as land, electricity, clean water, and access roads.
 - iii. Convey willingness to allocate operational and maintenance costs per year.
 - iv. Prepare financial, institutional, legal, policy, and off-taker aspects
 - v. Conduct environmental monitoring and management
6. Article 6: Implementation of activities is at the Ministry and PU offices in each district.
7. Article 7: Asset handover will be carried out by signing the Management Handover Minutes.
8. Article 8: The program is funded by APBN, APBD, and other sources of funding.
9. Article 9: The term of implementation of the agreement is four years.
10. Article 10: Monitoring, evaluation, and reporting conducted periodically at least two times within the knowledge of PUPR and LG
11. Article 11: Force majeure
12. Article 12: Dispute resolution
13. Article 13: Addendum
14. Article 14: Termination of memorandum of agreement
15. Article 15: Liaison and correspondence
16. Article 16: Other provisions
17. Article 17: Closing

Below is a template of the Memorandum of Agreement that needs to be adjusted by PUPR and LG, considering the objectives of the project, project scope, tasks and responsibilities, etc., which will be agreed upon as a mutual agreement.

MEMORANDUM OF AGREEMENT
BETWEEN
DIRECTORATE GENERAL OF HUMAN SETTLEMENTS
MINISTRY OF PUBLIC WORKS AND HOUSING
AND
LOCAL GOVERNMENT
ABOUT
SYNERGY OF PLANNING, IMPLEMENTATION OF DEVELOPMENT, AND UTILIZATION OF INTEGRATED WASTE
PROCESSING SITE INFRASTRUCTURE AND FACILITIES, AS WELL AS ARRANGEMENT OF FINAL WASTE
PROCESSING SITE
IN XXXXX DISTRICT

NUMBER :

NUMBER :

On this day....., located in our respective positions, we, the undersigned:

- I. : Director of Sanitation, Directorate General of Human Settlements, Ministry of Public Works and Housing of the Republic of Indonesia, domiciled at Jalan Pattimura Number 20, South Jakarta Administrative City, in this case acting for and on behalf of the Directorate General of Human Settlements, appointed based on , hereinafter referred to as the FIRST PARTY.
- II : Regent , ... , domiciled in , in this case acting for and on behalf of the Regional Government , appointed based on , hereinafter referred to as the SECOND PARTY.

By paying attention to and remembering the laws and regulations, as follows:

1. Law Number 17 of 2003 concerning State Finance (State Gazette of the Republic of Indonesia of 2003 Number 47, Supplement to the State Gazette of the Republic of Indonesia Number 4286) as amended several times, most recently by Law Number 7 of 2021 concerning Harmonization of Tax Regulations (State Gazette of the Republic of Indonesia of 2021 Number 246, Supplement to the State Gazette of the Republic of Indonesia Number 6736);
2. Law Number 18 of 2008 concerning Waste Management (State Gazette of the Republic of Indonesia 2008 Number 69, Supplement to the State Gazette of the Republic of Indonesia Number 4851);
3. Law Number 32 of 2009 concerning Environmental Protection and Management (State Gazette of the Republic of Indonesia 2009 Number 140, Supplement to the State Gazette of the Republic of Indonesia Number 5059) as last amended by Law Number 6 of 2023 concerning the Stipulation of Government Regulation in Lieu of Law Number 2 of 2022 concerning Job Creation to Become Law (State Gazette of the Republic of Indonesia 2022 Number 238 Supplement to the State Gazette of the Republic of Indonesia Number 6841);
4. Law Number 23 of 2014 concerning Regional Government (State Gazette of the Republic of Indonesia 2014 Number 244, Supplement to the State Gazette of the Republic of Indonesia Number 5587) as amended several times, most recently by Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments (State Gazette of the Republic of Indonesia 2022 Number 4 Supplement to the State Gazette of the Republic of Indonesia Number 6757);
5. Law Number 17 of 2019 concerning Water Resources (State Gazette of the Republic of Indonesia 2019 Number 190, Supplement to the State Gazette of the Republic of Indonesia Number 6405) as last amended by Law Number 6 of 2023 concerning the Stipulation of Government Regulation in Lieu of Law Number 2 of 2022 concerning Job Creation to Become Law (State Gazette of the Republic of Indonesia 2022 Number 238 Supplement to the State Gazette of the Republic of Indonesia Number 6841);

6. Government Regulation Number 81 of 2012 concerning Management of Household Waste and Waste Similar to Household Waste (State Gazette of the Republic of Indonesia 2012 Number 188, Supplement to the State Gazette of the Republic of Indonesia Number 5347);
7. Government Regulation Number 27 of 2014 concerning Management of State/Regional Property as amended by Government Regulation Number 28 of 2020 concerning Amendments to Government Regulation Number 27 of 2014 concerning Management of State/Regional Property (State Gazette of the Republic of Indonesia 2020 Number 142, Supplement to the State Gazette of the Republic of Indonesia Number 6523);
8. Government Regulation Number 2 of 2018 concerning Minimum Service Standards (State Gazette of the Republic of Indonesia 2018 Number 2, Supplement to the State Gazette of the Republic of Indonesia Number 6178);
9. Government Regulation Number 28 of 2018 concerning Regional Cooperation (State Gazette of the Republic of Indonesia 2018 Number 97, Supplement to the State Gazette of the Republic of Indonesia Number 6219);
10. Government Regulation Number 12 of 2019 concerning Regional Financial Management (State Gazette of the Republic of Indonesia 2019 Number 42, Supplement to the State Gazette of the Republic of Indonesia Number 6322);
11. Government Regulation Number 22 of 2021 concerning the Implementation of Environmental Protection and Management (State Gazette of the Republic of Indonesia 2021 Number 32, Supplement to the State Gazette of the Republic of Indonesia Number 6634);
12. Presidential Regulation Number 18 of 2020 concerning the National Medium-Term Development Plan for 2020-2024 (State Gazette of the Republic of Indonesia 2020 Number 10);
13. Presidential Regulation Number 120 of 2022 concerning Special Assignments in the Framework of Accelerating the Implementation of Infrastructure Development (State Gazette of the Republic of Indonesia 2022 Number 193);
14. Regulation of the Minister of Public Works Number 03/PRT/M/2013 concerning the Provision of Waste Infrastructure and Facilities in Handling Household Waste and Waste Similar to Household Waste (State Gazette of the Republic of Indonesia 2013 Number 470);
15. Regulation of the Minister of Home Affairs Number 19 of 2016 concerning Guidelines for Management of Regional Property (State Gazette of the Republic of Indonesia 2016 Number 547);
16. Regulation of the Minister of Public Works and Public Housing Number 29/PRT/M/2016 Concerning the Establishment of Joint Agreements and Cooperation Agreements in the Ministry of Public Works and Public Housing (State Gazette of the Republic of Indonesia 2016 Number 1358);
17. Regulation of the Minister of Environment and Forestry Number P.59/Menlhk/Setjen/Kum.1/7/2016 concerning Leachate Quality Standards for Integrated Waste Processing Businesses and/or Activities (State Gazette of the Republic of Indonesia 2016 Number 1050);
18. Regulation of the Minister of Environment and Forestry Number P.68/MENLHK/SETJEN/KUM.1/8/2016 concerning Domestic Wastewater Quality Standards (State Gazette of the Republic of Indonesia 2016 Number 1323);
19. Regulation of the Minister of Public Works and Public Housing Number 04/PRT/M/2017 concerning the Implementation of Domestic Wastewater Management System (State Gazette of the Republic of Indonesia 2017 Number 456);
20. Regulation of the Minister of Public Works and Public Housing Number 29/PRT/M/ of 2018 concerning Technical Standards for Minimum Service Standards for Public Works and Public Housing (State Gazette of the Republic of Indonesia 2018 Number 1891);
21. Regulation of the Minister of Home Affairs Number 22 of 2020 concerning Procedures for Regional Cooperation with Other Regions and Regional Cooperation with Third Parties (State Gazette of the Republic of Indonesia 2020 Number 371);
22. Regulation of the Minister of Home Affairs Number 7 of 2021 concerning Procedures for Calculating Retribution Rates in the Implementation of Waste Management;
23. Local regulation,

The FIRST PARTY and the SECOND PARTY hereinafter collectively in this Memorandum of Agreement are referred to as the PARTIES, and individually referred to as a PARTY.

THE PARTIES first explain the following matters:

- a. that in order to improve environmental quality and public health, it is necessary to be supported by waste infrastructure and facilities;
- b. that in order to achieve the target of the 2020-2024 National Medium-Term Development Plan (RPJMN), namely 20% reduction and 80% in waste management, it is necessary to organize waste management in Regency ,;
- c. that the implementation of waste management in Regency , needs to be carried out by various stakeholders in order to improve services to the community;
- d. that based on the letter , Statement of Interest in the Development of TPAS and TPST; and
- e. that in order to organize the management of waste infrastructure and facilities, synergy is required between the Ministry of Public Works and Public Housing and the Regional Government of Regency , which is stated in a Memorandum of Agreement.

Based on the above matters, in accordance with their respective positions and authorities, THE PARTIES agree and consent to implement the Memorandum of Agreement on Synergy in Planning, Implementation of Development, and Utilization of Infrastructure and Facilities for Integrated Waste Processing Sites, as well as Arrangement of Final Waste Processing Sites in Regency, with the following provisions and conditions:

article 1 AGREEMENT

In this Memorandum of Agreement the following terms are defined:

1. Waste is the remains of human daily activities and/or natural processes in solid form.
2. Waste management is a systematic, comprehensive and continuous activity that includes waste reduction and handling.
3. Final waste processing is an activity that aims to return waste and/or residue from previous processing to the environmental media safely.
4. Integrated waste processing facilities, hereinafter abbreviated as TPST, are places to process and return waste to the environmental media in a way that is safe for humans and the environment.
5. Waste infrastructure, hereinafter referred to as infrastructure, is a basic facility that can support the implementation of waste management activities.
6. Waste management facilities, hereinafter referred to as facilities, are equipment that can be used in waste management activities.
7. State Property, hereinafter abbreviated as BMN, is all goods purchased or obtained at the expense of the State Revenue and Expenditure Budget or originating from other legitimate sources.
8. Synergy of Development Planning and Implementation is the division of roles and responsibilities between the Central Government and Regional Governments to ensure that development planning and implementation are in accordance with the provisions of laws and regulations.
9. The Synergy Agreement Document, hereinafter referred to as the Memorandum of Agreement, is a document containing the main substance in the form of the duties and responsibilities of the Central Government and Regional Government which are binding.
10. First Handover (*Provisional Hand Over*) , hereinafter abbreviated as PHO, is the process of handing over the complete work results from the Goods/Services Provider to the Commitment Making Officer as stated in the First Handover Minutes.
11. Final Handover (*Final Hand Over*) , hereinafter abbreviated as FHO, is the process of handing over the final results of the work as a whole from the Goods/Services Provider to the Commitment Making Officer as stated in the Final Handover Minutes.

P origin 2
PURPOSE AND OBJECTIVES

- (1) This Memorandum of Agreement is intended to build a joint commitment between the PARTIES in synergizing the planning, implementation of development and utilization of TPST infrastructure and facilities, as well as the arrangement of TPA Waste.
- (2) The purpose of this Memorandum of Agreement is to:
 - a. realize balanced cooperation between the PARTIES in planning activities, implementation of development, and utilization of TPST infrastructure and facilities, as well as the arrangement of TPA Waste according to their respective duties and responsibilities;
 - b. create transparent and accountable cooperation mechanisms; and
 - c. realize the acceleration of development and operation of TPST infrastructure and facilities, as well as the arrangement of TPA Waste in, Regency .

Article 3
OBJECTS AND LOCATIONS

- (1) The object of this Memorandum of Agreement is the synergy of planning, implementation of development, and utilization of TPST infrastructure and facilities, as well as the arrangement of TPA Waste located in the administrative area of the SECOND PARTY.
- (2) Planning, implementation of development and utilization of TPST infrastructure and facilities, as well as the arrangement of TPA Waste as referred to in paragraph (1) consists of:
 - a. landfill area work/arrangement;
 - b. construction of Leachate Treatment Plant (LTP)
 - c. construction of TPST building area;
 - d. construction of Leachate Treatment Plant (LTP);
 - e. construction of TPST garage area;
 - f. construction of TPST plaza area;
 - g. construction of TPST gate area;
 - h. construction of mechanical electrical and plumbing; and
 - i. procurement of machinery
- (3) The location of the Object of the Memorandum of Agreement for synergy in planning, implementation of development, and utilization of TPST infrastructure and facilities, as well as the arrangement of TPA Waste as referred to in paragraph (1) is at , .

Article 4
SCOPE

The scope of this Memorandum of Agreement consists of:

- a. objects and locations;
- b. duties and responsibilities;
- c. implementation;
- d. handover;
- e. financing;
- f. time period;
- g. monitoring, evaluation and reporting;
- h. *force majeure* ;
- i. dispute resolution;
- j. *addendum* ;
- k. termination of the memorandum of Agreement;
- l. liaison and correspondence;
- m. other provisions; and
- n. cover

Article 5 DUTIES AND RESPONSIBILITIES

- (1) THE FIRST PARTY has the following duties and responsibilities:
- a. prepare a *Feasibility Study* for TPST and arrangement of TPA Waste;
 - b. *detailed engineering design (DED)* reviews ;
 - c. received a signed Letter of Interest from the Regent which contains:
 - 1) statement of readiness of certified land that is not in dispute;
 - 2) statement of willingness to allocate TPST Operational and Maintenance Costs;
 - 3) the TPST location is in accordance with the Regional Spatial Planning Plan.
 - d. submit the Readiness Criteria document (*Readiness Criteria*) which consists of:
 - 1) a copy of the Land Certificate which is an attachment to the Letter of Interest;
 - 2) a statement of willingness to accept a stamped BMN grant;
 - 3) statement of willingness to allocate TPST Operational and Maintenance Costs;
 - 4) a statement of support from the DPRD of Regency, to allocate operational and maintenance costs for TPST and waste management in the APBD of Regency, at least IDR 8,500,000,000 per year;
 - 5) a statement guaranteeing that the TPST location is in accordance with the Regional Spatial Planning Plan;
 - 6) Joint agreement/cooperation agreement or other terms related to the existence of TPST oftakers.
 - e. receive a copy of the Regent's Regulation regarding the Master Plan for a waste management system that is in accordance with the TPST to be built;
 - f. receive licensing documents related to the construction of TPST and arrangement of TPA Waste from the SECOND PARTY;
 - g. receive a copy of the Environmental Document for the construction of the TPST and the arrangement of the TPA from the SECOND PARTY;
 - h. receive land ready to build for the construction of TPST infrastructure and facilities from the SECOND PARTY;
 - i. receive support for 1000 kVA electricity, clean water and an access road of at least 5 meters wide with a road gradient according to applicable standards to the TPST construction site, from the SECOND PARTY;
 - j. accompany the implementation of socialization by the SECOND PARTY to the community and local government (Sub-district Head, Village Head, Citizens' Association/Neighborhood Association) regarding the construction of TPST according to the needs of the SECOND PARTY;
 - k. carry out the construction of TPST and arrangement of TPA Waste after the Readiness Criteria (*Readiness Criteria*) have been met;
 - l. prepare SOP (*Standard Operating Procedure*) TPST;
 - m. together with the SECOND PARTY to carry out a trial of the TPST's functionality before signing the PHO Minutes;
 - n. receive the application for Handover of Management from the FIRST PARTY after the PHO Minutes have been signed;
 - o. compile, prepare and sign the Minutes of Handover of Management of TPST infrastructure and facilities with the SECOND PARTY;
 - p. hand over the management of the TPST building to the SECOND PARTY during the BMN grant handover process;
 - q. carry out the maintenance period for TPST infrastructure and facilities, from the time the PHO Handover Minutes are signed until the FHO Handover Minutes are signed;
 - r. carry out repairs to damage caused by construction errors from the time the PHO Handover Minutes are signed until the FHO Handover Minutes;
 - s. prepare administrative documents for the handover of BMN;
 - t. sign the Minutes of Handover of BMN together with the SECOND PARTY;
 - u. hand over the TPST infrastructure and facilities that have been built to the SECOND PARTY after signing the Minutes of Grant from the FIRST PARTY to the SECOND PARTY;
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- v. receive a copy of the regional regulations regarding levies;
 - w. receive a copy of the regional head's regulations regarding the procedures for collecting levies;
 - x. receive a copy of the regulations for the establishment of TPST management institutions/cooperation on TPST management with Business Entities;
 - y. together with the SECOND party to monitor and evaluate the implementation of this Memorandum of Agreement; and
 - z. implement all contents of the Memorandum of Agreement and its changes based on the agreement of the PARTIES.
- (2) THE SECOND PARTY has the following duties and responsibilities:
- a. submitting data/information required in preparing the TPST *Feasibility Study* and TPA Waste Management;
 - b. prepare detailed engineering plans/ *Detail Engineering Design (DED)*;
 - c. submit a Letter of Interest signed by Regent which contains:
 - 1) statement of land readiness that is certified and not in dispute;
 - 2) statement of willingness to allocate TPST Operational and Maintenance Costs;
 - 3) The TPST location is in accordance with the Regional Spatial Planning Plan.
 - d. convey the Readiness Criteria (*Readiness Criteria*) which consists of:
 - 1) copy of the Land Certificate which is an attachment to the Letter of Interest;
 - 2) statement of willingness to accept stamped BMN grants;
 - 3) statement of willingness to allocate TPST Operational and Maintenance Costs;
 - 4) statement of support from the DPRD of Regency, to allocate operational and maintenance costs for TPST and waste management in the APBD of Regency, at least IDR 8,500,000,000 per year; and
 - 5) statement guaranteeing that the TPST location is in accordance with the Regional Spatial Planning Plan
 - 6) Joint agreement/cooperation agreement or other terms related to the existence of TPST *offtakers*
 - e. establish a Master Plan for a waste management system that is in accordance with the TPST to be built, in the form of a Regent Regulation;
 - f. ensure that the waste processing plan at the TPST is in accordance with the Regional Medium-Term Development Plan (RPJMD);
 - g. provide transportation equipment to optimize TPST and Residue Filling Land operations;
 - h. guarantee all issuance of permits that are the authority of the SECOND PARTY related to the construction of TPST infrastructure and facilities and the arrangement of TPA Waste;
 - i. prepare and legalize Environmental Documents for TPST development and TPA waste management;
 - j. Providing and handing over land ready for construction of TPST infrastructure and facilities in accordance with the operational needs of the TPST, including land for the disposal route/pipe for processed waste from the Leachate Treatment Plant (IPL) to the receiving water body;
 - k. facilitating the relocation of existing buildings or green areas and restoring conditions resulting from these activities;
 - l. provide 1000 kVA electricity, clean water and an access road of at least 5 meters wide with a road gradient according to applicable standards to the TPST construction site;
 - m. Preparing adequate waste storage locations according to the waste generation capacity to the TPA during the implementation of TPST construction and TPA waste management;
 - n. conducting outreach to the community and local government (Sub-district Head, Village Head, Citizens' Association/Neighborhood Association) regarding the construction of TPST;
 - o. ensure the safety and smooth running of the TPST construction process and TPA waste management;
 - p. receive the SOP (*Standard Operating Procedure*) TPST document from the FIRST PARTY and implementation;
 - q. carry out a functional test of the TPST together with the FIRST PARTY before signing the PHO Minutes;
 - r. submit a request for Handover of Management to the FIRST PARTY after the PHO Minutes have been signed;
 - s. sign the Minutes of Handover of Management together with the FIRST PARTY;
 - t. carry out repairs to damage caused by the operational activities of the SECOND PARTY's TPST starting
-

- from the signing of the Minutes of Handover of Management;
- u. sign the Minutes of Handover of BMN (State Property) together with the FIRST PARTY;
- v. receive the results of TPST infrastructure development from the FIRST PARTY;
- w. determine Regional Regulations regarding levies, with amounts referring to the provisions of statutory regulations;
- x. establish Regional Head Regulations regarding procedures for collecting levies and carrying out effective collection of levies from the start of TPST operations;
- y. carry out waste management starting from the waste source location to the TPST;
- z. Operate TPST according to SOP so that only residue enters the residue disposal unit (UPR);
- aa. ensure that waste transported to TPST is separated (food waste, tree waste, recyclables, B3 waste, and residual waste);
- bb. allocate operational and maintenance costs for transportation of residue from TPST to TPA;
- cc. increasing the fleet of waste collection and transport vehicles and allocating operating-maintenance-care costs, to support the capacity of the TPST being built (including in transporting its residue);
- dd. provide a budget for operational and maintenance costs of TPST and waste management in the APBD of Regency, IDR 8,500,000,000/year since the signing of the Minutes of Handover of Management;
- ee. prepare and establish TPST management institutions in accordance with the needs and provisions in force prior to PHO;
- ff. train/strengthen the human resources of local government operators so that they are able to operate-maintain for the TPST that has been built;
- gg. carry out leachate management according to SOP at IPL, both from TPST and TPA;
- hh. conduct effluent quality testing for Leachate Treatment Plant infrastructure in accordance with applicable quality standards periodically;
- ii. utilize and/or distribute all TPST processed products, whether in the form of RDF or other forms;
- jj. prepare reports on the utilization and management of TPST infrastructure and facilities and submit them to the FIRST PARTY at least once a year;
- kk. ensure the sustainability of the TPST that will be built;
- ll. identify the readiness of off-takers of processed waste products at TPST and ensure the distribution of processed waste products to off-takers;
- mm. together with the FIRST PARTY to monitor and evaluate the implementation of this Memorandum of Agreement; and
- nn. Implement all contents of the Memorandum of Agreement and its changes based on the PARTIES' agreement.

Article 6 IMPLEMENTATION

- (1) The implementation of this Memorandum of Agreement refers to the Work Plan in the Attachment which is an integral part of this Memorandum of Agreement.
- (2) In implementing the Memorandum of Agreement as referred to in paragraph (1), the PARTIES agree to appoint the following implementing officials:
 - a. The FIRST PARTY assigns the Head of the West Java Regional Settlement Infrastructure Center to implement and be responsible for the implementation of this Memorandum of Agreement.
 - b. The SECOND PARTY assigns the Head of the Environmental Service of Regency, to implement and be responsible for the implementation of this Memorandum of Agreement.
- (3) If there are changes to the Work Plan as intended in paragraph (1) they will be stated in the changes to the Work Plan agreed upon by THE PARTIES.

Article 7 HANDOVER

- (1) The BMN grant process from the FIRST PARTY to the SECOND PARTY will be carried out immediately after the PHO Minutes are signed.
- (2) The TPST infrastructure and facilities, as well as the arrangement of the TPA waste that has been built by the FIRST PARTY are handed over to the SECOND PARTY.
- (3) Before the completion of the BMN asset grant handover process, the PARTIES agree to carry out a management handover which is stated in writing in the Management Handover Minutes, the implementation of which will be carried out after the signing of the PHO Minutes.
- (4) After the Minutes of Handover of Management have been approved by the PARTIES, the operation, maintenance, rehabilitation of the TPST as well as the operational and maintenance costs become the responsibility of the SECOND PARTY.
- (5) BMN grants for development results carried out by the FIRST PARTY to the SECOND PARTY are carried out in accordance with the provisions of statutory regulations.

Article 8 FINANCING

Costs arising as a result of the implementation of this Memorandum of Agreement are sourced from:

- a. The State Revenue and Expenditure Budget of the Ministry of Public Works and Public Housing allocated to the Directorate General of Human Settlements, Ministry of Public Works and Public Housing;
- b. Regional Revenue and Expenditure Budget of Regency, ; and
- c. Other legitimate and non-binding sources in accordance with the provisions of laws and regulations.

Article 9 TIME PERIOD

- (1) This Memorandum of Agreement is valid for 4 (four) years, starting from the signing of the Memorandum of Agreement document by the PARTIES and may be extended with the approval of the PARTIES.
- (2) This Memorandum of Agreement may be terminated before the end of the term as referred to in paragraph (1) and may be extended by agreement of the PARTIES, with the provision that the PARTY wishing to terminate or extend must notify the other PARTY in writing, no later than 6 (six) months before the end of the term.

Article 10 MONITORING, EVALUATION AND REPORTING

- (1) THE PARTIES shall monitor and evaluate the implementation of the Memorandum of Agreement periodically at least 2 (two) times a year;
- (2) The results of monitoring and evaluation as referred to in paragraph (1) are compiled in the form of a Monitoring and Evaluation Report Document to become a joint report of the PARTIES as input for planning further program synergies.

Article 11 FORCE MAJEURE

- (1) What is meant by force majeure *in* this agreement are events that are beyond the capabilities of the PARTIES which result in the PARTIES not being able to fulfill their obligations, including:
 - a. natural disasters, floods, earthquakes, landslides, storms or hurricanes, disease outbreaks;
 - b. riots/commotion;

- c. war/rebellion;
 - d. sabotage;
 - e. pandemic disease outbreak;
 - f. a general strike which is clearly declared as Force Majeure; and/or
 - g. fundamental changes in government policy in the financial/monetary sector, and these circumstances result in a direct causal relationship with the losses experienced by the PARTIES.
- (2) If there are things beyond the control of the PARTIES or referred to as Force Majeure and cause the contents of this Memorandum of Agreement to be unable to be implemented either in part or in whole, then the PARTIES will make adjustments to the contents of this Memorandum of Agreement document. If it is not possible to make adjustments, then the PARTIES agree not to make any claims and the losses arising from it will be resolved through deliberation by the PARTIES in order to achieve the best possible resolution.
- (3) Force Majeure as referred to in paragraph (1) must be declared by an authorized party or official.
- (4) In the event of a Force Majeure Event as referred to in paragraph (2), the party affected by the Force Majeure Event must notify the other PARTY in writing no later than 14 (fourteen) working days from the time the Force Majeure Event occurs.
- (5) In the event that the party affected by Force Majeure does not notify the other PARTY in writing of the Force Majeure event within the time period as referred to in paragraph (3), then the force majeure is deemed never to have occurred.

Article 12 DISPUTE RESOLUTION

- (1) In the event of a dispute in interpreting and/or implementing the contents of this agreement, the PARTIES agree to resolve it through deliberation to reach a consensus.
- (2) If an amicable resolution fails to reach a consensus, then dispute resolution will be carried out based on the provisions of statutory regulations.

Article 13 ADDENDUM

- (1) Other matters that have not been regulated and/or have not been sufficiently regulated in this Memorandum of Agreement will be regulated later in an Additional Agreement (*Addendum*) or amendments based on an agreement between the PARTIES made in writing and which is an inseparable part of this Memorandum of Agreement.
- (2) Any proposed *Addendum* or changes to this Memorandum of Agreement must first be informed and discussed jointly by the PARTIES.

Article 14 TERMINATION OF MEMORANDUM OF AGREEMENT

This Memorandum of Agreement ends if:

- a. the time limit for the Memorandum of Agreement has expired and is not extended by the PARTIES;
- b. there is a written agreement from the PARTIES to terminate this Memorandum of Agreement;
- c. there are new provisions in the laws and regulations which result in this Memorandum of Agreement not being able to be implemented; and
- d. the completion of the BMN grant for TPST infrastructure and facilities from the FIRST PARTY to the SECOND PARTY.

Article 15
LIABILITIES AND CORRESPONDENCE

- (1) THE PARTIES assign a liaison officer and determine their respective correspondence addresses for the implementation of this memorandum of Agreement, namely:

FIRST PARTY

Liaison Officer : Head of the Regional Settlement Infrastructure Center (BPPW)
..... ,

Address : ,

Telephone : ,

Facsimile : ,

E-mail : ,

THE SECOND PARTY

Liaison Officer : Head of the District Public Works, Spatial Planning and Environment
Department ,

Address : ,

Telephone : ,

Facsimile : ,

E-mail : ,

- (2) THE PARTIES may change the correspondence address as referred to in paragraph (1) at any time and are required to notify the other party of the change in correspondence address no later than 7 (seven) calendar days before the change in correspondence address occurs.
- (3) As long as notification of the change in correspondence address has not been received, all correspondence conveying information will continue to use the correspondence address as referred to in paragraph (1).

Article 16
OTHER PROVISIONS

- (1) The provisions of this Memorandum of Agreement remain in effect and are not affected by any change in leadership within the PARTIES.
- (2) The duties and responsibilities as referred to in Article 5 that have been carried out by the PARTIES prior to the signing of this Memorandum of Agreement constitute an integral part of the implementation of this Memorandum of Agreement.

Article 17
CLOSING

- (1) This Memorandum of Agreement is accompanied by an Attachment which is an integral and inseparable part of this Memorandum of Agreement.
- (2) This Memorandum of Agreement is made and signed by THE PARTIES, made in 2 (two) copies with sufficient stamps, each having the same legal force for THE PARTIES.

THE SECOND PARTY,

FIRST PARTY,

..... ,

..... ,

NOTA KESEPAKATAN
ANTARA
DIREKTORAT JENDERAL CIPTA KARYA
KEMENTERIAN PEKERJAAN UMUM DAN PERUMAHAN RAKYAT
DAN
PEMERINTAH DAERAH
TENTANG
SINERGI PERENCANAAN, PELAKSANAAN PEMBANGUNAN, DAN PEMANFAATAN PRASARANA
DAN SARANA TEMPAT PENGOLAHAN SAMPAH TERPADU, SERTA PENATAAN TEMPAT
PEMROSESAN AKHIR SAMPAH
DI KABUPATEN XXXXX

NOMOR :

NOMOR :

Pada hari ini....., bertempat di kedudukan masing-masing, kami yang bertandatangan di bawah ini:

- I. : Direktur Sanitasi Direktorat Jenderal Cipta Karya
Kementerian Pekerjaan Umum dan Perumahan Rakyat
Republik Indonesia, berkedudukan di Jalan Pattimura
Nomor 20, Kota Administrasi Jakarta Selatan, dalam hal
ini bertindak untuk dan atas nama Direktorat Jenderal
Cipta Karya, diangkat berdasarkan,
selanjutnya disebut PIHAK KESATU.
- II : Bupati, ..., berkedudukan
....., dalam hal ini bertindak untuk dan atas
nama Pemerintah Daerah, diangkat
berdasarkan, selanjutnya disebut PIHAK
KEDUA.

Dengan memperhatikan dan mengingat peraturan perundang-undangan, sebagai berikut:

1. Undang-Undang Nomor 17 Tahun 2003 tentang Keuangan Negara (Lembaran Negara Republik Indonesia Tahun 2003 Nomor 47, Tambahan Lembaran Negara Republik Indonesia Nomor 4286) sebagaimana telah diubah beberapa kali terakhir dengan Undang-Undang Nomor 7 Tahun 2021 tentang Harmonisasi Peraturan Perpajakan (Lembaran Negara Republik Indonesia Tahun 2021 Nomor 246, Tambahan Lembaran Negara Republik Indonesia Nomor 6736);
2. Undang-Undang Nomor 18 Tahun 2008 tentang Pengelolaan Sampah (Lembaran Negara Republik Indonesia Tahun 2008 Nomor 69, Tambahan Lembaran Negara Republik Indonesia Nomor 4851);
3. Undang-Undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 140, Tambahan Lembaran Negara Republik Indonesia Nomor 5059) sebagaimana telah diubah terakhir dengan Undang-Undang Nomor 6 Tahun 2023 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2022 Tentang Cipta Kerja Menjadi Undang-Undang (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 238 Tambahan Lembaran Negara Republik Indonesia Nomor 6841);
4. Undang-Undang Nomor 23 Tahun 2014 tentang Pemerintahan Daerah (Lembaran Negara Republik Indonesia Tahun 2014 Nomor 244, Tambahan Lembaran Negara Republik Indonesia Nomor 5587) sebagaimana telah diubah beberapa kali terakhir dengan Undang-Undang Nomor 1 Tahun 2022 tentang Hubungan Keuangan antara Pemerintah Pusat dan Pemerintah Daerah (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 4 Tambahan Lembaran Negara Republik Indonesia Nomor 6757);
5. Undang-Undang Nomor 17 Tahun 2019 tentang Sumber Daya Air (Lembaran Negara Republik Indonesia Tahun 2019 Nomor 190, Tambahan Lembaran Negara Republik Indonesia Nomor 6405) sebagaimana telah diubah terakhir dengan Undang-Undang Nomor 6 Tahun 2023 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2022 Tentang Cipta Kerja Menjadi Undang-Undang (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 238 Tambahan Lembaran Negara Republik Indonesia Nomor 6841);
6. Peraturan Pemerintah Nomor 81 Tahun 2012 tentang Pengelolaan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga (Lembaran Negara Republik Indonesia Tahun 2012 Nomor 188, Tambahan Lembaran Negara Republik Indonesia Nomor 5347);
7. Peraturan Pemerintah Nomor 27 Tahun 2014 tentang Pengelolaan Barang Milik Negara/Daerah sebagaimana telah diubah dengan Peraturan Pemerintah Nomor 28 Tahun 2020 tentang Perubahan Atas Peraturan Pemerintah Nomor 27 Tahun 2014 tentang Pengelolaan Barang Milik Negara/Daerah (Lembaran Negara Republik Indonesia Tahun 2020 Nomor 142, Tambahan Lembaran Negara Republik Indonesia Nomor 6523);
8. Peraturan Pemerintah Nomor 2 Tahun 2018 tentang Standar Pelayanan Minimal (Lembaran Negara Republik Indonesia Tahun 2018 Nomor 2, Tambahan Lembaran Negara Republik Indonesia Nomor 6178);
9. Peraturan Pemerintah Nomor 28 Tahun 2018 tentang Kerja Sama Daerah (Lembaran Negara Republik Indonesia Tahun 2018 Nomor 97, Tambahan Lembaran Negara Republik Indonesia Nomor 6219);

10. Peraturan Pemerintah Nomor 12 Tahun 2019 tentang Pengelolaan Keuangan Daerah (Lembaran Negara Republik Indonesia Tahun 2019 Nomor 42, Tambahan Lembaran Negara Republik Indonesia Nomor 6322);
11. Peraturan Pemerintah Nomor 22 Tahun 2021 tentang Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup (Lembaran Negara Republik Indonesia Tahun 2021 Nomor 32, Tambahan Lembaran Negara Republik Indonesia Nomor 6634);
12. Peraturan Presiden Nomor 18 Tahun 2020 tentang Rencana Pembangunan Jangka Menengah Nasional Tahun 2020-2024 (Lembaran Negara Republik Indonesia Tahun 2020 Nomor 10);
13. Peraturan Presiden Nomor 120 Tahun 2022 Tentang Penugasan Khusus Dalam Rangka Percepatan Pelaksanaan Pembangunan Infrastruktur (Lembaran Negara Republik Indonesia Tahun 2022 Nomor 193);
14. Peraturan Menteri Pekerjaan Umum Nomor 03/PRT/M/2013 tentang Penyelenggaraan Prasarana dan Sarana Persampahan Dalam Penanganan Sampah Rumah Tangga dan Sampah Sejenis Sampah Rumah Tangga (Berita Negara Republik Indonesia Tahun 2013 Nomor 470);
15. Peraturan Menteri Dalam Negeri Nomor 19 Tahun 2016 tentang Pedoman Pengelolaan Barang Milik Daerah (Berita Negara Republik Indonesia Tahun 2016 Nomor 547);
16. Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 29/PRT/M/2016 Tentang Pembentukan Kesepakatan Bersama Dan Perjanjian Kerja Sama Di Kementerian Pekerjaan Umum dan Perumahan Rakyat (Berita Negara Republik Indonesia Tahun 2016 Nomor 1358);
17. Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.59/Menlhk/Setjen/Kum.1/7/2016 tentang Baku Mutu Lindi Bagi Usaha dan/atau Kegiatan Tempat pengolahan sampah terpadu (Berita Negara Republik Indonesia Tahun 2016 Nomor 1050);
18. Peraturan Menteri Lingkungan Hidup dan Kehutanan Nomor P.68/MENLHK/SETJEN/KUM.1/8/2016 tentang Baku Mutu Air Limbah Domestik (Berita Negara Republik Indonesia Tahun 2016 Nomor 1323);
19. Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 04/PRT/M/2017 tentang Penyelenggaraan Sistem Pengelolaan Air Limbah Domestik (Berita Negara Republik Indonesia Tahun 2017 Nomor 456);
20. Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 29/PRT/M/ Tahun 2018 tentang Standar Teknis Standar Pelayanan Minimal Pekerjaan Umum dan Perumahan Rakyat (Berita Negara Republik Indonesia Tahun 2018 Nomor 1891);
21. Peraturan Menteri Dalam Negeri Nomor 22 Tahun 2020 tentang Tata Cara Kerja Sama Daerah dengan Daerah Lain dan Kerja Sama Daerah dengan Pihak Ketiga (Berita Negara Republik Indonesia Tahun 2020 Nomor 371);
22. Peraturan Menteri Dalam Negeri Nomor 7 Tahun 2021 tentang Tata Cara Perhitungan Tarif Retribusi dalam Penyelenggaraan Penanganan Sampah;
23. Peraturan Daerah,

PIHAK KESATU dan PIHAK KEDUA selanjutnya secara bersama-sama dalam Nota Kesepakatan ini disebut PARA PIHAK, dan secara sendiri sendiri disebut PIHAK.

PARA PIHAK terlebih dahulu menerangkan hal-hal sebagai berikut:

- a. bahwa dalam rangka meningkatkan kualitas lingkungan dan kesehatan masyarakat perlu didukung oleh prasarana dan sarana persampahan;
- b. bahwa dalam rangka pencapaian target Rencana Pembangunan Jangka Menengah Nasional (RPJMN) Tahun 2020-2024, yaitu 20% pengurangan dan 80% pada penanganan sampah, maka diperlukan penyelenggaraan pengelolaan sampah di Kabupaten;
- c. bahwa penyelenggaraan pengelolaan sampah Kabupaten, perlu diselenggarakan oleh berbagai pemangku kepentingan dalam rangka peningkatan pelayanan kepada masyarakat;
- d. bahwa berdasarkan surat, Surat Pernyataan Minat Pembangunan TPAS dan TPST; dan
- e. bahwa dalam rangka penyelenggaraan pengelolaan prasarana dan sarana persampahan tersebut diperlukan sinergi antara Kementerian Pekerjaan Umum dan Perumahan Rakyat dengan Pemerintah Daerah Kabupaten, yang dituangkan dalam suatu Nota Kesepakatan.

Berdasarkan hal-hal tersebut di atas, sesuai dengan kedudukan dan kewenangan masing-masing, PARA PIHAK setuju dan sepakat untuk melaksanakan Nota Kesepakatan Sinergi Perencanaan, Pelaksanaan Pembangunan, dan Pemanfaatan Prasarana dan Sarana Tempat Pengolahan Sampah Terpadu, serta Penataan Tempat Pemrosesan Akhir Sampah di Kabupaten, dengan ketentuan dan syarat-syarat sebagai berikut:

Pasal 1 PENGERTIAN

Dalam Nota Kesepakatan ini yang dimaksud dengan:

12. Sampah adalah sisa kegiatan sehari-hari manusia dan/atau dari proses alam yang berbentuk padat.
13. Pengelolaan sampah adalah kegiatan yang sistematis, menyeluruh, dan berkesinambungan yang meliputi pengurangan dan penanganan sampah.
14. Pemrosesan akhir sampah adalah kegiatan yang bertujuan untuk mengembalikan sampah dan/atau residu hasil pengolahan sebelumnya ke media lingkungan secara aman.
15. Tempat pengolahan sampah terpadu yang selanjutnya disingkat TPST adalah tempat untuk memproses dan mengembalikan sampah ke media lingkungan secara aman bagi manusia dan lingkungan.
16. Prasarana persampahan yang selanjutnya disebut prasarana adalah fasilitas dasar yang dapat menunjang terlaksananya kegiatan penanganan sampah.
17. Sarana persampahan yang selanjutnya disebut sarana adalah peralatan yang dapat dipergunakan dalam kegiatan penanganan sampah.
18. Barang Milik Negara, yang selanjutnya disingkat BMN adalah semua barang yang dibeli atau diperoleh atas beban Anggaran Pendapatan dan Belanja Negara atau berasal dari perolehan lainnya yang sah.
19. Sinergi Perencanaan dan Pelaksanaan Pembangunan adalah pembagian peran dan tanggung jawab antara Pemerintah Pusat dan Pemerintah Daerah untuk memastikan

- bahwa perencanaan dan pelaksanaan pembangunan sesuai dengan ketentuan peraturan perundang-undangan.
20. Dokumen Kesepakatan Sinergi yang selanjutnya disebut Nota Kesepakatan adalah Dokumen yang berisi substansi pokok berupa tugas dan tanggung jawab Pemerintah Pusat dan Pemerintah Daerah yang bersifat mengikat.
 21. Serah Terima Pertama (*Provisional Hand Over*) yang selanjutnya disingkat PHO adalah proses serah terima hasil pekerjaan secara menyeluruh dari Penyedia Barang/Jasa kepada Pejabat Pembuat Komitmen yang dinyatakan dalam Berita Acara Serah Terima Pertama.
 22. Serah Terima Akhir (*Final Hand Over*) yang selanjutnya disingkat FHO adalah proses serah terima hasil akhir pekerjaan secara menyeluruh dari Penyedia Barang/Jasa kepada Pejabat Pembuat Komitmen yang dinyatakan dalam Berita Acara Serah Terima Akhir.

Pasal 2 MAKSUD DAN TUJUAN

- (3) Nota Kesepakatan ini dimaksudkan untuk membangun komitmen bersama PARA PIHAK dalam mensinergikan perencanaan, pelaksanaan pembangunan dan pemanfaatan prasarana dan sarana TPST, serta penataan TPA Sampah.
- (4) Tujuan Nota Kesepakatan ini untuk:
 - d. mewujudkan kerja sama antara PARA PIHAK yang berimbang dalam kegiatan perencanaan, pelaksanaan Pembangunan, dan pemanfaatan prasarana dan sarana TPST, serta penataan TPA Sampah sesuai tugas dan tanggung jawab masing-masing;
 - e. menciptakan mekanisme kerja sama yang transparan dan akuntabel; dan
 - f. mewujudkan percepatan pembangunan dan operasional prasarana dan sarana TPST, serta penataan TPA Sampah di Kabupaten, .

Pasal 3 OBJEK DAN LOKASI

- (4) Objek Nota Kesepakatan ini adalah sinergi perencanaan, pelaksanaan pembangunan, dan pemanfaatan prasarana dan sarana TPST, serta penataan TPA Sampah yang berlokasi di wilayah administratif PIHAK KEDUA.
- (5) Perencanaan, pelaksanaan pembangunan, dan pemanfaatan prasarana dan sarana TPST, serta penataan TPA Sampah sebagaimana dimaksud pada ayat (1) terdiri dari:
 - j. pekerjaan/penataan area landfill;
 - k. pembangunan Instalasi Pengolahan Lindi (IPL)
 - l. pembangunan area gedung TPST;
 - m. pembangunan Instalasi Pengolahan Lindi (IPL);
 - n. pembangunan area garasi TPST;
 - o. pembangunan area plaza TPST;
 - p. pembangunan area gerbang TPST;
 - q. pembangunan mekanikal elektrik dan plumbing; dan

- r. pengadaan mesin
- s.
- (6) Lokasi dari Objek Nota Kesepakatan sinergi perencanaan, pelaksanaan pembangunan, dan pemanfaatan prasarana dan sarana TPST, serta penataan TPA Sampah sebagaimana dimaksud ayat (1) berada di, .

Pasal 4 RUANG LINGKUP

Ruang lingkup Nota Kesepakatan ini terdiri atas:

- a. objek dan lokasi;
- b. tugas dan tanggung jawab;
- c. pelaksanaan;
- d. serah terima;
- e. pembiayaan;
- f. jangka waktu;
- g. monitoring, evaluasi dan pelaporan;
- h. keadaan kahar (*force majeure*);
- i. penyelesaian perselisihan;
- j. *addendum*;
- k. pengakhiran nota kesepakatan;
- l. penghubung dan korespondensi;
- m. ketentuan lain-lain; dan
- n. penutup

Pasal 5 TUGAS DAN TANGGUNG JAWAB

- (1) PIHAK KESATU mempunyai tugas dan tanggung jawab sebagai berikut:
- a. menyusun Studi Kelayakan (*Feasibility Study*) TPST dan penataan TPA Sampah;
 - b. melakukan reviu rencana teknik terinci/*Detail Engineering Design (DED)*;
 - c. menerima Surat Minat yang ditandatangani Bupati yang berisikan:
 - 1) pernyataan kesiapan lahan yang bersertifikat dan tidak dalam sengketa;
 - 2) pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST;
 - 3) lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah.
 - d. menyampaikan dokumen Kriteria Kesiapan (*Readiness Criteria*) yang terdiri atas:
 - 1) salinan Sertifikat Tanah yang merupakan lampiran Surat Minat;
 - 2) pernyataan kesediaan menerima hibah BMN bermaterai;
 - 3) pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST;

- 4) pernyataan dukungan dari DPRD Kabupaten, untuk mengalokasikan biaya operasional dan pemeliharaan TPST serta pengelolaan persampahan pada APBD Kabupaten, sekurang-kurangnya Rp 8.500.000.000 per tahun;
 - 5) pernyataan menjamin bahwa lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah;
 - 6) Kesepakatan bersama/perjanjian kerja sama atau sebutan lain terkait adanya offtaker TPST.
- e. menerima salinan Peraturan Bupati terkait Rencana Induk sistem pengelolaan sampah yang berkesesuaian dengan TPST yang akan dibangun;
 - f. menerima dokumen perizinan terkait pembangunan TPST dan penataan TPA Sampah dari PIHAK KEDUA;
 - g. menerima salinan Dokumen Lingkungan pembangunan TPST dan penataan TPA Sampah dari PIHAK KEDUA;
 - h. menerima lahan siap bangun untuk pembangunan prasarana dan sarana TPST dari PIHAK KEDUA;
 - i. menerima dukungan listrik 1000 kVA, air bersih dan jalan akses masuk minimal lebar 5 meter dengan kemiringan jalan sesuai standar yang berlaku ke lokasi pembangunan TPST, dari PIHAK KEDUA;
 - j. mendampingi pelaksanaan sosialisasi oleh PIHAK KEDUA kepada masyarakat dan pemerintah setempat (Camat, Lurah, Rukun Warga/Rukun Tetangga) terkait pembangunan TPST sesuai kebutuhan PIHAK KEDUA;
 - k. melaksanakan pembangunan TPST dan penataan TPA Sampah setelah terpenuhinya Kriteria Kesiapan (*Readiness Criteria*);
 - l. menyusun SOP (*Standard Operating Procedure*) TPST;
 - m. bersama PIHAK KEDUA melaksanakan uji coba keberfungsian TPST sebelum dilakukan penandatanganan Berita Acara PHO;
 - n. menerima permohonan Serah Terima Pengelolaan dari PIHAK KESATU setelah Berita Acara PHO ditandatangani;
 - o. menyusun, menyiapkan dan menandatangani dokumen Berita Acara Serah Terima Pengelolaan prasarana dan sarana TPST dengan PIHAK KEDUA;
 - p. menyerahkan pengelolaan bangunan TPST kepada PIHAK KEDUA selama proses serah terima hibah BMN berjalan;
 - q. melaksanakan masa pemeliharaan prasarana dan sarana TPST, sejak Berita Acara Serah Terima PHO ditandatangani sampai dengan Berita Acara Serah Terima FHO ditandatangani;
 - r. melakukan perbaikan terhadap kerusakan yang diakibatkan oleh kesalahan Pembangunan sejak Berita Acara Serah Terima PHO ditandatangani sampai dengan Berita Acara Serah Terima FHO;
 - s. menyiapkan dokumen administrasi dalam rangka serah terima BMN;
 - t. menandatangani Berita Acara serah terima BMN bersama PIHAK KEDUA;
 - u. menyerahkan prasarana dan sarana TPST yang sudah dibangun kepada PIHAK KEDUA setelah penandatanganan Berita Acara Hibah dari PIHAK KESATU kepada PIHAK KEDUA;
 - v. menerima salinan peraturan daerah terkait retribusi;
 - w. menerima salinan peraturan kepala daerah terkait tata cara penarikan retribusi;

- x. menerima salinan peraturan pembentukan kelembagaan pengelola TPST/ kerjasama pengelolaan TPST dengan Badan Usaha;
 - y. bersama pihak KEDUA melakukan monitoring dan evaluasi pelaksanaan Nota Kesepakatan ini; dan
 - z. melaksanakan seluruh isi Nota Kesepakatan dan perubahannya berdasarkan kesepakatan PARA PIHAK.
- (2) PIHAK KEDUA mempunyai tugas dan tanggung jawab sebagai berikut:
- a. menyampaikan data/informasi yang dibutuhkan dalam penyusunan Studi Kelayakan (*Feasibility Study*) TPST dan penataan TPA Sampah;
 - b. menyusun rencana teknik terinci/ *Detail Engineering Design (DED)*;
 - c. menyampaikan Surat Minat yang ditandatangani Bupati yang berisikan:
 - 1) pernyataan kesiapan lahan yang bersertifikat dan tidak dalam sengketa;
 - 2) pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST;
 - 3) lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah.
 - d. menyampaikan Kriteria Kesiapan (*Readiness Criteria*) yang terdiri atas:
 - 1) salinan Sertifikat Tanah yang merupakan lampiran Surat Minat;
 - 2) pernyataan kesediaan menerima hibah BMN bermaterai;
 - 3) pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST;
 - 4) pernyataan dukungan dari DPRD Kabupaten, untuk mengalokasikan biaya operasional dan pemeliharaan TPST serta pengelolaan persampahan pada APBD Kabupaten, sekurang-kurangnya Rp 8.500.000.000 per tahun; dan
 - 5) pernyataan menjamin bahwa lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah
 - 6) Kesepakatan bersama/perjanjian kerja sama atau sebutan lain terkait adanya *offtaker* TPST.
 - e. menetapkan Rencana Induk sistem pengelolaan sampah yang berkesesuaian dengan TPST yang akan dibangun, dalam bentuk Peraturan Bupati;
 - f. menjamin bahwa rencana pengolahan sampah di TPST sesuai dengan Rencana Pembangunan Jangka Menengah Daerah (RPJMD);
 - g. menyediakan alat angkut untuk mengoptimalkan operasional TPST dan Lahan Urug Residu;
 - h. menjamin seluruh penerbitan perizinan yang menjadi kewenangan PIHAK KEDUA terkait pembangunan prasarana dan sarana TPST dan penataan TPA Sampah;
 - i. menyusun dan melegalisasi Dokumen Lingkungan pembangunan TPST dan penataan TPA Sampah;
 - j. Menyediakan dan menyerahkan lahan siap bangun untuk pembangunan prasarana dan sarana TPST sesuai dengan kebutuhan operasionalisasi TPST, termasuk lahan untuk jalur pembuangan/pipa hasil olahan Instalasi Pengolahan Lindi (IPL) ke badan air penerima;
 - k. melakukan fasilitasi relokasi bangunan eksisting atau lahan hijau berikut pemulihan kondisi akibat kegiatan tersebut;
 - l. menyediakan listrik 1000 kVA, air bersih dan jalan akses masuk minimal lebar 5 meter dengan kemiringan jalan sesuai standar yang berlaku ke lokasi pembangunan TPST;

- m. Menyiapkan lokasi penampungan Sampah yang memadai sesuai kapasitas timbunan sampah ke TPA Sampah selama pelaksanaan pembangunan TPST dan penataan TPA Sampah;
- n. melakukan sosialisasi kepada masyarakat dan pemerintah setempat (Camat, Lurah, Rukun Warga/Rukun Tetangga) terkait pembangunan TPST;
- o. menjamin keamanan dan kelancaran proses pelaksanaan pembangunan TPST dan penataan TPA Sampah;
- p. menerima dokumen SOP (*Standard Operating Procedure*) TPST dari PIHAK KESATU serta melaksanakannya;
- q. melaksanakan uji coba keberfungsian TPST bersama PIHAK KESATU sebelum dilakukan penandatanganan Berita Acara PHO;
- r. mengajukan permohonan Serah Terima Pengelolaan kepada PIHAK KESATU setelah Berita Acara PHO ditandatangani;
- s. menandatangani Berita Acara Serah Terima Pengelolaan bersama PIHAK KESATU;
- t. melakukan perbaikan terhadap kerusakan yang diakibatkan oleh kegiatan operasional TPST PIHAK KEDUA yang dimulai sejak penandatanganan Berita Acara Serah Terima Pengelolaan;
- u. menandatangani Berita Acara Serah Terima BMN (Barang Milik Negara) bersama PIHAK KESATU;
- v. menerima hasil pembangunan prasarana TPST dari PIHAK KESATU;
- w. menetapkan Peraturan Daerah terkait retribusi, dengan besaran yang mengacu sesuai ketentuan peraturan perundang-undangan;
- x. menetapkan Peraturan Kepala Daerah terkait tata cara penarikan retribusi dan melakukan penarikan retribusi yang efektif sejak awal TPST beroperasi;
- y. melakukan pengelolaan sampah mulai dari lokasi sumber penghasil sampah sampai ke TPST;
- z. Mengoperasikan TPST sesuai SOP sehingga hanya residu yang masuk ke unit pengurukan residu (UPR);
- aa. memastikan sampah yang terangkut ke TPST dalam keadaan terpilah (sampah makanan, sampah pepohonan, sampah daur ulang/recyclables, sampah B3, dan sampah residu);
- bb. mengalokasikan biaya operasional dan pemeliharaan untuk transportasi residu dari TPST ke TPA sampah;
- cc. menambah armada kendaraan pengumpul-pengangkut sampah dan mengalokasikan biaya pengoperasian-pemeliharaan-perawatannya, untuk mendukung kapasitas TPST terbangun (termasuk dalam pengangkutan residunya);
- dd. menyediakan anggaran untuk pembiayaan operasional dan pemeliharaan TPST serta pengelolaan persampahan pada APBD Kab, Rp 8.500.000.000/ tahun sejak dilakukan penandatanganan Berita Acara Serah Terima Pengelolaan;
- ee. menyiapkan dan menetapkan kelembagaan pengelola TPST sesuai dengan kebutuhan dan ketentuan yang berlaku sebelum PHO;
- ff. melatih/memperkuat SDM operator Pemda sehingga mampu mengoperasikan-memelihara-merawat TPST yang telah terbangun;
- gg. melakukan pengelolaan lindi sesuai SOP pada IPL baik yang bersumber dari TPST maupun dari TPA Sampah;

- hh. melakukan pengujian kualitas efluen untuk infrastruktur Instalasi Pengolahan Lindi sesuai baku mutu yang berlaku secara berkala;
- ii. memanfaatkan dan/atau menyalurkan seluruh hasil olahan TPST baik berupa RDF atau bentuk lainnya;
- jj. menyiapkan laporan pemanfaatan dan pengelolaan prasarana dan sarana TPST serta menyerahkan kepada PIHAK PERTAMA sekurang-kurangnya 1 (satu) kali dalam setahun;
- kk. menjamin keberlanjutan/ sustainability dari TPST yang akan terbangun;
- ll. mengidentifikasi kesiapan offtaker produk hasil olahan sampah di TPST dan menjamin tersalurkannya produk hasil olahan sampah kepada *offtaker*;
- mm. bersama PIHAK KESATU melakukan monitoring dan evaluasi pelaksanaan Nota Kesepakatan ini; dan
- nn. melaksanakan seluruh isi Nota Kesepakatan dan perubahannya berdasarkan kesepakatan PARA PIHAK.

Pasal 6 PELAKSANAAN

- (1) Pelaksanaan Nota Kesepakatan ini mengacu Rencana Kerja pada Lampiran yang merupakan bagian tidak terpisahkan dari Nota Kesepakatan ini.
- (2) Dalam pelaksanaan Nota Kesepakatan sebagaimana dimaksud pada ayat (1), PARA PIHAK sepakat menunjuk pejabat pelaksana sebagai berikut:
 - a. PIHAK KESATU menugaskan Kepala Balai Prasarana Permukiman Wilayah Jawa Barat untuk melaksanakan dan bertanggung jawab terhadap pelaksanaan Nota Kesepakatan ini.
 - b. PIHAK KEDUA menugaskan Kepala Dinas Lingkungan Hidup Kabupaten, untuk melaksanakan dan bertanggung jawab terhadap pelaksanaan Nota Kesepakatan ini.
- (3) Apabila ada perubahan Rencana Kerja sebagaimana dimaksud pada ayat (1) akan dituangkan dalam perubahan Rencana Kerja yang disepakati PARA PIHAK.

Pasal 7 SERAH TERIMA

- (1) Proses hibah BMN dari PIHAK KESATU kepada PIHAK KEDUA dilaksanakan segera setelah Berita Acara PHO ditandatangani.
- (2) Prasarana dan sarana TPST, serta penataan TPA Sampah yang telah dibangun oleh PIHAK KESATU diserahkan kepada PIHAK KEDUA.
- (3) Sebelum selesainya proses serah terima hibah aset BMN, PARA PIHAK sepakat melakukan serah terima pengelolaan yang dinyatakan secara tertulis dalam Berita Acara Serah Terima Pengelolaan yang pelaksanaannya setelah ditandatanganinya Berita Acara PHO.
- (4) Setelah Berita Acara Serah Terima Pengelolaan disetujui oleh PARA PIHAK, maka

pengoperasian, pemeliharaan, rehabilitasi TPST serta biaya operasi dan pemeliharaan menjadi tanggung jawab PIHAK KEDUA.

- (5) Hibah BMN atas hasil pembangunan yang dilaksanakan oleh PIHAK KESATU kepada PIHAK KEDUA dilakukan sesuai dengan ketentuan peraturan perundang-undangan.

Pasal 8

PEMBIAYAAN

Biaya yang timbul sebagai akibat dari pelaksanaan Nota Kesepakatan ini bersumber dari:

- a. Anggaran Pendapatan dan Belanja Negara Kementerian Pekerjaan Umum dan Perumahan Rakyat yang dialokasikan pada Direktorat Jenderal Cipta Karya, Kementerian Pekerjaan Umum dan Perumahan Rakyat;
- b. Anggaran Pendapatan dan Belanja Daerah Kabupaten ; dan
- c. Sumber lain yang sah dan tidak mengikat sesuai dengan ketentuan peraturan perundang-undangan.

Pasal 9

JANGKA WAKTU

- (1) Nota Kesepakatan ini berlaku selama 4 (empat) tahun, terhitung sejak ditandatanganinya dokumen Nota Kesepakatan oleh PARA PIHAK dan dapat diperpanjang atas persetujuan PARA PIHAK.
- (2) Nota Kesepakatan ini dapat diakhiri sebelum jangka waktu berakhir sebagaimana dimaksud pada ayat (1) dan dapat diperpanjang dengan kesepakatan PARA PIHAK dengan ketentuan PIHAK yang ingin mengakhiri atau memperpanjang harus memberitahukan secara tertulis kepada PIHAK lainnya, paling lambat 6 (enam) bulan sebelum berakhirnya jangka waktu.

Pasal 10

MONITORING, EVALUASI DAN PELAPORAN

- (1) PARA PIHAK melakukan monitoring dan evaluasi pelaksanaan Nota Kesepakatan secara berkala sekurang kurangnya 2 (dua) kali dalam setahun;
- (2) Hasil monitoring dan evaluasi sebagaimana dimaksud pada ayat (1) disusun dalam bentuk Dokumen Laporan Monitoring dan Evaluasi untuk menjadi laporan bersama PARA PIHAK sebagai bahan masukan untuk merencanakan sinergi program selanjutnya.

Pasal 11

KEADAAN KAHAR (*FORCE MAJEURE*)

- (1) Yang dimaksud keadaan kahar (*force majeure*) dalam kesepakatan ini yaitu peristiwa – peristiwa yang berada di luar kemampuan PARA PIHAK yang berakibat tidak dapat dipenuhi kewajiban – kewajiban PARA PIHAK, antara lain:
 - a. bencana alam banjir, gempa bumi, tanah longsor, badai atau angin topan, wabah penyakit;
 - b. kerusuhan/huru-hara;
 - c. peperangan/pemberontakan;
 - d. sabotase;
 - e. pandemi wabah penyakit;
 - f. pemogokan umum yang dengan jelas dinyatakan sebagai Keadaan Kahar; dan/atau
 - g. perubahan kebijakan pemerintah yang mendasar dalam bidang keuangan/moneter, serta keadaan-keadaan tersebut mengakibatkan hubungan sebab akibat secara langsung dengan kerugian yang dialami PARA PIHAK.
- (2) Apabila terjadi hal-hal diluar kemampuan PARA PIHAK atau disebut sebagai Keadaan Kahar dan mengakibatkan isi Nota Kesepakatan ini tidak dapat dilaksanakan baik sebagian maupun seluruhnya maka PARA PIHAK akan melakukan penyesuaian terhadap isi dokumen Nota Kesepakatan ini. Apabila tidak memungkinkan untuk dilakukan penyesuaian, maka PARA PIHAK sepakat untuk tidak akan mengadakan tuntutan apapun dan kerugian yang timbul karenanya akan diselesaikan secara musyawarah oleh PARA PIHAK demi tercapainya penyelesaian yang sebaik--baiknya.
- (3) Keadaan Kahar sebagaimana yang dimaksud pada ayat (1) harus dinyatakan oleh pihak atau pejabat yang berwenang.
- (4) Dalam hal terjadinya Keadaan Kahar sebagaimana dimaksud pada ayat (2), pihak yang terkena Keadaan Kahar harus memberitahukan kepada PIHAK lainnya secara tertulis paling lambat dalam jangka waktu 14 (empat belas) hari kerja sejak terjadinya Keadaan Kahar.
- (5) Dalam hal pihak yang terkena Keadaan Kahar tidak memberitahukan peristiwa Keadaan Kahar secara tertulis kepada PIHAK lainnya dalam jangka waktu sebagaimana dimaksud pada ayat (3), maka keadaan kahar dianggap tidak pernah terjadi.

Pasal 12 PENYELESAIAN PERSELISIHAN

- (1) Dalam hal terjadi perselisihan dalam menafsirkan dan/atau dalam melaksanakan isi kesepakatan ini, maka PARA PIHAK sepakat untuk menyelesaikannya secara musyawarah untuk mufakat.
- (2) Apabila penyelesaian secara musyawarah tidak berhasil mencapai mufakat, maka penyelesaian perselisihan dilaksanakan berdasarkan ketentuan peraturan perundang--undangan.

Pasal 13 ADDENDUM

- (1) Hal-hal lain yang belum diatur dan/atau belum cukup diatur dalam Nota Kesepakatan ini, akan diatur kemudian dalam Kesepakatan Tambahan (*Addendum*) atau perubahan berdasarkan atas kesepakatan PARA PIHAK yang dilakukan secara tertulis dan merupakan bagian yang tidak terpisahkan dari Nota Kesepakatan ini.
- (2) Setiap usulan *Addendum* atau perubahan dalam Nota Kesepakatan ini terlebih dahulu harus diinformasikan dan dibahas bersama oleh PARA PIHAK.

Pasal 14 PENGAKHIRAN NOTA KESEPAKATAN

Nota Kesepakatan ini berakhir apabila:

- a. batas waktu Nota Kesepakatan berakhir dan tidak diperpanjang oleh PARA PIHAK;
- b. adanya kesepakatan tertulis dari PARA PIHAK untuk mengakhiri Nota Kesepakatan ini;
- c. terdapat ketentuan baru dalam peraturan perundang-undangan yang mengakibatkan Nota Kesepakatan ini tidak dapat dilaksanakan; dan
- d. telah diselesaikannya hibah BMN prasarana dan sarana TPST dari PIHAK KESATU kepada PIHAK KEDUA.

Pasal 15 PENGHUBUNG DAN KORESPONDENSI

- (1) PARA PIHAK menugaskan pejabat penghubung dan menentukan alamat korespondensi masing-masing dalam rangka pelaksanaan nota kesepakatan ini yaitu:

PIHAK KESATU

Pejabat Penghubung : Kepala Balai Prasarana Permukiman Wilayah (BPPW)
.....,

Alamat :,

Telepon :,

Faksimili :,

Email :,

PIHAK KEDUA

Pejabat Penghubung : Kepala Dinas Pekerjaan Umum, Tata Ruang dan Lingkungan
Hidup Kabupaten,

Alamat :,

Telepon :,

Faksimili :,

Email :,

- (2) PARA PIHAK setiap waktu dapat mengubah alamat korespondensi sebagaimana dimaksud pada ayat (1) dan wajib memberitahukan perubahan alamat korespondensi paling lambat 7 (tujuh) hari kalender sebelum terjadinya perubahan alamat korespondensi tersebut.
- (3) Selama pemberitahuan perubahan alamat korespondensi tersebut belum diterima, maka segala korespondensi penyampaian informasi tetap menggunakan alamat korespondensi sebagaimana dimaksud pada ayat (1).

Pasal 16 KETENTUAN LAIN-LAIN

- (1) Ketentuan Nota Kesepakatan ini tetap berlaku dan tidak terpengaruh oleh terjadinya pergantian kepemimpinan di lingkungan PARA PIHAK.
- (2) Tugas dan Tanggung Jawab sebagaimana dimaksud dalam Pasal 5 yang telah dilaksanakan PARA PIHAK sebelum penandatanganan Nota Kesepakatan ini merupakan satu-kesatuan dari pelaksanaan Nota Kesepakatan ini.

Pasal 17 PENUTUP

- (1) Nota Kesepakatan ini dilengkapi dengan Lampiran yang merupakan satu kesatuan dan bagian tidak terpisahkan dari Nota Kesepakatan ini.
- (2) Nota Kesepakatan ini dibuat dan ditandatangani PARA PIHAK, dibuat dalam rangkap 2 (dua) bermaterai cukup, masing-masing mempunyai kekuatan hukum yang sama bagi PARA PIHAK.

PIHAK KEDUA,

PIHAK KESATU,

.....,

.....,

Lampiran : Nota Kesepakatan Antara Direktorat Jenderal Cipta Karya Kementerian Pekerjaan Umum Dan Perumahan Rakyat Dan Pemerintah Kabupaten,

Tentang : Sinergi Perencanaan, Pelaksanaan Pembangunan, dan Pemanfaatan Prasarana dan Sarana Tempat Pengolahan Sampah Terpadu, serta Penataan Tempat Pemrosesan Akhir Sampah, Serta Penataan Tempat Pemrosesan Akhir Sampah Di Kabupaten,

Nomor :

Nomor :

Tanggal : 2024

RENCANA KERJA

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME	
					KE-				PIHAK KESATU	PIHAK KEDUA			
					I	II	III	IV					
1.	Sinergitas Perencanaan Pembangunan	a.	Penyusunan dokumen perencanaan dan pemenuhan dokumen kriteria kesiapan	Kabupaten,	APBN dan APBD	v				- menyusun Studi Kelayakan (<i>Feasibility Study</i>) TPST dan penataan TPA Sampah - melakukan reviu rencana teknik terinci (DED)emenerima Surat Minat yang ditandatangani Bupati yang berisikan:	- Menyampaikan data/informasi yang dibutuhkan dalam penyusunan Studi Kelayakan (<i>Feasibility Study</i>) TPST dan penataan TPA Sampah - menyusun rencana teknik terinci (DED)	Tersedianya dokumen Studi Kelayakan (<i>Feasibility Study</i>), DED, surat minat dan dokumen	Terpenuhinya seluruh kriteria persiapan pembangunan

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
		(Readiness Criteria)							1) pernyataan kesiapan lahan yang bersertifikat dan tidak dalam sengketa, 2) pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST, 3) lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah. • menerima dokumen Kriteria Kesiapan (Readiness Criteria) yang terdiri atas: - salinan Sertifikat Tanah yang merupakan lampiran Surat Minat; - pernyataan kesediaan menerima hibah BMN bermaterai; - pernyataan kesediaan mengalokasikan	• menyampaikan Surat Minat yang ditandatangani Bupati yang berisikan: 4) pernyataan kesiapan lahan yang bersertifikat dan tidak dalam sengketa, 5) pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST, 6) lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah. • menyampaikan Kriteria Kesiapan (Readiness Criteria) yang terdiri atas: - salinan Sertifikat Tanah yang merupakan lampiran Surat Minat; - pernyataan kesediaan	kriteria kesiapan	

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
									Biaya Operasional dan Pemeliharaan TPST serta Lahan Urug Residu; - pernyataan dukungan dari DPRD Kabupaten, untuk mengalokasikan biaya operasional dan pemeliharaan TPST serta pengelolaan persampahan pada APBD Kabupaten, sekurang-kurangnya Rp 8.500.000.000 per tahun; - pernyataan menjamin bahwa lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah; - Kesepakatan bersama/perjanjian kerja sama atau sebutan lain terkait	menerima hibah BMN bermaterai; - pernyataan kesediaan mengalokasikan Biaya Operasional dan Pemeliharaan TPST serta Lahan Urug Residu; - pernyataan dukungan dari DPRD Kabupaten, untuk mengalokasikan biaya operasional dan pemeliharaan TPST serta pengelolaan persampahan pada APBD Kabupaten, sekurang-kurangnya Rp 8.500.000.000 per tahun; - pernyataan menjamin bahwa lokasi TPST telah sesuai dengan Rencana Tata Ruang Wilayah;		

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
									adanya <i>offtaker</i> TPST. Menerima salinan Peraturan Bupati terkait Rencana Induk sistem pengelolaan sampah yang berkesesuaian dengan TPST yang akan dibangun	- Kesepakatan bersama/perjanjian kerja sama atau sebutan lain terkait adanya <i>offtaker</i> TPST. - menetapkan Rencana Induk sistem pengelolaan sampah yang berkesesuaian dengan TPST yang akan dibangun, dalam bentuk Peraturan Bupati - menjamin bahwa rencana pengolahan sampah di TPST sesuai dengan Rencana Pembangunan Jangka Menengah Daerah (RPJMD) - Menjamin operasional Instalasi Pengolahan Lumpur Tinja (IPLT) eksisting di kawasan TPST yang akan dibangun.		
		b.	Pemenuhan dokumen	Kabupaten,	APBN dan APBD				Menerima dokumen perizinan terkait pembangunan TPST dan penataan TPA	menjamin seluruh penerbitan perizinan yang menjadi kewenangan PIHAK	Tersedianya dokumen perizinan dan	

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
			lingkungan dan perizinan						Sampah dari PIHAK KEDUA Menerima salinan Dokumen Lingkungan pembangunan TPST dan penataan TPA Sampah dari PIHAK KEDUA	KEDUA terkait pembangunan prasarana dan sarana TPST dan penataan TPA Sampah menyusun dan melegalisasi Dokumen Lingkungan pembangunan TPST dan penataan TPA Sampah	dokumen lingkungan	
		c.	Penyediaan lahan dan dukungan listrik, air bersih serta jalan akses masuk lokasi pembangunan	Kabupaten,	APBD				- Menerima lahan siap bangun untuk pembangunan prasarana dan sarana TPST dari PIHAK KEDUA - Menerima dukungan listrik 1000 kVA, air bersih dan jalan akses masuk minimal lebar 5 meter dengan kemiringan jalan sesuai standar yang berlaku ke lokasi pembangunan TPST, dari PIHAK KEDUA	- Menyediakan dan menyerahkan lahan siap bangun untuk pembangunan prasarana dan sarana TPST sesuai dengan kebutuhan operasionalisasi TPST, termasuk lahan untuk jalur pembuangan/pipa hasil olahan Instalasi Pengolahan Lindi (IPL) ke badan air penerima - melakukan fasilitasi relokasi bangunan eksisting atau lahan hijau berikut pemulihan kondisi akibat kegiatan tersebut	Tersedianya lahan dan listrik, air bersih serta jalan akses	

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
										menyediakan listrik 1000 kVA, air bersih dan jalan akses masuk minimal lebar 5 meter dengan kemiringan jalan sesuai standar yang berlaku ke lokasi pembangunan TPST		
2.	Sinergitas Pelaksanaan Pembangunan	Pelaksanaan Pembangunan dan penyusunan SOP	Kabupaten,	APBN DAN APBD					- mendampingi pelaksanaan sosialisasi oleh PIHAK KEDUA kepada masyarakat dan pemerintah setempat (Camat, Lurah, Rukun Warga/Rukun Tetangga) terkait pembangunan TPST sesuai kebutuhan PIHAK KEDUA - melaksanakan pembangunan TPST dan penataan TPA Sampah - menyusun SOP (<i>Standard Operating Procedure</i>) TPST - bersama PIHAK KEDUA melaksanakan uji coba keberfungsian TPST sebelum dilakukan	- Menyiapkan lokasi penampungan Sampah yang memadai sesuai kapasitas timbunan sampah ke TPA Sampah selama pelaksanaan pembangunan TPST dan penataan TPA Sampah. - melakukan sosialisasi kepada masyarakat dan pemerintah setempat (Camat, Lurah, Rukun Warga/Rukun Tetangga) terkait pembangunan TPST - menjamin keamanan dan kelancaran proses pelaksanaan pembangunan TPST dan penataan TPA Sampah	Tersedianya TPST dan TPA yang telah ditata	Terselenggaranya pengelolaan sampah di Kabupaten,

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
									penandatanganan Berita Acara PHO	- menerima dokumen SOP (<i>Standard Operating Procedure</i>) TPST dari PIHAK KESATU serta melaksanakannya - melaksanakan uji coba keberfungsian TPST bersama PIHAK KESATU sebelum dilakukan penandatanganan Berita Acara PHO		
3.	Sinergitas serah terima dan pemanfaatan	a.	Serah Terima pengelolaan/ operasional	Kabupaten, APBN dan APBD					- menerima permohonan Serah Terima Pengelolaan dari PIHAK KESATU setelah Berita Acara PHO ditandatangani - menyusun, menyiapkan dan menandatangani dokumen Berita Acara Serah Terima Pengelolaan prasarana dan sarana TPST dengan PIHAK KEDUA - menyerahkan pengelolaan bangunan TPST kepada PIHAK KEDUA selama proses	- mengajukan permohonan Serah Terima Pengelolaan kepada PIHAK KESATU setelah Berita Acara PHO ditandatangani - menandatangani Berita Acara Serah Terima Pengelolaan bersama PIHAK KESATU - melakukan perbaikan terhadap kerusakan yang diakibatkan oleh kegiatan operasional TPST PIHAK KEDUA yang dimulai sejak penandatanganan Berita Acara Serah Terima Pengelolaan	Tersedianya berita acara serah terima pengelolaan TPST	

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
									serah terima hibah BMN berjalan • melaksanakan masa pemeliharaan prasarana dan sarana TPST, sejak Berita Acara Serah Terima PHO ditandatangani sampai dengan Berita Acara Serah Terima FHO ditandatangani; • melakukan perbaikan terhadap kerusakan yang diakibatkan oleh kesalahan Pembangunan sejak Berita Acara Serah Terima PHO ditandatangani sampai dengan Berita Acara Serah Terima FHO			
		b.	Serah terima BMN	Kabupaten,	APBN dan APBD				• menyiapkan dokumen administrasi dalam rangka serah terima BMN • menandatangani Berita Acara serah terima BMN bersama PIHAK KEDUA • menyerahkan prasarana dan sarana	• menandatangani Berita Acara Serah Terima BMN (Barang Milik Negara) bersama PIHAK KESATU • menerima hasil pembangunan prasarana TPST dari PIHAK KESATU	Tersedianya Berita Acara Serah Terima BMN	

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
									TPST yang sudah dibangun kepada PIHAK KEDUA setelah penandatanganan Berita Acara Hibah dari PIHAK KESATU kepada PIHAK KEDUA			
		c.	Operasional dan Pengelolaan	Kabupaten,	APBD				• menerima salinan peraturan daerah terkait retribusi • menerima salinan peraturan kepala daerah terkait tata cara penarikan retribusi • menerima salinan peraturan pembentukan kelembagaan pengelola TPST/ kerjasama pengelolaan TPST dengan Badan Usaha	• menetapkan Peraturan Daerah terkait retribusi, dengan besaran yang mengacu sesuai ketentuan peraturan perundang-undangan • menetapkan Peraturan Kepala Daerah terkait tata cara penarikan retribusi dan melakukan penarikan retribusi yang efektif sejak awal TPST beroperasi. • melakukan pengelolaan sampah mulai dari lokasi sumber penghasil sampah sampai ke TPST. • Mengoperasikan TPST sesuai SOP sehingga	Tersedianya kebutuhan operasional pengelolaan sampah	

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
										hanya residu yang masuk ke unit pengurukan residu (UPR); • memastikan sampah yang terangkut ke TPST dalam keadaan terpilah (sampah makanan, sampah pepohonan, sampah daur ulang/recyclables, sampah B3, dan sampah residu); • mengalokasikan biaya operasional dan pemeliharaan untuk transportasi residu dari TPST ke TPA sampah; • menambah armada kendaraan pengumpul-pengangkut sampah dan mengalokasikan biaya pengoperasian-pemeliharaan-perawatannya, untuk mendukung kapasitas TPST terbangun (termasuk dalam		

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
										pengangkutan residunya); • menyediakan anggaran untuk pembiayaan operasional dan pemeliharaan TPST serta pengelolaan persampahan pada APBD Kab, Rp 8.500.000.000/ tahun sejak dilakukan penandatanganan Berita Acara Serah Terima Pengelolaan; • menyiapkan dan menetapkan kelembagaan pengelola TPST sesuai dengan kebutuhan dan ketentuan yang berlaku sebelum PHO • melatih/memperkuat SDM operator Pemda sehingga mampu mengoperasikan-memelihara-merawat TPST yang telah terbangun • melakukan pengelolaan lindi		

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
										sesuai SOP pada IPL baik yang bersumber dari TPST maupun dari TPA Sampah • melakukan pengujian kualitas efluen untuk infrastruktur Instalasi Pengolahan Lindi sesuai baku mutu yang berlaku secara berkala; • memanfaatkan dan/atau menyalurkan seluruh hasil olahan TPST baik berupa RDF atau bentuk lainnya • menyiapkan laporan pemanfaatan dan pengelolaan prasarana dan sarana TPST serta menyerahkan kepada PIHAK PERTAMA sekurang-kurangnya 1 (satu) kali dalam setahun; • menjamin keberlanjutan/ sustainability dari TPST yang akan terbangun; • mengidentifikasi kesiapan oftaker		

NO	PROGRAM/ KEGIATAN	TAHAPAN KEGIATAN	LOKASI	SUMBER DANA	TAHUN				TUGAS DAN TANGGUNG JAWAB		OUTPUT	OUTCOME
					KE-				PIHAK KESATU	PIHAK KEDUA		
					I	II	III	IV				
										produk hasil olahan sampah di TPST dan menjamin tersalurkannya produk hasil olahan sampah kepada offtaker		
4.	Monitoring dan Evaluasi	Monitoring dan Evaluasi	Kabupaten,	APBN dan APBD					- bersama pihak KEDUA melakukan monitoring dan evaluasi pelaksanaan Nota Kesepakatan ini - melaksanakan seluruh isi Nota Kesepakatan dan perubahannya berdasarkan kesepakatan PARA PIHAK	- bersama PIHAK KESATU melakukan monitoring dan evaluasi pelaksanaan Nota Kesepakatan ini; dan - melaksanakan seluruh isi Nota Kesepakatan dan perubahannya berdasarkan kesepakatan PARA PIHAK	Tersedianya dokumen monitoring dan evaluasi pelaksanaan nota kesepakatan	Dilaksanakannya seluruh isi nota kesepakatan

PIHAK KEDUA,

PIHAK KESATU,

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Appendix J Site Visit Report

Summary of Site Visit Report

Aspect	Aceh	Jejara	Rembang	Tasikmalaya	Temanggung
Waste Management and Environmental Issues	- Currently, the landfill is not closed every day or every week, so it has the potential for odor pollution - Waste accumulation that has the potential for landslides - Waste that initially covered the operational road, making it difficult to operate during the rain, has been tidied up. SOPs for waste accumulation and supervision are needed so that the same problem does not recur.	- Currently, the landfill is not covered by soil every day or every week, so it has the potential for odor pollution, and damage to the liner that is not monitored or repaired properly. - The IPL is not functioning optimally (the aerator was stolen) has the potential for surface water pollution - The leachate quality exceeds the threshold. - The landfill methane gas is currently not utilized by local	- The landfill is only covered once every 4 months, so there is potential for odor and leachate contamination. - IPL is not functioning, potential pollution of surface water and soil	- The lack of routine closure at the Nangkaleah landfill has the potential to cause odor pollution and surface water pollution. - The lack of leachate treatment and drainage channels at the Nangkaleah landfill has the potential to cause soil and surface water pollution.	- The lack of routine closure at the landfill has the potential for odor and water pollution. - The non-functioning of the IPL and drainage channels containing leachate and waste. - The history of landslides at the landfill due to poor waste management and heavy rains that closed the main operational road access.

Aspect	Aceh	Jepara	Rembang	Tasikmalaya	Temanggung
	- Damaged aerator for IPL, potentially polluting surface water - Electrical problems affect LTP operations	residents because of the broken system.			
Community Concerns and External Complaints	- Complaints from the community regarding improper waste transport (waste spillage and odour). - Complaints on landfill compensation fee. - River pollution due to leachate contamination, so that it cannot be consumed/used (farmers and livestock).	- Complaints about odor, water contamination and lots of flies in residential areas. - Complaints about rivers being polluted for agricultural irrigation are making farmers itchy. - Complaints from the former landowners due to the government's lack of clarity regarding the	Complaints about odor, water contamination and land productivity.	A foul odor is noticeable in Cikalapa village, particularly during the dry season	-

Aspect	Aceh	Jepara	Rembang	Tasikmalaya	Temanggung
	Complaints from the airport due to Egret which allegedly came from the landfill.	plants on the land being sold.			
Cultural Resources	There are no cultural resources around Landfill identified	There are 4 sacred sites within <500 m from the landfill, 2 listed as "suspected cultural heritage" by Jepara Regency Tourism and Culture Office	There is a sacred site within the landfill area that is still used once a year on the eve of 1 Suro	There are no cultural resources around Landfill identified	Within a radius of 500 metres there are sacred sites and tombs. The local community holds an annual ceremony at this sacred site. Based on interviews, there is no evidence that the landfill has had an impact on the sacred sites to date

Aspect	Aceh	Jepara	Rembang	Tasikmalaya	Temanggung
Scavengers	There are no scavengers identified	There are 24 scavengers, 15 men and 9 women	There are 26 scavengers, 12 men and 14 women	There are 57 scavengers, approximately 70% of scavengers are women. If the landfill is to be relocated to the Cinangsih Landfill as a temporary site, the scavengers currently employed at the landfill (approximately 40 individuals) will lose their jobs due to the territorial concept	There are 69 scavengers, 49 of them are women, and 24 of them are elders
Land Issue	The land ownership is under local government (Forest Area Use Approval / PPKH)	The government purchased land from individual landowners. However, the payment only covered the price of the land	The lack of clarity regarding the boundaries of the proposed temporary landfill site may potentially lead to encroachment	There are two temporary landfill options (during the construction phase) that will be used. One of these is in Cinangsih (the	The local government has exchanged land with the village government to expand the landfill area. The certificate is

Aspect	Aceh	Jepara	Rembang	Tasikmalaya	Temanggung
		itself and did not include the value of the plants on the land. This has led the former landowners to question whether the plants will be purchased by the government or can be sold by the landowners. There is land user on the local government land.	on community land, as some community members may already be using the area, or it may disrupt the community's access to their livelihoods.	old/closed TPA). This option has caused a lot of problems with the local community, especially the police housing department. Additionally, the local government purchased approximately one hectare of land from the community for the intended site of TPST construction. The status is still in progress.	currently being finalised.
Vulnerable Group	Daily workers in landfill (all men)	There are 4 women who work as scavengers at the landfill	- As many as 60% of scavengers are women 40% of the number of scavengers are elderly	Approximately 70% of scavengers are women, and based on observations, it is predicted that	There are 69 scavengers, 49 of them are women, and 24 of them are elders

Aspect	Aceh	Jepara	Rembang	Tasikmalaya	Temanggung
		Around 25% of scavengers are elderly		more than 30% are older	
Economic Displacement	No scavengers identified on the site therefore no economic displacement anticipated	There are 24 scavengers and 1 collector at the landfill. Scavenging is the main and only job for most scavengers.	The plan to relocate the landfill to a temporary landfill site approximately 2km away from the existing one will result in scavengers partially or entirely losing their source of livelihood	The relocation of the landfill during the construction of the TPST has the potential to result in economic displacement from scavengers (around 57 scavengers) and collectors	The construction of the Sanggrahan landfill will have an impact on the income of scavengers (67 scavengers) and collectors

Aceh

Participant:

- PUPR (staff level)
- BPPW (staff level)
- Local Government (staff level)
- ESC

*The PIC and the timeline are still suggestions from ESC, needs to be discussed with AIIB

“If the project comprises or includes existing facilities or existing activities that do not meet the requirements of the ESSs at the time of approval by the Bank, the Bank will require the Borrower to adopt and implement measures satisfactory to the Bank so that the material aspects of such facilities or activities meet the requirements of the ESSs within a timeframe acceptable to the Bank”

Findings	Description	Mitigation Measures	Timeline*	PIC*
MRF				
Off-taker	Off-taker agreement for operations is not available	Provide off-taker agreement to secure MRF operation	Prior to the Loan Agreement is signed	Local Government
Environmental				
Environmental Contamination	Leachate contamination in drainage and potential contamination outside the landfill perimeter.	- Ensure landfill can work based on sanitary landfill procedure. - Waste is only disposed of within the cell perimeter. - Provide proper access road, and cell and perimeter drain.	Depending on local government funding, preferably prior to the completion of MRF construction or committed within 1 year	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Conduct regular monitoring of leachate, surface water and groundwater in sensitive receptors area (resident area)	after the completion of MRF construction.	
Landfill Management	- Currently, landfill is not covered daily or weekly, - Waste piling with potential landslide - Waste covering operational roads and operational difficulties during rainy days. - Broken Aerator for LTP - Electrical issues affecting LTP operations	- Implement daily or weekly covering of waste - Improve waste arrangement practices. - Provide proper operational road to cell landfill - Ensure proper access to landfill cells (already included in the project) - Repair or replace broken aerator - Ensure adequate power supply for LTP operations - Conduct regular monitoring of leachate, surface water and groundwater in sensitive receptors area (resident area)		- Local Government - The construction of proper access to the landfill cells will be provided in the project (PUPR)
Social				
Community and external complaints	- Complaints from the community regarding	- Respond to complaints promptly - Properly engage the community to address their concerns	- Social/complaints issues are expected to be	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
	improper waste transport (waste spillage and odour) - Complaints on landfill compensation fee. - River pollution due to leachate contamination, so that it cannot be consumed/used (farmers and livestock). Complaints from the airport due to Egret which allegedly came from the landfill	- Ensure commitment and application of tarpaulin cover during waste transport. - Improve leachate management - Regularly monitor water quality - Consult with airport authority	resolved immediately - River pollution-related issues are to be addressed preferably prior to the completion of MRF construction or committed within 1 year after the completion of MRF construction (depending on applicability and local government funding).	

Documentation





Jepara

Participant:

- PUPR (staff level)
- BPPW (staff level)
- Local Government (staff level)
- AIIB
- AEPW
- ESC

*The PIC and the timeline are still suggestions from ESC, needs to be discussed with AIIB

“If the project comprises or includes existing facilities or existing activities that do not meet the requirements of the ESSs at the time of approval by the Bank, the Bank will require the Borrower to adopt and implement measures satisfactory to the Bank so that the material aspects of such facilities or activities meet the requirements of the ESSs within a timeframe acceptable to the Bank”

Findings	Description	Mitigation Measures	Timeline*	PIC*
MRF				
Off-taker	Off-taker agreement for operations is not available	Provide off-taker agreement to secure MRF operation	Prior to the Loan Agreement is signed	Local Government
Environmental				
Landfill Management	- Currently landfill is not covered daily, or weekly and liner damage is not being monitored or fixed properly.	- Implement daily or weekly covering of waste - Regularly inspect and repair liners (the cells will be closed in this project)	- For LTP related mitigation preferably prior to the	- Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
	- LTP not functioning optimally (stolen aerator) - Leachate quality exceeding thresholds. Landfill methane gas currently not being utilised by surrounding residents as the system is broken.	- Replace stolen aerator, make leachate treatment plant more optimum until replaced by the new LTP - Conduct regular monitoring of leachate, surface water, and groundwater - Develop and implement proper landfill infrastructure Ensure adequate methane and leachate management	MRF construction or - prior to MRF completion or committed within 1 year after the completion of MRF construction for other issues (depending on applicability and local government funding).	
Legacy Waste	Temporary landfill during the MRF construction without proper landfill operational infrastructure will be a legacy issue.	- Cover current closed open dump cell with impermeable liner and provide dedicated leachate sum pit. - Provide drain to collect leachate to the sum pit and collect leachate from the sum pit in daily basis for LTP process. - Cell mining for MRF feed or to be disposed of to a designated/proper	- For open dumping mitigation preferably prior to the MRF construction or - prior to MRF completion or committed	- Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		landfill after the MRF construction is completed. If required, to provide new designated landfill cell.	within 1 year after the completion of MRF construction for provision of new landfill area. (depending on applicability and local government funding).	
Proximity to Residential Areas	Currently the closest distance to a residential area is around 150 – 200 meters.	- Establish green buffer zones around landfill - Implement measures to control odours and emissions	- Preferably prior to MRF completion or committed within 1 year after the completion of MRF construction (depending on applicability and local government funding).	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
Social				
Land Issues	Sale of plants not included in land sale, causing disputes Land user on the landfill site/local government land (south side, zone 15)	- Review of documentation for land status, including land purchase and sale or lease activities (if any) - Conduct site investigation and consultation with PAP - Identify the Impact and level of vulnerability - Identify gaps between national regulations and international standards regarding the land - Prepare impact management plans such as compensation program etc - Implementation of planned programmes - Monitoring and Evaluation	Preferably prior to MRF construction	Local Government
Cultural Resources	4 sacred sites within <500 m from the landfill, 2 listed as "suspected cultural heritage" by Jepara Regency Tourism and Culture Office.	- Identify the cultural Resources around the project site - Evaluate the impact to the cultural resources and community - Conduct consultations with relevant stakeholders - Prepare mitigation plans, such as chance find procedure if required	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Implementation of planned programmes - Monitoring and evaluation		
Community Complaints	Historical pollution complaints from farmers, odour and water quality concerns. Odour complaints, high number of flies in residential areas.	- Identify community concerns - Evaluate the impact of these concerns - Conduct consultations with relevant stakeholders - Prepare mitigation plans, including the establishment of GRM and dedicated resource - Implementation of planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government
Economic displacement	There are 20 scavengers and 1 collector at the landfill. Scavenging is the main and only job for most scavengers.	- Conduct a baseline study for PAP - Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans - Implement planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government
Vulnerable Group Issue	There are 4 women who work as scavengers at the landfill.	- Identification of vulnerable groups	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Identification of the impact on vulnerable groups - Conduct consultation with relevant stakeholders (including data collection and baseline analysis) - Prepare a mitigation plan and ensure equal access to safety equipment and training - Implementation of planned programmes - Monitoring and evaluation		

Documentation



Introduction Meeting with DLH Jepara



Plan of TPA Bandengan



Facility Existing



Weighbridge



Warehouse



Facility Existing



Waste Transportation



Waste Transportation



Waste Transportation



Gathering Point



Waste Transportation



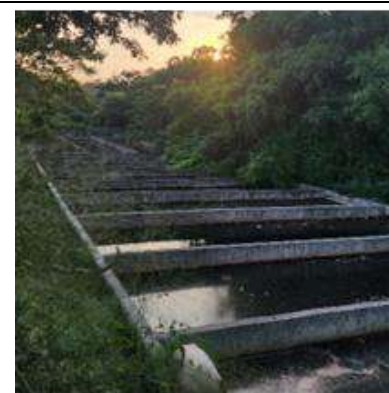
Monitoring Well



Scavanger



Collector in TPA



IPAL



Electrical cable network near WWTP and active waste pile



IPLT



Processing Organic Waste Into Organic Fertilizer



The Nearest River from TPA for Irrigation



Cassava plantation next to the landfill



“Tuan Guru” Tomb



Old Cemetary



Watu Gentong



Syeh Hasan bin Ibrohim Al-Hasni Tomb



Syekh Wasi Tomb



People who take grass from the landfill



Landfill Bandengan

Rembang

Participant:

- PUPR (staff level)
- BPPW (staff level)
- Local Government (staff level)
- AIIB
- AEPW
- ESC

*The PIC and the timeline are still suggestions from ESC, needs to be discussed with AIIB

“If the project comprises or includes existing facilities or existing activities that do not meet the requirements of the ESSs at the time of approval by the Bank, the Bank will require the Borrower to adopt and implement measures satisfactory to the Bank so that the material aspects of such facilities or activities meet the requirements of the ESSs within a timeframe acceptable to the Bank”

Findings	Description	Mitigation Measures	Timeline*	PIC*
MRF				
Preferably prior to MRF construction	Preferably prior to MRF construction	Preferably prior to MRF construction	Preferably prior to MRF construction	Preferably prior to MRF construction
Environmental				
Landfill Management	- Landfill is covered every 4 months only.	- Implement daily or weekly covering of waste - Improve waste arrangement practices-	Preferably prior to MRF completion or committed within 1 year after the completion of MRF construction	- Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
	- LTP not functioning, potential contamination on the surface water.	- Repair or replace broken components of LTP - Conduct regular monitoring of leachate, soil, groundwater and surface water quality	(depending on applicability and local government funding).	The existing cell landfill will be capped in this project (PUPR)
Legacy Waste	Absence of liners and improper drainage system to LTP, potential contamination on soil and groundwater.	- Close the landfill with impermeable liner once adequate temporary landfill east of UNDIP Pedak Pulo campus is constructed and ready to use with proper controlled landfill infrastructure. - Ensure STP drain is clear before closing the landfill. - Conduct regular monitoring of leachate, soil, groundwater and surface water quality	Preferably prior to MRF completion or committed within 1 year after the completion of MRF construction (depending on applicability and local government funding).	- Local Government
Health and Safety	- Previous fatalities and injuries at the landfill. There was a fire incident in 2019.	- Implement strict safety protocols and provide training - Improve site management and	At all times	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		emergency response plans		
Proximity to Residential Areas	The landfill is directly adjacent to Landoh Village and Kerep Village. Before there was a landfill, the nearest house was 500 m away and currently the closest house to the landfill is 300 m away.	- Establish green buffer zones - Implement measures to control odours and emissions	Preferably prior to MRF completion or committed within 1 year after the completion of MRF construction (depending on applicability and local government funding).	Local Government
Environmental Permit	The temporary landfill is not included in the existing environmental permit.	Obtain necessary environmental permits for temporary landfill	Immediate	Local Government
Social				
Community Complaints	Odour, water contamination, and land productivity complaints.	- Identify community concerns - Evaluate the impact of these concerns - Conduct consultations with relevant stakeholders - Prepare mitigation plans, including the establishment of GRM and dedicated resource - Implementation of planned programmes	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Monitoring and evaluation		
Cultural Resources	There is a sacred site within the landfill area that is still used once a year on the eve of 1 Suro.	- Identify the cultural Resources around the project site - Evaluate the impact to the cultural resources and community - Conduct consultations with relevant stakeholders - Prepare mitigation plans, such as chance find procedure if required - Implementation of planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government
Scavengers	There are approximately 39 scavengers at the landfill site, but only 26 of them are actively scavenging and registered by the local management unit, with nearly 60% of them being women. Elderly scavengers constitute 40% of the total.	- Conduct a baseline study for PAP - Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Implement planned programmes - Monitoring and evaluation		
Vulnerable Group Issue	As many as 60% of scavengers are women and 40% of the number of scavengers are elderly.	- Identification of vulnerable groups - Identification of the impact on vulnerable groups - Conduct consultation with relevant stakeholders (including data collection and baseline analysis) - Prepare a mitigation plan and ensure equal access to safety equipment and training - Implementation of planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government
Economic Displacement	The plan to relocate the landfill to a temporary landfill site approximately 2km away from the existing one will result in scavengers partially or entirely losing their source of livelihood.	- Conduct a baseline study for PAP - Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Implement planned programmes - Monitoring and evaluation		
Land Issue	The lack of clarity regarding the boundaries of the proposed temporary landfill site may potentially lead to encroachment on community land, as some community members may already be using the area, or it may disrupt the community's access to their livelihoods.	- Review of documentation for land status, including land purchase and sale or lease activities (if any) - Conduct site investigation and consultation with PAP - Identify the Impact and level of vulnerability - Identify gaps between national regulations and international standards regarding the land - Prepare impact management plans such as compensation program etc - Implementation of planned programmes - Monitoring and Evaluation	Preferably prior to MRF construction	Local Government

Documentation



Scavangers



Scavangers



Old Tomb Near Mbah Sentono Tomb



Sacred Site



Mbah Tauhid Tomb



Mbah Sentono Tomb



Waste Transportation



Waste Transportation



Goat Inside TPA



Existing Landfill Condition



Scavenger's hut



Passive Cell

 IPAL	 Mounds of rubbish that have been covered by plants	 The moors around the landfill
 Sugar cane plantation across from the landfill		

Tasikmalaya

Participant:

- PUPR (staff level)
- BPPW (staff level)
- Local Government (staff level)
- AIIB
- AEPW
- ESC

*The PIC and the timeline are still suggestions from ESC, needs to be discussed with AIIB

“If the project comprises or includes existing facilities or existing activities that do not meet the requirements of the ESSs at the time of approval by the Bank, the Bank will require the Borrower to adopt and implement measures satisfactory to the Bank so that the material aspects of such facilities or activities meet the requirements of the ESSs within a timeframe acceptable to the Bank”

Findings	Description	Mitigation Measures	Timeline*	PIC*
MRF				
Off-taker	Off-taker agreement for operations is not available	Provide off-taker agreement to secure MRF operation	Prior to the Loan Agreement is signed	Local Government
Environmental				
Waste legacy	Lack of leachate treatment and drainage channels at Nangkaleah landfill.	- Install leachate treatment systems - Develop and implement drainage channels, engage with community	- Preferably prior to MRF completion or committed	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
	Specific waste, such as electronic items, is commonly found at the Nangkaleah landfill.	to make sure no complaints from community - Ensure proper handling and disposal of specific waste, create SOP	within 1 year after the completion of MRF construction (depending on applicability and local government funding).	
Environmental permit	There is social issues at the planned temporary landfill. There is SUTET (Extra High Voltage Transmission Line) near Nangkaleah landfill.	- Engage with the community to address concerns - Engage with PLN	Immediate	Local Government
Health and Safety	Steep contours of the landfill pose safety risks to workers and scavengers. History of landfill fires due to methane gas production.	- Implement safety protocols and provide training - Stabilize landfill slopes Improve landfill gas management - Ensure adequate fire-fighting equipment and training	immediate	Local Government The project will cap the existing landfill and create new landfill cell (PUPR)
Social				
Scavengers	Approximately 70% of scavengers are women. If the landfill is to be	- Conduct a baseline study for PAP	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
	relocated to the Cinangsih Landfill as a temporary site, the scavengers currently employed at the landfill (approximately 40 individuals) will lose their jobs due to the territorial concept.	- Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans. - Implement planned programmes. - Monitoring and evaluation.		
Land Issue	There are two temporary landfill options (during the construction phase) that will be used. One of these is in Cinangsih (the old/closed TPA). This option has caused a lot of problems with the local community, especially the police housing department. Additionally, the local government purchased approximately one hectare of land from the community for the intended site of TPST construction. The status is still in progress.	- Review of documentation for land status, including land purchase and sale or lease activities (if any) - Conduct site investigation and consultation with PAP - Identify the Impact and level of vulnerability - identify gaps between national regulations and international standards regarding the land - prepare impact management plans such as compensation program etc - Implementation and monitoring of planned programmes	Preferably prior to MRF construction	Local Government
Vulnerable Group Issue	Approximately 70% of scavengers are women, and based on observations, it is predicted that more than 30% are older.	- Identification of vulnerable groups	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Identification of the impact on vulnerable groups - Conduct consultation with relevant stakeholders (including data collection and baseline analysis) - Prepare a mitigation plan and ensure equal access to safety equipment and training - Implementation of planned programmes - Monitoring and evaluation		
Community Concern	TPA Nangkaleah (Current Landfill): A foul odour is noticeable in Cikalapa village, particularly during the dry season.	- Identify community concerns - Evaluate the impact of these concerns - Conduct consultations with relevant stakeholders - Prepare mitigation plans, including the establishment of GRM and dedicated resource - Implementation of planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government
Economic Displacement	The relocation of the landfill during the construction of the TPST has the potential to result in economic	- Conduct a baseline study for PAP	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
	displacement from scavengers and waste collectors.	- Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans. - Implement planned programmes. - Monitoring and evaluation.		

Documentation





Temanggung

Participant:

- PUPR (staff level)
- BPPW (staff level)
- Local Government (staff level)
- AIIB
- AEPW
- ESC

*The PIC and the timeline are still suggestions from ESC, needs to be discussed with AIIB

“If the project comprises or includes existing facilities or existing activities that do not meet the requirements of the ESSs at the time of approval by the Bank, the Bank will require the Borrower to adopt and implement measures satisfactory to the Bank so that the material aspects of such facilities or activities meet the requirements of the ESSs within a timeframe acceptable to the Bank”

Findings	Description	Mitigation Measures	Timeline*	PIC*
Environmental				
Off-taker	Off-taker agreement for operations is not available	Provide off-taker agreement to secure MRF operation	Prior to the Loan Agreement is signed	Local Government
Environmental				
Leachate and Drainage Issues	Non-functioning LTP and drainage channels containing leachate and waste.	- Repair or replace the LTP - Implement proper drainage channels - Regular monitoring of leachate, surface water, and ground water	Preferably prior to MRF completion or committed within 1 year after the	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
			completion of MRF construction	
Landslide Risk	History of landfill landslides due to poor construction and heavy rain that close access of the main operation road.	- Conduct geotechnical assessments - Improve landfill construction practices - Stabilize landfill slopes	Preferably prior to MRF completion or committed within 1 year after the completion of MRF construction	Local Government
Waste Legacy	Current landfill will be a potential legacy waste issue after closing due to improper management during the operational period.	- Ensure proper landfill management practices are followed	Preferably prior to MRF completion or committed within 1 year after the completion of MRF construction	Local Government
Social				
Cultural Resources	Within a radius of 500 metres there are sacred sites and tombs. The local community holds an annual ceremony at this sacred site. Based on interviews, there is no evidence that the landfill has had an impact on the sacred site.	- Identify the cultural Resources around the project site - Evaluate the impact to the cultural resources and community - Conduct consultations with relevant stakeholders - Prepare mitigation plans, such as chance find procedure if required - Implementation of planned programmes	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		- Monitoring and evaluation		
Scavengers	There are 69 scavengers, 49 of them are women, and 24 of them are elders.	- Conduct a baseline study for PAP - Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans. - Implement planned programmes. - Monitoring and evaluation.	Preferably prior to MRF construction	Local Government
Land Issue	The local government has exchanged land with the village government to expand the landfill area. The certificate is currently being finalised.	- Review of documentation for land status, including land purchase and sale or lease activities (if any) - Conduct site investigation and consultation with PAP - Identify the Impact and level of vulnerability - identify gaps between national regulations and international standards regarding the land - prepare impact management plans such as compensation program etc - Implementation of planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government

Findings	Description	Mitigation Measures	Timeline*	PIC*
		•		
Vulnerable Group Issue	A total of 49 women and 24 elders of scavengers were identified on the site, in addition to a number of toddlers and children who were observed accompanying their parents.	- Identification of vulnerable groups - Identification of the impact on vulnerable groups - Conduct consultation with relevant stakeholders (including data collection and baseline analysis) - Prepare a mitigation plan and ensure equal access to safety equipment and training - Implementation of planned programmes - Monitoring and evaluation	Preferably prior to MRF construction	Local Government
Economic Displacement	The construction of the Sanggrahan landfill will have an impact on the income of scavengers and collectors.	- Conduct a baseline study for PAP - Identify the impact and level of vulnerability - Develop PAP impact mitigation programmes/plans, such as livelihood restoration plans. - Implement planned programmes. - Monitoring and evaluation.	Preferably prior to MRF construction	Local Government

Documentation



Interview with Scavengers



Open Dumping Landfill



Site Observation



Zone 6 Area (Location Plan for TPST)



Access Road closed by Waste

Appendix K Workshop Report

Regular meetings, workshops, and consultations as a consultation process in preparing ESMPF as follows.

No	Date of Meeting	Participants	Summary
1	15 March 2024	PUPR ESC	ESMPF content formulation workshop
2	4 June 2024	AIIB AEPW ESC	Technical Assistance for Preparation of Solid Waste Management - <i>Sustainable Urban Development Project (SWM-SUD)</i> ; Discuss of findings from each regency; Flow chart of the decision-making process; Initial proposed exclusion list.
3	21 June 2024	AIIB AEPW ESC	AIIB feedback on the exclusion list draft
4	15 – 16 July 2024	PUPR - Bu Marsa - Bu Dessi BPPW AIIB AEPW ESC ARKONIN	- Discussion of the ESMPF Document - Public consultation needs to be carried out before loan negotiation to discuss the draft ESMPF document with LG and Civil Development Organization (CDO)
6	8 August 2024	GROUP 1 Directorate of Housing and Settlement Area, Bappenas 1) Faiq Yahya Hidayah Directorate of Multilateral Financing, Bappenas 2) Heni Apriani Directorate of Development Funding Planning, Bappenas 3) Riesella 4) Dewi Ambarsari Directorate of Sanitation, MPWH	Visit to Jepara, Rembang (Group 1) Visit to Tasikmalaya (Group 2) Site visits final draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Discussion on the FS

No	Date of Meeting	Participants	Summary
		5) Ibu Marsaulina 6) Ibu Indrastuti 7) Ibu Ryvia Hananda 8) Ibu Terra Prima Sari 9) Ibu Maria Stefany Gulo 10) Ibu Lucita Meliana	Confirm the fulfilment of RCs. Discussion on Nokes (Nota Kesepakatan) Offtaker sitevisit (Tasikmalaya – Sugar Factory)
7	9 August 2024	11) Muhammad Iqbal 12) Suhaili Yarham Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH Directorate of Synchronization for Regional Development I, MOHA 13) Bu Cynthia Resti Eriyadi Directorate of Synchronization for Regional Development II, MOHA 14) Pak Danil 15) Pak Lucky 16) Bu Adita Mubarika Local governments AIIB 17) Pak Krisnan 18) Bu Xiang 19) Translator AEPW 20) Ibu Mia ESC 21) Sidqy GROUP 2 Directorate of Housing and Settlement Area, Bappenas	Visit to Jepara, Rembang (Group 1) Visit to Tasikmalaya (group 2) Site visits Discussions on the final draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Discussion on the FS Confirm the fulfilment of RCs. Discussion on Nokes (Nota Kesepakatan)

No	Date of Meeting	Participants	Summary
		1) Bu Nur Aisyah Nasution (Koordinator) 2) Rasya Budi Asmara Directorate of Sanitation, MPWH 3) Bu Grace Roseline 4) Pak Eka Wisnu Sumantri 5) Bu Asri Farida Silaholo 6) Pak I Gusti Bagus Angga 7) Bu Trya Arini Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 8) Bu Indy 9) Pak Nino Directorate of Synchronization for Regional Development II, MOHA 10) Pak Zidi 11) Ihsan 12) Ahmad Azzam Al Asyraf Directorate of Local Enterprise, Public Service and Assets, MOHA 13) Pak Saiful Arif (Kasi) 14) Pak Andi Hutama Local governments AIIB 15) Bu Jana 16) Bu Edith 17) Pak Beno 18) Bu Sabah 19) Bu Nurul AEPW	

No	Date of Meeting	Participants	Summary
		20) Pak Riki ESC 21) Pak Marco	
8	12 August 2024	GROUP 1 Directorate of Housing and Settlement Area, Bappenas 1) Pak Faiq Yahya Hidayah Directorate of Multilateral Financing, Bappenas 2) Bu Agustin (Direktur) 3) Bu Bagus (koordinator) Directorate of Development Funding Planning, Bappenas 4) Bu Riza Hamzah (Koordinator) 5) Pak Pribadi Charisna Hanif Directorate of Sanitation, MPWH	Visit to Temanggung (Group1) Visit to Reg Magelang & Gunung Kidul (Group 2) Site visits Discussions on the draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Confirm the fulfilment of RCs. Offtaker site visits (PT SBI – Temanggung)
9	13 August 2024	6) Bu Grace Roseline 7) Bu Tuti 8) Bu Asri Farida Silaholo 9) Pak Suharmo 10) Bu Hana Luthfiyana 11) Pak M. Iqbal Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 12) Bu Finda Septiawati 13) Bu Elvia Nasrul Jalal 14) Bu Olawaty Annissa Hutagalung Directorate of Synchronization for Regional Development 1, MOHA 15) Pak Kunto Bimaji (Kasubdit) Directorate of Synchronization for Regional Development II, MOHA 16) Bu Anita	Visits to Temanggung (Group 1) Visit to Reg Magelang & Gunung Kidul (Group 2) Site visits Discussions on the draft of DEDs (including E&S consideration into design and investment e.g. monitoring wells, proper temporary site, slope stability, drainage). Discussion on the ESIA and ESMPF (leachate treatment, ground water monitoring, community engagement, budget, staffing, training) Confirm the fulfilment of RCs. Discussion on Nokes (Nota Kesepakatan) Offtaker site visits (PT SBI – Temanggung)

No	Date of Meeting	Participants	Summary
		Directorate of Local Enterprise, Public Service and Assets, MOHA 17) Bu Dina Irvina (Kasubdit) 18) Pak Galih Aji Pratama Local governments AIIB 19) Bu Jana 20) Pak Krisnan 21) Bu Xiang 22) Bu Jiaqi 23) Vic AEPW ESC 24) Sidqy GROUP 2 Directorate of Housing and Settlement Area, Bappenas 1) Bu Aisyah (Koordinator) 2) Bu Nadifa Directorate of Multilateral Financing, Bappenas 3) Bu Narulita 4) Bu Cendana Directorate of Sanitation, MPWH 5) Bu Marsaulina (Kasubdit) 6) Bu Arindita Dessi 7) Bu Olivia Stefany 8) Bu Sylvia 9) Bu Egis Prastiwi	

No	Date of Meeting	Participants	Summary
		10) Bu Raras Patriyanti Directorate of Settlement Infrastructure Implementation System and Strategy, MPWH 11) Bu Amel 12) Bu Indy Directorate of Synchronization for Regional Development II, MOHA 13) Pak Azies 14) Pak Bayu MOH 15) Bu Dewi Marlina Local governments AIIB 16) Bu Nicole 17) Bu Edith 18) Pak Beno 19) Bu Sabah 20) Bu Nurul AEPW ESC 21) Pak Marco	
10	14 August 2024	PUPR AIIB AEPW ESC ARKONIN	Confirm the readiness and completion of: ESMPF and ESIA (including ES risk management measures in the design, construction and operations, stakeholder- NGO engagement, GRM system and reporting arrangement, budget, training) Discussion of the ESMPF document

No	Date of Meeting	Participants	Summary
			Need to change the components from 2 to 4 FS (including Economic Analysis and Climate Change aspects)

Appendix L Baseline Condition

This Appendix will provide the High level overview of Adjacent Key Biodiversity Area round sites, World Databases Protected Area around sites, Customary forest around sites, and Cultural Heritage around sites. Later in this section will provide more detailed social, environment, and biodiversity baseline condition for Trance 1 selected cities.

Key Biodiversity Area and World Database on Protected Areas

The table below presents the distances of various proposed project sites from Key Biodiversity Areas (KBA) in their respective regions. These distances indicate the proximity of each landfill site to ecologically sensitive areas, which could be crucial in assessing potential environmental impacts. For instance, the TPA Blang Bintang, Aceh Besar site is located 48.95 kilometers from KBA Ulu Masin, while the TPA Gunungkidul and TPA Banyuwangi sites are notably closer, being only 2.25 kilometers and 2.81 kilometers away from their respective KBAs, Bribin Underground River System and Baluran.

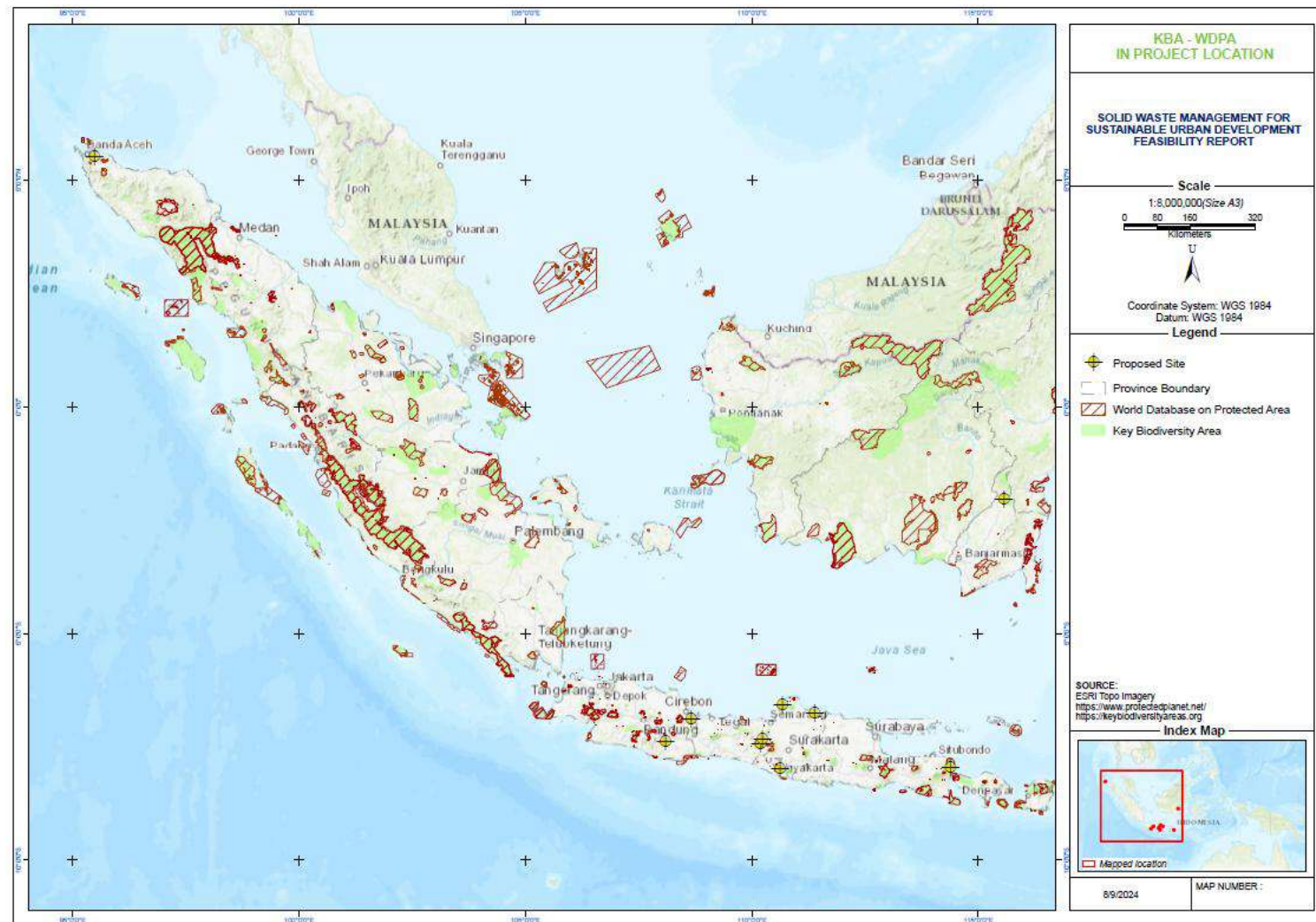
No	Proposed Site	Distance (Km)	KBA
1	TPA Aceh Besar	48.95	KBA Ulu Masin
2	TPA Tasikmalaya	15.28	KBA Gunung Cikurai
3	TPA Jepara	16.15	KBA Gunung Muria
4	TPA Rembang	48.39	KBA Gunung Muria
5	TPA Temanggung	19.72	KBA Gunung Unggaran
6	TPA Magelang	26.71	KBA Gunung Merapi
7	TPA Gunungkidul	2.25	KBA Bribin Underground River System
8	TPA Banyuwangi	2.81	KBA Baluran
9	TPA Cirebon	20.67	KBA Gunung Ceremai
10	TPA Tabalong	3.49	KBA Meratus Hulu

Source: <https://keybiodiversityareas.org>

The table below provides the distances of various proposed project sites from the nearest areas listed in the World Database on Protected Areas (WDPA). These distances highlight the proximity of each landfill site to protected areas, which is crucial for environmental impact assessments and conservation planning. For example, the TPA Banyuwangi site is only 3.34 kilometers from Baluran, while the TPA Tabalong site is located 56.19 kilometers from Lati Petangis.

No	Proposed Site	Distance (Km)	WDPA
1	TPA Aceh Besar	16.93	Kuta Malaka
2	TPA Tasikmalaya	18.64	Talaga Bodas
3	TPA Jepara	16.18	Kembang
4	TPA Rembang	16.19	Gunung Butak
5	TPA Temanggung	17.75	Gunung Merbabu
6	TPA Magelang	16.05	Gunung Merbabu
7	TPA Gunungkidul	9.88	Gunung Bunder
8	TPA Banyuwangi	3.34	Baluran
9	TPA Cirebon	22.04	Gunung Ciremai
10	TPA Tabalong	56.19	Lati Petangis

Source: <https://www.protectedplanet.net/>



Customary Forest

The table below presents the distances between various proposed project sites and the nearest customary forests. These distances are important for understanding the potential cultural and environmental impacts of the projects on indigenous and local communities. For instance, the TPA Aceh Besar site is located 828.7 kilometers from the Imbo Putui customary forest, while the TPA Cirebon site is just 33.35 kilometers away from Jalawastu.

No	Proposed Site	Distance (Km)	Customary Forest
1	TPA Aceh Besar	828.7	Imbo Putui
2	TPA Tasikmalaya	54.16	Leuweung Gede
3	TPA Jepara	208.82	Jalawastu
4	TPA Rembang	279.38	Jalawastu
5	TPA Temanggung	152.79	Jalawastu
6	TPA Magelang	150.36	Jalawastu
7	TPA Gunungkidul	216.65	Jalawastu
8	TPA Banyuwangi	86.22	Mekori
9	TPA Cirebon	33.35	Jalawastu
10	TPA Tabalong	155.99	Pulau Barasak

Source: Customary Forest, Ministry of Environmental and Forestry

The table below provides the distances between various proposed project sites and nearby cultural heritage sites. These distances are significant for evaluating the potential impact of development activities on historical and culturally important locations. For example, the TPA Magelang site is just 2.2 kilometers from Candi Selogriyo, while the TPA Tabalong site is located much farther, at 413.32 kilometers from the Kompleks Makam Raja Banggae.

No	Proposed Site	Distance (Km)	Cultural Heritage Site
1	TPA Aceh Besar	9.63	Kompleks Makam Malahayati
2	TPA Tasikmalaya	37.13	Astana Gede Kawali
3	TPA Jepara	5.17	Kompleks Makam dan Masjid Mantingan
4	TPA Rembang	54.17	Kompleks Makam dan Masjid Sunan Muria
5	TPA Temanggung	12.49	Candi Selogriyo
6	TPA Magelang	2.2	Candi Selogriyo
7	TPA Gunungkidul	9.09	Situs Radio PC2 Playen
8	TPA Banyuwangi	24.24	Kawasan Gilimanuk
9	TPA Cirebon	20.79	Keraton Kasepuhan Cirebon
10	TPA Tabalong	413.32	Kompleks Makam Raja Banggae

Source: Balai Pelestarian Cagar Budaya (BPCB)

Aceh

Environmental Baseline

Climate

The location for the planned integrated landfill development activities is located in Data Makmur Village, Blang Bintang Sub-district, Aceh Besar Regency. This location is approximately 5 kilometres southeast of the Sultan Iskandar Muda International Airport, specifically in the coordinate of 05°31'21" North Latitude and 95°25'01" East Longitude, which has a tropical climate as other parts of Indonesia. There are two seasons in a year, the dry season occurs between April and September and the rainy season is between October and March.

According to 2021 data, the monthly average rainfall in Blang Bintang Sub-district is 288 mm, with a relatively high annual rainfall, reaching 3451 mm. The highest rainfall of 620 mm with a total of 16 rainy days occurred in January. On the other hand, the lowest rainfall of 89 mm with 6 rainy days occurred in February.

Table 0-1. Rainfall Data of Blang Bintang Sub-district in 2021

Month	Rainfall (mm)	Rainy days (days)
January	620	16
February	89	6
March	345	13
April	193	11
May	142	7
June	180	16
July	391	9
August	181	12
September	225	9
October	338	14
November	388	18
December	360	14
Average	288	12

Source: Final Report FS RDF Plant Development in Aceh Province

The average air temperature in Aceh Besar is relatively cold, ranges from 26.1°C to 27.8°C, with an average monthly minimum of 21.9°C, and an average monthly maximum temperature of 34.4°C. The monthly minimum air temperature occurs in July with a temperature of 18.2°C, and the monthly maximum air temperature of 37.2°C occurs in October. Relative humidity ranges between 74 - 86%, and the monthly average maximum wind speed is 6 m/s. Based on annual review period, the dominant wind blows from the Southeast and is followed by winds from the South.

Table 0-2. Climatology Data of Blang Bintang Sub-district in 2021

Month	Average temperature (°C)	Relative humidity (%)	Wind speed (m/s)
January	26.2	83.9	5.8
February	26.9	80.2	6.1
March	26.5	82.0	6.1
April	27.0	81.7	6.1
May	27.8	82.1	5.8
June	27.5	78.5	4.9
July	27.8	74.6	6.9
August	27.4	76.6	6.7
September	27.0	78.7	6.2

October	27.3	79.4	6.5
November	26.2	85.7	5.1
December	26.4	83.4	5.7
Average	26.8	80.6	6.0

Source: Final Report FS RDF Plant Development in Aceh Province

Topography, Geology, and Geomorphology

The topography of Aceh Besar Regency is relatively diverse, consisting of flat (0-8%), undulating (8-15%), slightly steep (15-25%), steep (25-40%) and very steep (>40%). Elevation classes of Aceh Besar Regency ranges from 0 to 800 metres above sea level, with class of 200-400 metres above sea level covering a wide land area of Aceh Besar Regency (20,67%) which is spread in the eastern and western part of the regency. Meanwhile, elevation class with the smallest area is 50-100 meters above sea level with an area reaching 42,125 Ha or 11% of the land area of Aceh Besar Regency which is spread across the northern part and slightly in the western part of Aceh Besar Regency

Table 0-3. Land Surface Elevation Classes in Aceh Besar Regency

No.	Elevations (m above sea level)	Area	
		Ha	%
1.	200 – 400	60.020	20,67
2.	400 – 800	54.966	18,93
3.	0 – 50	58.066	20,00
4.	100 – 200	43.224	14,89
5.	50 – 100	31.949	11,00
6.	>800	42.125	14,51
Total area		290.350	-

Source: Andal TPA Regional Blang Bintang

Based on the geological structure, the soil parent material in Aceh Besar is quite varied, ranging from acidic to alkaline. The Blang Bintang landfill site is composed of Quaternary Lam Teuba volcanic rock products consisting of andesite and dacite lava, agglomerate, tuff and tuff breccia, which are generally having been further weathered in the form of silty clay-sand. The thickness of the weathered soil varies from less than 1 meters to up to 5 meters. Meanwhile, the permeability at the surface is of the order of 10^{-3} cm/sec and below the surface 10^{-5} cm/sec. The southwest part is composed of the Seulimeun Formation, consisting of tuff and calcareous sandstone, conglomerate, and a little mudstone. The rocks exposed on the surface, especially the northeastern, southwest and central parts, are composed of agglomerate tuff. At the bottom of the river, fresh bedrock is exposed which are identified as breccia and tuff.

The geomorphology of Aceh Besar coastal area is broadly divided into:

- Plains which are found on the north coast from Kuta Alam Sub-district to parts of Kuta Raja Sub-district
- The western coast of parts of Meuraxa Sub-district

Meanwhile, areas including plains with elevations of 0 to more than 10 meters and slopes of 0 – 2% are located between river estuaries and hills. The plains on the coast of Aceh Besar are generally formed from marine system deposits, which are originating from marine (alluvial) sedimentary materials consisting of sand, mud, and gravel. These are found on the coastal plain which extends parallel to the coastline and are in the form of strips of recent and subrecent sand shoals. Recent sand shoals are existing closest to the sea and always receive new additions in the form of sand deposits,

while subrecent sand shoals are formed by materials of old sand deposits, river sediments, and alluvial/colluvial materials from the surrounding area.

Hydrology, Hydrogeology, and Water Quality

The hydrological condition of Aceh Besar Regency is influenced by its inclusion in the Aceh-Meureudu River Region and, to a lesser extent, by its border with Aceh Jaya Regency, which falls within the Teunom-Lambesoi River Region. According to the 2008 Environmental Impact Analysis (ANDAL) for the Integrated Waste Processing Site in Aceh Besar Regency, the river located on the site of the Refuse Derived Fuel (RDF) Plant activity plan is a tributary of the Krueng Titi Puteh, which residents also call Krueng Uteun Seublah with an area of 568.6 Ha, while the planned activity area included in this watershed is 141 Ha or 66% of the total area of the planned activity. This river generally has water throughout the season, although during the dry season the water recedes to a maximum. There are 3 surface water sampling locations which described as follows:

- S1 (Krueng Uteun Seublah upstream) : 95°28'36" East Longitude and 05°31'32" North Latitude
- S2 (Krueng Uteun Seublah upstream) : 95°27'45" East Longitude and 05°30'49" North Latitude
- S3 (Krueng Titi Puteh) : 95°26'15" East Longitude and 05°30'29" North Latitude

Table 0-4. Results of Water Quality Analysis for Krueng Uteun Seublah and Titi Puteh

No	Parameters	Testing Method	Units	Bapedalda Lab Test Results			ITB Environmental Engineering Lab Test Results			Standards
				S1	S2	S3	^S1	^S2	^S3	
Physics										
1	Odour	Organoleptic	-	Normal	Normal	Normal	Odourless	Odourless	Odourless	-
2	Turbidity	Nephelometry	NTU	Normal	-	-	9.6	8.2	37	-
3	Taste	Organoleptic	-	Normal	Normal	Normal	Tasteless	Tasteless	Tasteless	-
4	Colour	Organoleptic	TCU	Normal	Normal	Normal	17.5 colloid	20 colloid	25 colloid	-
5	DHL	Potentiometry	uS/cm	78.5	57.9	218	55.5	43.4	162.6	-
6	Temperature	Thermometry	°C	25.9	26.3	26.6	-	-	-	-
Chemistry										
1	Ammonia	Spectrophotometry	mg/L	0.21	0.18	0.16	0.011	0.008	0.058	0.5
2	Iron (Fe)	Spectrophotometry	mg/L	0.27	0.26	0.81	0.233	0.339	0.892	0.3
3	Manganese (Mn)	Spectrophotometry	mg/L	0.13	0.12	0.47	<0.02	<0.02	0.26	0.1
4	Sulphide (H2S)	Spectrophotometry	mg/L	0.017	0.004	0.043	0	0	0	0.002
5	Nitrate (NO3-N)	Spectrophotometry	mg/L	0.08	0.05	0.21	0.099	0.127	0.108	10
6	Nitrite (NO2-N)	Spectrophotometry	mg/L	0.007	0.009	**	<0.002	<0.002	<0.002	0.06
7	pH	Potentiometry	mg/L	7.59	7.25	8.02	7.48	7.45	7.99	6.9
8	BOD	Spectrophotometry	mg/L	0.37	0.63	0.39	5	4.8	4.3	2
9	COD	Spectrophotometry	mg/L	16	32	16	9.66	9.66	6.76	10
10	Sulphate (SO4)	Spectrophotometry	mg/L	-	-	-	0	0	1.12	400
11	DO	Electrometry	mg/L	4.89	5.21	5.99	6.3	6.3	6.4	>6
12	Suspended solids	Gravimetry	mg/L	37	27	103	10	6	25	50
13	Organic matter	Titrimetric	mg/L	23.28	19.52	21.03	7.6	6.96	8.12	-
14	Lead (Pb)	Spectrophotometry	mg/L	**	**	0.003	0.07	0.08	0.07	0.03
15	Copper (Cu)	Spectrophotometry	mg/L	0.08	0.07	0.09	0.009	0.003	0.006	0.02
16	Aluminium	Spectrophotometry	mg/L	0.15	0.08	0.11	0.62	0.494	1.28	-
17	Phosphate	Spectrophotometry	mg/L	0.03	0.04	0.18	<0.008	<0.008	<0.008	0.2

Source: Andal TPA Terpadu Kecamatan Blang Bintang 2008

On the other hand, the Final Report on the Feasibility Study for Developing RDF Plant at Blang Bintang Regional Landfill in Aceh Province identifies the project location within the Krueng Lingka River Watershed, a tributary of the Krueng Aceh River, covering an area of approximately 46 km². There are also reservoirs as supporting infrastructure for the management and development of water resources, one of which is the Keliling Reservoir, with an inundation area of 260 Ha located in Kuta Cot Glie District. Another surface water monitoring of Blang Bintang Regional Landfill area was also done in September 2023, resulting in a different result analysis.

Table 0-5. Results of River Water Quality

No	Parameters	Units	Standards	Analysis Results			
				River 2	River 3	River 4	River 5
1	pH	-	6-9	7.13	7.61	7.26	7.31
2	DO	mg/l	4	7.9281	8.7813	8.4969	7.5370
3	TSS	mg/l	50	26	21	28	28.5
4	COD	mg/l	25	17.42	20.14	17.10	19.50
5	BOD	mg/l	3	3.13	4.69	4.09	3.09
6	Ammonia (NH ₃ -N)	mg/l	0.2	<0.02*	<0.02*	<0.02*	0.028
7	Nitrate	mg/l	10	8.027	3.398	2.689	3.244
8	Iron (Fe)	mg/l	-	<0.10*	<0.10*	<0.10*	<0.10*
9	Lead (Pb)	mg/l	0.03	<0.03*	<0.03*	<0.03*	<0.03*
10	Cadmium (Cd)	mg/l	0.01	<0.00034*	<0.00034*	<0.00034*	<0.00034*
11	Detergent (MBAS)	mg/l	0.2	0.52	0.32	0.20	0.06
12	Fat Oil	mg/l	1	1.4	1.6	1.4	0.8
13	Total Coliform	MPN/100 ml	5000	42	15.8	18.7	1986.3

Source: Andal TPA Regional Blang Bintang 2023

According to the hydrogeology map, several groundwater basins in WS Aceh-Meureudu have been identified as groundwater potential and prospects and have been explored as water sources for domestic, industrial and agricultural needs. Groundwater potential in WS Aceh-Meureudu can be described as follows:

- Productive aquifers, generally located in volcanic areas, springs with small discharge, are used as a source of raw water in most rural areas
- Aquifers with moderate, local, discontinuous, low productivity, well discharge generally less than 5 L/s
- Aquifers with medium productivity and wide distribution, ground water level is generally deep, there are springs appearing, discharge < 10 L/s, located in the centre of WS Aceh-Meureudu
- Aquifers with local low productivity (in the form of shallow groundwater, limited in quantity in rock weathering zones or in depression zones). This condition can be found in the downstream parts of the rivers that flow to the north coast of Aceh
- Areas with limited (scarce) groundwater are located in the majority of upstream areas of WS Aceh-Meureudu

Measurement of groundwater quality at the landfill activity location was carried out through sampling at 2 well water points:

- SU₁ (resident's well) at Balai Ngaji : 95°25'32" East Longitude and 05°30'30" North Latitude
- SU₂ (resident's well) at TGK Eumpe Awee Islamic Boarding School : 95°27'57" East Longitude and 05°30'04" North Latitude

Table 0-6. Results of Groundwater Quality

No	Parameters	Testing Method	Units	Bapedalda Lab Test Results		ITB Environmental Engineering Lab Test Results		Standards
				SU1	SU2	^SU1	^SU2	
Physics								
1	Odour	Organoleptic	-	Normal	Normal	Odourless	Odourless	-
2	Turbidity	Nephelometry	NTU	Normal	-	9.6	8.2	-
3	Taste	Organoleptic	-	Normal	Normal	Tasteless	Tasteless	-
4	Colour	Organoleptic	TCU	Normal	Normal	17.5 colloid	20 colloid	-
5	DHL	Potentiometry	uS/cm	362	497	282	394	-
6	Temperature	Thermometry	°C	25.7	27.5	-	-	-
Chemistry								
1	Ammonia	Spectrophotometry	mg/L	2.03	0.23	0.048	<0.001	0.5
2	Iron (Fe)	Spectrophotometry	mg/L	0.13	0.11	0.025	0.014	0.3
3	Manganese (Mn)	Spectrophotometry	mg/L	0.01	0.01	>0.02	>0.02	0.1
4	Sulphide (H2S)	Spectrophotometry	mg/L	0.01	0.007	0	0	0.002
5	Nitrate (NO3-N)	Spectrophotometry	mg/L	0.04	0.08	0.156	0.196	10
6	Nitrite (NO2-N)	Spectrophotometry	mg/L	0.002	0.002	0.002	0.002	0.06
7	pH	Potentiometry	mg/L	7.3	7.46	7.85	7.25	6.9
8	BOD	Spectrophotometry	mg/L	0.47	0.71	3	2.8	2
9	COD	Spectrophotometry	mg/L	48	32	4.83	4.83	10
10	Sulphate (SO4)	Spectrophotometry	mg/L	-	-	0	1.78	400
11	DO	Electrometry	mg/L	4.42	4.74	6.1	6.2	6
12	Suspended solids	Gravimetry	mg/L	1	1	8	<2	50
13	Organic matter	Titrimetric	mg/L	16.52	14.26	1.16	0.29	-
14	Lead (Pb)	Spectrophotometry	mg/L	**	**	0.1	0.11	0.03
15	Copper (Cu)	Spectrophotometry	mg/L	0.04	0.04	0.005	0.006	0.02
16	Aluminium	Spectrophotometry	mg/L	0.07	0.10	<0.123	<0.123	-
17	Phosphate	Spectrophotometry	mg/L	0.06	0.19	0.446	0.28	0.2

Source: Andal TPA Terpadu Kecamatan Blang Bintang 2008

In measuring the quality of leachate at the landfill site, there are existing buildings for the leachate processing installation (IPL) and fecal sludge processing installation (IPLT). Routine lab test monitoring is carried out by the Aceh Provincial Government through the Aceh Province Environmental Housing Service.

Table 0-7. Results of Leachate Test in 2023

No	Parameters	Units	Standards	Analysis Results					
				Feb	Mar	May	Aug	Oct	Dec
I	Physics								
1	Total Suspended Solids (TSS)	mg/l	100	33	504.0	130	306.667	31	200
II	Chemistry								
1	pH	-	6-9	8.2	8.5	8.5	8.5	8.9	9.2
2	BOD	mg/l	150	400	390	295	263	130	210
3	COD	mg/l	25	1310.7	1318.4	1621.6	2613.840	681.79	1097
4	Iron (Fe)	mg/l	3	TD	1815	7915	7455	-	-
5	Cadmium (Cd)	mg/l	0.2	TD	TD	-	0.081	0.0007	-
6	Mercury (Hg)	mg/l	10	0.037	0.0002	-	-	TD	-
7	Ammonia (as N)	mg/l	-	10.70	744.7	10.45	210.760	0.41	1.485
8	Nitrate (as N)	mg/l	-	252.57	261.4	415.8	629.650	421.46	192.3
9	Nitrite (as N)	mg/l	-	-	-	-	-	-	281

Source: Andal TPA Regional Blang Bintang 2023

Air Quality and Noise

To determine the air quality at the landfill activity location and its surroundings, pollutant gas and dust sampling is carried out during the day by absorption. Air quality measurements were carried out at five sample points as follows:

- U₁, 200 meters southeast of the landfill location (upwind) : 5°31'42" East Longitude and 95°28'26" North Latitude
- U₂, the middle of the activity location : 5°31'07" East Longitude and 95°28'19" North Latitude
- U₃, 200 meters northwest of the landfill location : 5°30'37" East Longitude and 95°28'22" North Latitude
- U₄, the closest settlement between the landfill location and the airport : 5°30'14" East Longitude and 95°26'48" North Latitude
- U₅, a settlement affected by the waste transportation route : 5°30'39" East Longitude and 95°24'52" North Latitude

Table 0-8. Analysis Results of Pollutant Gases and Dust

No.	Parameters	Methods	Units	Analysis Results					Standards
				U ₁	U ₂	U ₃	U ₄	U ₅	
1	SO ₂	Parasosacillin / spectrophotometer	µg/m ³	4.27	1.98	1.85	4.80	12.52	365*)
2	NO ₂	Salzman / spectrophotometer	ppm	6.62	2.35	2.06	8.25	14.06	150*)
3	CO	NDIR Analyzer	µg/m ³	12.90	2.70	2.65	18.20	22.90	10000*)
4	CO ₂	Gas absorption / gas chromatograph	ppm	12.80	14.8	14.2	12.7	12.6	-
5	Dust	Gravimetric	ppm	64	46	45	72	94	230*)
6	Pb	AAS	µg/m ³	<0.005	<0.005	<0.005	<0.005	<0.005	2.0*)

No.	Parameters	Methods	Units	Analysis Results					Standards
				U ₁	U ₂	U ₃	U ₄	U ₅	
7	CH ₄	Gas absorption / gas chromatograph	ppm	0.0012	0.0012	0.0009	0.0045	0.0052	-
8	Odour								
	- H ₂ S	Gas absorption / gas chromatograph	ppm	0.0009	0.0008	0.0006	0.0014	0.0019	0.02**)
	- NH ₃	Gas absorption / gas chromatograph	ppm	0.0042	0.0032	0.0028	0.0042	0.0048	2.0**)

Source: Andal TPA Terpadu Kecamatan Blang Bintang 2008

Noise measurements are carried out during the day using sound level meter equipment. The noise intensity in the centre of the activity location and its surroundings is known to be still below quality standards.

Table 0-9. Noise Intensity Measurement Results

No.	Location	Coordinate	Units	Results		Standards
				L-Min	L-Max	
1	The middle of activity location	5°31'07" East Longitude and 95°28'19" North Latitude	dBA	35	40	70
2	200 meters southeast	5°31'42" East Longitude and 95°28'26" North Latitude	dBA	43	46	70
3	200 meters to northwest	5°30'37" East Longitude and 95°28'22" North Latitude	dBA	35	41	70
4	Closest settlement between the location and the airport	5°30'14" East Longitude and 95°26'48" North Latitude	dBA	45	48	55
5	A settlement affected by the waste transportation route	5°30'39" East Longitude and 95°24'52" North Latitude	dBA	49	52	55

Source: Andal TPA Terpadu Kecamatan Blang Bintang 2008

Disaster Risk

According to the RDF Feasibility Report (2022), Aceh Besar is highly prone to several natural disasters including earthquakes, tsunamis, floods, landslides, and volcanic eruptions. Historical records show that significant tsunamis occurred in 1797, 1891, 1907, and most notably in 2004, when a 9.0 magnitude earthquake struck on December 26, causing widespread devastation and fatalities across several countries along the Indian Ocean, including Sri Lanka, Bangladesh, Thailand, Malaysia, and parts of Africa. This earthquake was the third-largest and the most powerful recorded since the invention of the seismograph in 1966. The resulting tsunami displaced large volumes of seawater, generating massive waves that caused catastrophic damage, particularly in Banda Aceh. A similar event is predicted to occur every 100 to 150 years.

The disaster-prone areas in Aceh Besar are largely geologically related, comprising earthquakes, landslides, floods, tsunamis, and volcanic activities. Specific risk zones include:

- Earthquake-prone areas: These are caused by tectonic movements, surface fault activity, local geomorphological movements, and volcanic activities, impacting sub-districts such as Leupung, Lhoong, Mesjid Raya, Seulimeum, and Selawah.
- Landslide-prone areas: Spanning 16,509 hectares, these regions feature steep physiographic mountains with slopes ranging from 25% to over 40%, located in southern Kuta Cot Glie, Kota Jantho, and Kuta Malaka.
- Erosion-prone areas: Covering 27,109.8 hectares of steep, sparsely vegetated mountains with exposed rock surfaces, primarily found in Seulimeum, Mesjid Raya, and Lembah Seulawah.
- Flood-prone areas: These are concentrated alongside the lower Krueng Aceh River basin, covering 11,434.7 hectares and including Ingin Jaya, Montasik, Darul Imarah, and Kuta Malaka.
- Volcanic eruption-prone areas: These are hazards posed by the active Seulawah volcano, including hot lava, rock debris, cold lava, and ash, affecting a 65,044-hectare area across Seulimeum, Mesjid Raya, and Lembah Seulawah.
- Tsunami-prone areas: Spanning a 16,422-hectare coastal radius of 5 km from the shoreline, at elevations below 50 meters, these areas include Peukan Bada, Baitusalam, Mesjid Raya, Lhoknga, Pulo Aceh, Lhoong, and Leupung.

Disaster-prone regions in Aceh Besar overlap with protected areas, accounting for 133,791.8 hectares or 45% of the district's total area. Due to high erosion, abrasion, and flood risks, some areas have limited development potential.

Traffic

The road leading to TPA Blang Bintang is a provincial road with a width of over 8 meters and is in excellent condition. This well-maintained road facilitates smooth waste transportation. However, it is crucial to ensure that trucks maintain a controlled speed and that their beds are properly covered to prevent littering, which could cause issues and complaints from the community.

Land use

Based on the satellite imagery of the TPA Blang Bintang area, the land use around this site appears to be a mix of various features:

- Forest and Vegetation: The area surrounding the TPA Blang Bintang has a significant amount of green cover, indicating forested regions or areas with dense vegetation. This suggests that the region is relatively undisturbed and maintains a natural landscape.
- Agricultural Land: There are patches of land that appear to be used for agricultural purposes. These areas are likely used for farming or other agricultural activities, indicated by the clear demarcation of fields and the organized layout typical of agricultural plots.
- Infrastructure and Roads: The presence of roads and infrastructure is visible, with a major road running near the TPA. This indicates accessibility and connectivity to the site.
- Water Bodies: The image shows a few small water bodies, such as Embung Lubok, which may be used for irrigation, water storage, or other purposes.
- Residential and Built-up Areas: There are some indications of built-up areas or residential zones, though they appear to be sparse and limited in extent compared to the natural and agricultural areas.

Biodiversity Baseline

A desk-based literature review covering terrestrial biodiversity was conducted to determine biodiversity in Blang Bintang District, Aceh Besar Regency. Secondary data was taken from reliable sources, such as the International Union for Conservation of Nature (IUCN) and other governmental agencies.

The location of the Blang Bintang landfill (TPA), situated in an industrial forestry and agricultural area, shows a diversity of flora and fauna in its vicinity. According to the 2023 Environmental Impact Analysis (Andal) document. Below is a list of the flora identified in the area surrounding the Blang Bintang landfill.

Table 0-10. List of Flora at Blang Bintang Landfill

No	Family	Species Name	Local Name
1	Fabaceae	<i>Mimosa pudica</i>	Putri Malu
2	Poaceae	<i>Cynodon dactylon</i>	Grinting
3	Poaceae	<i>Cyperus rotundus</i>	Teki

Source: Andal TPA Blang Bintang, 2023

The 2023 Andal document also identifies a diversity of fauna around the Blang Bintang landfill. At least 11 wild animals have been found and identified. The list of fauna identified around the project site can be seen in **Table 0-11**.

Table 0-11. List of Fauna at Blang Bintang Landfill

No	Class	Family	Species Name	Local Name
1	Amphibia	Bufonidae	<i>Bufo</i> sp.	Kodok
2	Amphibia	Ranidae	<i>Rana specycosa</i>	Katak
3	Arthropod	Acrididae	<i>Melanoplus femurrubrum</i>	Belalang
4	Arthropod	Aeshnidae	<i>Aeshna</i> sp.	Capung
5	Arthropod	Formicidae	<i>Monomorium monomorium</i>	Semut
6	Arthropod	Gryllidae	<i>Acheta domesticus</i>	Jangkrik
7	Aves	Cettiidae	<i>Abroscopus superciliatis</i>	Prenjak
8	Aves	Estrilidadae	<i>Loncura leucogastoides</i>	Bondol Jawa
9	Aves	Pycnonotidae	<i>Pynonotus aurigaster</i>	Kutilang
10	Mammal	Muridae	<i>Rattus</i> sp.	Tikus
11	Reptile	Scincidae	<i>Eutrophis multifasciata</i>	Kadal

Source: Andal TPA Blang Bintang, 2023

Based on IUCN data, there is 32 species have Redlist status, there are five birds, 22 mammals, and four reptiles. Of the 32 identified species three have Critically Endangered (CR), eleven have Endangered (EN) and 28 have Vulnerable (VU) status. The detailed of the species can be seen in the table below.

Table 0-12. IUCN Redlist of Threatened Species around the Project Sites

No	Class	Family	Species Name	IUCN Category
1	AVES	HELIORNITHIDAE	<i>Heliopais personatus</i>	CR
2	AVES	CICONIIDAE	<i>Ciconia stormi</i>	EN
3	AVES	ANATIDAE	<i>Asarcornis scutulata</i>	EN
4	AVES	ALCEDINIDAE	<i>Halcyon pileata</i>	VU
5	AVES	STURNIDAE	<i>Acridotheres javanicus</i>	VU
7	MAMMALIA	RHINOCEROTIDAE	<i>Dicerorhinus sumatrensis</i>	CR
8	MAMMALIA	MANIDAE	<i>Manis javanica</i>	CR
9	MAMMALIA	CANIDAE	<i>Cuon alpinus</i>	EN
10	MAMMALIA	VIVERRIDAE	<i>Cynogale bennettii</i>	EN
11	MAMMALIA	CERCOPITHECIDAE	<i>Macaca fascicularis</i>	EN
12	MAMMALIA	CERCOPITHECIDAE	<i>Macaca nemestrina</i>	EN
13	MAMMALIA	FELIDAE	<i>Panthera tigris</i>	EN
14	MAMMALIA	SCIURIDAE	<i>Pteromyscus pulverulentus</i>	EN
15	MAMMALIA	HYLOBATIDAE	<i>Symphalangus syndactylus</i>	EN
16	MAMMALIA	LORISIDAE	<i>Nycticebus hilleri</i>	EN

No	Class	Family	Species Name	IUCN Category
17	MAMMALIA	URSIDAE	<i>Helarctos malayanus</i>	VU
18	MAMMALIA	MUSTELIDAE	<i>Lutrogale perspicillata</i>	VU
19	MAMMALIA	MURIDAE	<i>Maxomys rajah</i>	VU
20	MAMMALIA	MURIDAE	<i>Maxomys whiteheadi</i>	VU
21	MAMMALIA	SCIURIDAE	<i>Petinomys genibarbis</i>	VU
22	MAMMALIA	SCIURIDAE	<i>Petinomys setosus</i>	VU
23	MAMMALIA	CERCOPITHECIDAE	<i>Presbytis thomasi</i>	VU
24	MAMMALIA	CERCOPITHECIDAE	<i>Trachypithecus cristatus</i>	VU
25	MAMMALIA	VIVERRIDAE	<i>Arctictis binturong</i>	VU
26	MAMMALIA	CERVIDAE	<i>Rusa unicolor</i>	VU
27	MAMMALIA	MUSTELIDAE	<i>Aonyx cinereus</i>	VU
28	MAMMALIA	PTEROPODIDAE	<i>Dyacopterus brooksi</i>	VU
29	REPTILIA	GEOEMYDIDAE	<i>Cuora amboinensis</i>	EN
30	REPTILIA	ELAPIDAE	<i>Ophiophagus hannah</i>	VU
31	REPTILIA	ELAPIDAE	<i>Ophiophagus hannah</i>	VU
32	REPTILIA	COLUBRIDAE	<i>Elaphe taeniura</i>	VU

Source: IUCN Red List of Threatened Species

Notes: VU: Vulnerable

EN: Endangered

CR: Critically Endangered

Social Baseline

The project location is within the Blang Bintang TPA which is administratively located in Peurumping Village, Montasik District. However, the community admits that the Blang Bintang Landfill is in Data Makmur Village, Blang Bintang District. Various environmental documents also state that the location of the landfill is in Data Makmur Village, Blang Bintang District, according to the name of the landfill.

The boundary of social studies is determined based on environmental impact limits and the social, economic and cultural conditions of society. Thus, directly affected villages are villages whose areas are within 0-500 m from the project location which contain housing or economic activities and cultural sites within them. Meanwhile, indirectly affected villages are villages whose area is within a radius of 500 m - 1 km. So, the directly affected villages by this project are Peurumping Village, Montasik District and Data Makmur Village, Blang Bintang District. Meanwhile, the indirectly affected village is Atong Village, Montasik District.

Blang Bintang Landfill

Based on the administrative map from the Ministry of Home Affairs in 2024, Blang Bintang Landfill is in Peurumping Village, Montasik District. However, based on environmental documents and information obtained from the community and landfill managers, the location of the landfill is in Data Makmur Village, Blang Bintang District. This could be because the project location is a production forest area so there are differences in understanding village boundaries for the areas within it between the community and government data.

Blang Bintang landfill is owned by the Aceh Provincial government and has been operating since 2015. The total land area of the landfill is 206 Ha and the used land is 45 ha. According to the area status from the Ministry of Environment and Forestry, the project location is a production forest, and currently has received a Borrow-Use Permit.

Before it was built as a landfill, people used the land as grazing land. There is no productive agricultural activity on this land because apart from being located far from residential areas, it is located at an altitude and far from water sources.

Demographic

This section will explain the demographic conditions of the affected areas, namely Data Makmur Village, Blang Bintang District, Peurumping Village, and Atong Village from Montasik District. Demographics will include the total population based on gender and age, sex ratio, density, and religion adhered to by the community.

The village with the largest population is Atong Village in Montasik District. This has an effect on the population density of Atong Village being the largest when compared to other affected villages. The number of people of productive age in Aceh Besar Regency is also quite large and continues to increase from year to year as the population increases. Regarding religion, the majority of the affected villages community adhere to Islam.

Table 0-13 Population of Affected People

Location	Category	2020	2021	2022	2023
Peurumping Village	Area (km2)	8.52	8.52	8.52	8.52
	Gender	Men	155	162	170
		Women	147	152	154
	Total	302	314	324	N/A
	Sex Ratio	1.05	1.07	1.10	N/A
	Density (People/km2)	35	37	38	N/A
Atong Village	Area (km2)	2.00	2.00	2.00	2.00
	Gender	Men	677	623	637
		Women	637	609	615
	Total	1,314	1,232	1,252	N/A
	Sex Ratio	1.06	1.02	1.04	N/A
	Density (People/km2)	657	616	626	N/A
Montasik Sub-District	Area (km2)	59.37	59.37	59.37	59.37
	Gender	Men	10,181	10,284	10,409
		Women	10,080	10,148	10,241

Location	Category	2020	2021	2022	2023
	Total	20,261	20,432	20,650	21,480
	Sex Ratio	1.01	1.01	1.02	1.01
	Density (People/km2)	341	344	348	362
Data Makmur Village	Area (km2)	7.71	7.71	7.71	7.71
	Gender	Men	394	393	409
		Women	362	369	383
	Total	756	762	792	N/A
	Sex Ratio	1.09	1.07	1.07	N/A
	Density (People/km2)	98	99	103	N/A
Blang Bintang Sub-District	Area (km2)	41.76	41.76	41.76	41.76
	Gender	Men	5,935	5,962	6,009
		Women	5,876	5,907	5,944
	Total	11,811	11,869	11,953	12,649
	Sex Ratio	1.01	1.01	1.01	1.00
	Density (People/km2)	283	284	286	303
Aceh Besar Regency	Area (km2)	2,903.49	2,903.49	2,903.49	2,903.49
	Gender	Men	204,428	204,428	209,017
		Women	201,107	205,099	205,473
	Total	405,535	409,527	414,490	425,298
	Sex Ratio	1.02	1.00	1.02	0.96
	Density (People/km2)	140	141	143	146

Source: Montasik Sub District in Figure 2021 – 2023, Blang Bintang Sub District in Figure 2021 – 2023, Aceh Besar Regency in Figure 2021 – 2024

*N/A: Not Available

Table 0-14 presents data on the population distribution by age Aceh Besar Regency. The dependency ratio for Aceh Besar District for 4 years ranges from 51-53, which means that every 100 working age residents support around 51-53 non-productive age residents.

Table 0-14 Population Distribution Based on Age and Sex in Aceh Besar Regency (2020 – 2023)

Location	Age Category	2020			2021			2022			2023		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Aceh Besar Regency	Age 0-14	59,632	56,592	116,224	59,387	56,459	115,846	59,296	56,479	115,775	63,036	59,585	122,621
	Age 15-64	135,182	132,019	267,201	136,956	133,559	270,515	139,015	135,375	274,390	134,709	143,558	278,267
	Age 65+	9,614	12,496	22,110	10,136	13,030	23,166	10,706	13,619	24,325	10,373	14,037	24,410
	Total	204,428	201,107	405,535	206,479	203,048	409,527	209,017	205,473	414,490	208,118	217,180	425,298

Source: Montasik Sub District in Figure 2021 – 2023, Blang Bintang Sub District in Figure 2021 – 2023, Aceh Besar Regency in Figure 2021 – 2024

The majority population of Aceh Besar Regency, especially in the 3 affected villages, adheres to Islam. As part of Aceh Province, the three affected villages also apply Islamic law in their daily lives. In 2022, people from religions other than Islam will begin to enter and live in Blang Bintang District, so that the number of people from non-Islamic religions will increase. Likewise with the people in Aceh Besar Regency.

Table 0-15 Population Percentage Based on Religion in Aceh Besar Regency (2020 – 2023)

Religion	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Islam	N/A	100%	100.00%	100.00%	99.79%	99.79%	100.00%	99.95%	99.95%
Protestant	N/A	0%	0.00%	0.00%	0.14%	0.14%	0.00%	0.03%	0.03%
Catholic	N/A	0%	0.00%	0.00%	0.02%	0.02%	0.00%	0.01%	0.01%
Hindu	N/A	0%	0.00%	0.00%	0.05%	0.05%	0.00%	0.00%	0.00%
Buddha	N/A	0%	0.00%	0.00%	0.01%	0.01%	0.00%	0.01%	0.01%
Others	N/A	0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	N/A	100%	100%	100%	100%	100%	100%	100%	100%

Source: Montasik Sub District in Figure 2021 – 2023, Blang Bintang Sub District in Figure 2021 – 2023, Aceh Besar Regency in Figure 2021 – 2024

*N/A: Not Available

Based on the results of an interview with the Head of Data Makmur Village, this area was a closed area, especially before the peace period between the Indonesian government and GAM (Free Aceh movement) in 2005. Access to health and education facilities was also very minimal. After 2005, the government increased access to basic community services. So, some children from this area are starting to be able to enter higher education. Currently, the majority of people in the affected villages are elementary school graduates. Meanwhile, the rest are junior high school, high school and college graduates.

Socio Economic

Aceh Besar Regency has great potential in the agricultural sector such as food agriculture, plantations, animal husbandry and fisheries. Based on BPS data, the largest contribution to the GRDP of Aceh Besar Regency from year to year is provided by the Agriculture, Forestry and Fisheries sectors (approx.23%). Based on the results of interviews with community leaders, most affected villagers work in the agricultural sector.

The unemployment rate in Aceh Besar Regency in 2020 and 2021 is quite stable at 4-5%. However, there will be a significant increase in 2022, especially for men, reaching 7.3% and decreasing again in 2024. A detailed breakdown of the population based on their economic activities is presented in **Table 0-16**.

Table 0-16 Population Based on Their Economic Activity in Aceh Besar Regency (2020- 2023)

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Economically Active												
Working	117,795	55,537	173,332	115,825	65,365	181,190	123,279	70,838	194,117	115,132	74,444	189,576
Unemployment	6,507	7,784	14,291	7,934	7,187	15,121	12,183	5,345	17,528	7,533	9,328	16,861
2. Not Economically Active												
Attending School	N/A	N/A	36,094	14,093	14,540	28,633	14,613	17,244	31,857	14,900	17,384	32,284
Housekeeping	N/A	N/A	69,195	8,241	60,242	68,483	2,964	56,841	59,805	6,879	48,235	55,114
Others	N/A	N/A	19,687	17,317	7,603	24,920	13,288	7,483	20,771	10,324	4,588	14,912
Total	160,478	152,121	312,599	163,410	154,937	318,347	166,327	157,751	324,078	154,768	153,979	308,747
Unemployment Rate	4.05%	5.12%	4.57%	4.86%	4.64%	4.75%	7.32%	3.39%	5.41%	4.87%	6.06%	5.46%

Source: Aceh Besar Regency in Figure 2021 – 2024

*N/A: Not Available

As a region that has a superior agricultural sector, the largest agricultural area in both Aceh Besar Regency and Montasik and Blang Bintang Districts is for food crops (rice). The second largest area is a coconut plantation. This plantation is an individual plantation managed by the community.

Table 0-17 Harvested Area of Agricultural Comodity in Aceh Besar Regency (Ha) (2021 – 2023)

Commodity	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Food Crops (Ha)									
Paddy Field	4,150.00	4,013.00	2,102.00	2,249.00	2,073.00	1,312.00	43,608.00	40,700.00	30,556.00
Corn	0.00	0.00	0.00	6.00	0.00	4.00	1,011.00	1,205.00	1,193.00
Cassava	0.00	0.00	0.00	5.00	0.00	3.00	196.00	295.00	294.00
Horticulture (Ha)									
Curly Chili	15.00	24.00	18.00	14.00	19.00	20.00	256.00	288.00	255.00
Cayenne Pepper	7.00	12.00	13.00	3.00	7.00	4.00	253.00	235.00	251.00
Tomato	8.00	8.00	5.00	0.00	1.00	1.00	56.00	49.00	50.00
Spinach	13.00	20.00	18.00	7.00	6.00	7.00	358.00	403.00	388.00
Water Spinach	N/A	9.00	12.00	N/A	3.00	10.00	N/A	377.00	402.00
Estate Crops (ha)									
Coconut	554.00	543.00	543.00	671.00	54.00	54.00	14,641.78	12,575.78	12,462.90
Coffee	42.00	6.50	6.50	0.00	0.00	0.00	1,508.00	678.40	656.40
Cocoa	23.00	21.00	21.00	6.00	2.50	2.50	3,389.84	3,013.70	2,968.65
Tobacco	20.00	20.00	20.00	0.00	0.00	0.00	191.00	177.00	162.00

Source: Aceh Besar Regency in Figure 2021 – 2024

*N/A: Not Available

There will be a significant decrease in the area of food agricultural land, especially rice, in 2023, especially in the affected sub-districts. This can also be seen from the agricultural commodity production data shown in **Table 0-18**. The decline in harvested area and rice production was due to crop failure in Aceh Besar Regency, especially Montasik and Blang Bintang Districts as the affected Districts. This crop failure was caused by the climate crisis such as El Nino and the Indian Ocean Dipole (IOD) which resulted in a long drought in Aceh.

The affected sub-districts also produce vegetable and fruit commodities such as green vegetables, chilies, mangoes, durian, bananas, papaya, snake fruit and rambutan. Fruit commodities are owned by individuals and are managed traditionally by the community (not implementing good agricultural practices). As it is known as an area with a variety of spicy dishes, one of the commodities with the highest yield in Aceh is curly chilies.

Table 0-18 Production of Agricultural Comodity in Aceh Besar Regency (2020 - 2023)

Commodity	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Food Crops (Ton)									
Paddy Field	29,050.00	29,495.55	14,714.00	12,010.00	12,748.95	8,528.00	297,776.00	283,715.08	208,753.90
Corn	0.00	0.00	0.00	0.00	0.00	12.00	6,895.00	8,079.80	8,444.40
Cassava	0.00	0.00	0.00	41.50	0.00	181.50	1,845.50	5,670.00	5,356.00

Commodity	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Horticulture (Quintal)									
Curly Chili	1,128.00	1,575.00	1,225.00	1,720.00	2,295.00	2,655.00	39,121.00	36,855.00	31,024.00
Cayenne Pepper	482.00	920.00	980.00	620.00	605.00	695.00	57,091.00	45,768.00	45,887.00
Tomato	905.00	270.00	150.00	0.00	40.00	30.00	8,797.00	5,945.00	5,511.00
Spinach	462.00	840.00	576.00	250.00	280.00	270.00	15,899.00	12,922.00	14,802.00
Water Spinach	N/A	360.00	395.00	N/A	125.00	425.00	N/A	31,674.00	30,806.00
Fruit (Quintal)									
Mango	6,200.00	5,283.00	11,075.00	240.00	240.00	80.00	29,802.00	26,739.00	42,122.00
Durian	0.00	0.00	900.00	80.00	120.00	180.00	26,584.00	32,286.00	34,488.00
Orange	1,246.00	271.00	1,780.00	70.00	5.00	0.00	4,239.00	3,304.00	4,611.00
Banana	1,367.00	1,191.00	1,668.00	340.00	320.00	320.00	204,391.00	96,096.00	35,832.00
Papaya	807.00	712.00	804.00	190.00	160.00	160.00	136,970.00	267,963.00	68,921.00
Snakefruit	376.00	5,676.00	447.00	0.00	0.00	0.00	525.00	5,820.00	808.00
Duku	0.00	200.00	782.00	0.00	0.00	0.00	4,405.00	30,064.00	7,368.00
Rambutan	8,385.00	6,284.00	10,814.00	480.00	430.00	600.00	103,933.00	81,592.00	39,754.00
Estate Crops (Ton)									
Coconut	388.00	388.00	388.00	459.00	32.30	32.30	7,876.11	5,500.00	5,469.18
Coffee	14.00	0.17	0.17	0.00	0.00	0.00	505.65	199.76	200.83
Cocoa	5.00	3.41	3.41	1.00	1.00	1.00	677.59	486.62	484.59
Tobacco	17.20	17.20	17.20	0.00	0.00	0.00	149.60	152.18	139.28

Source: Aceh Besar Regency in Figure 2021 – 2024

*N/A: Not Available

Aceh is also known for its various types of special dishes which use many livestock products. Such as native chicken, beef, goat, eggs and duck. Apart from that, various fish dishes can also be found. This is related to the development of the livestock and fisheries sector in Aceh. In detail, the livestock population in Aceh Besar Regency can be seen in **Table 0-19**.

Table 0-19 Livestock Population in Aceh Besar Regency (2020 – 2023)

Commodity	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Cow	10,699	331	8,769	1,202	242	2,180	81,276	5,189	84,134
Buffalo	532	16	434	441	14	585	12,536	340	13,038
Horse	0	N/A	0	0	N/A	7	24	N/A	39
Goat	3,351	532	2,651	1,142	762	1,655	60,281	9,895	52,645
Sheep	353	76	698	196	67	194	4,166	1,163	7,603
Laying hens	19,250	23,105	0	95,700	27,487	26,140	1,005,519	905,215	1,222,533
Native Chicken	25,430	446	22,100	5,231	962	0	573,874	140,549	453,393
Duck	9,850	7,174	9,850	1,865	5,015	1,957	132,604	153,967	138,115

Source: Aceh Besar Regency in Figure 2021 – 2024

*N/A: Not Available

The location of Montasik and Blang Bintang sub-districts which is quite far from the sea means that the fisheries sector that is developing is aquaculture and river capture fisheries. The fisheries production in the affected areas can be seen in Table 0-20.

Table 0-20 Production (Tons) of Pond Cultivation and Capture Fisheries in Impacted Sub-Districts and Aceh Besar Regency (2021 – 2023)

Cultivation	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Area (Ha)									
Pool	7.50	7.50	7.10	3.50	3.50	3.50	96.50	96.50	97.50
River	16.40	16.40	16.40	0.00	0.00	0.00	719.90	719.90	719.90
Production (Ton)									
Pool	10.37	10.37	8.04	11.90	11.90	9.96	312.80	312.80	186.89
River	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Aceh Besar Regency in Figure 2021 – 2024

Socio Cultural

During the kingdom era, the Aceh Besar Regency area was the core area of the Aceh Kingdom or commonly called Aceh Rayeuk. Aceh Besar Regency was legalized as an autonomous region through Law Number 7 of 1956 with its capital city at that time being Banda Aceh and also the jurisdiction of Banda Aceh Municipality. Since the enactment of Government Regulation of the Republic of Indonesia Number 35 of 1976 concerning the Transfer of the Capital of the Level II Regional Regency of Aceh Besar from the Level II Regional Municipality of Banda Aceh to the Janthoi settlement in Seulimeum District, the capital of Aceh Besar Regency is no longer in Banda Aceh but in the city Jantho.

Aceh Besar Regency is also the birthplace of national hero Cut Nyak Dhien. So there is a cultural site in the form of the Cut Nyak house in Lampisan Village, Peukan Bada District. A list of other sites in Aceh Besar Regency can be seen at **Table 0-21**.

Table 0-21 List of Registered Cultural Heritage in Aceh Besar Regency

Location	Name of Cultural Resource	Type	Year of Recognition	Picture	Link
Lampisan g Village, Peukan Bada Sub-district	Rumah Cut Nyak Dhien	Building	1987		https://www.kemdikbud.go.id/main/blog/2020/02/rumah-cut-nyak-dhien-simbol-perjuangan-rakyat-aceh-melawan-belanda
Indrapuri Sub-District, Aceh Besar Regency	Indrapuri Fort and Mosque	Building	1999		https://referensi.data.kemdikbud.go.id/budayakita/cagarbudaya/objek/KB000005

Location	Name of Cultural Resource	Type	Year of Recognition	Picture	Link
Mesjid Raya Sub-District, Aceh Besar Regency	Indrapat a Fort	Site	1999		https://disbudpar.acehprov.go.id/benteng-indrapatra-2/

Based on the results of discussions with the TPA manager and also representatives of the Data Makmur Village community, there are no sacred sites or cultural heritage sites within the project location and in its surroundings. However, because the people in the affected areas still adhere to strong Islamic and traditional values, there are several rules that must be obeyed by both local people and visitors.

One of the rules is not to do activities or work later than 5 pm on Friday. If you violate it, mystical things will happen, such as being possessed or the perpetrator getting sick. The same consequences will also occur for those who carry out immoral activities or violate religious and social norms. Punishments from religious figures and community leaders will also be given to violators

Initial Stakeholder Mapping

Stakeholder identification and categorization is a process of finding out who is affected by the project, including individuals, groups, local communities and other relevant parties. This can include disadvantaged or vulnerable groups. Stakeholder identification also looks to identify those who have an interest in, or influence on, the project outcome, and who can support it. DLH Aceh Province and the consultant did a quick initial stakeholder identification at this stage of the FS preparation. Full stakeholder identification will be carried out as part of the ESIA. The table below provides the results of initial stakeholder identification for the Blang Bintang Landfill development plan.

Table 0-22 Initial Stakeholder Mapping

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
Central Government					
1	Ministry of Public Works and Housing (PUPR)	Facilitates the budget for procurement of waste management infrastructure and facilities	Positive	Environment and improvement of public facilities	
2	Ministry of Environment and Forestry (KLHK)	Monitors of waste management	Positive	Environment	
3	Indonesian Ministry of National Development Planning (Bappenas)	Facilitate and coordinate collaboration and task allocation between stakeholders at the national level	Positive	Improvement of public facilities and enhancement of regional assets and revenue.	

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
4	Ministry of Finance	Facilitation for budgeting and financial management	Positive	Financial	
Local Government					
1	Aceh Settlement Infrastructure Agency (BPPW)	Facilitates technical work of waste infrastructure construction	Positive	Environment and improvement of public facilities	
2	Planning Agency (BAPPEDA)	Facilitates and coordinates collaboration and task allocation among stakeholders	Positive	Improvement of public facilities and enhancement of regional assets and revenue.	Regional Apparatur Organisation (OPD)
3	Environment Agency (DLHK)	Carries out planning and technical studies for the construction of waste management infrastructure and implement waste management activities in the regency.	Positive	Environment and improvement of public facilities	Regional Apparatur Organisation (OPD)
4	Management Agency of Finance, Income and Assets (BPKPAD)	Provides support and land allocation for the construction of waste management facilities, and manage assets and budgets related to the landfill.	Positive	Enhancement of regional assets and revenue.	Regional Apparatur Organisation (OPD)
5	Aceh Housing and Settlement Area Service (Perkim)	Provides support and facilitation for the status change of the prospective site land and the preparation of the DED for waste management facilities.	Positive	Improvement of public facilities	Regional Apparatur Organisation (OPD)
	The Aceh Representative Council (DPRA)	Provides funding support for operational maintenance of the RDF TPST as well as the provision of supporting facilities and infrastructure	Positive	Environment	
	Assistant for Economic and Development Aceh Regional Secretary	Facilitates and coordinates collaboration and task allocation among stakeholders	Positive	Environment	
6	Regional Inspectorate	Provide support for financial supervision and guidance for the	Positive	improvement in financial management	

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
		pre-construction, construction and operational stage			
	Aceh Financial Management Agency	Supervise the management and use of finances at all stages of the project	Positive	Financial	
7	Aceh Community and Gampong Empowerment Service (DPMG)	Facilitates the budgeting for village-level waste management through village funds.	Positive	Improvement of community health and social welfare	Regional Apparatur Organisation (OPD)
	Aceh Industry and Trade Service (Disperindag)	Providing support related to the development and control of industry and trade	Positive	Economy	
8	Community Health Agency	Carries out government affairs in the field of environmental health related to waste management that fall under regional authority.	Positive	Community health	Regional Apparatur Organisation (OPD)
9	Village Government	Facilitates land preparation, community mobilization and site conditioning for waste infrastructure development, and implement the waste management activities at village level.	Positive	Environment and improvement of public facilities	The entire area of Aceh Province is regulated under Governor's Regulation regarding the implementation of waste management.
NGO/LSM/					
1	3R Waste Management Site (TPS3R)	As an implementing agency for waste management activities in districts/cities	Positive	Environment	
2	Yayasan Aneuk Muda Aceh Unggul, Hebat (Amanah)	Providing support related to the development and control of industry and trade	Positive	MSME, Economy	
3	Yayasan Advokasi Rakyat Aceh (YARA)	Supervise and convey aspirations/complaints regarding landfill operations	Negative	Aviation safety and security at the airport	
Private Company					
1	PT SBA (Semen Bangun Andalas)	As a buyer of RDF products produced from the project	Positive	Environment	

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
Waste Bank					
1	Waste Bank Unit Group	Manages waste in their respective areas.	Positive	Increasing the economic value of waste and creating job opportunities.	Throughout Aceh Province, there are a total of several waste banks, such as at USK, Gampong Jawa, and Kamikita Foundation.
Community					
1	Surrounding community of Blang Bintang Landfill	Support the operation of landfill	Positive	Community economic	Data Makmur, Peurumping, Atong Village

Gender and Vulnerable Aspects

Blang Bintang Landfill currently still employs daily workers as landfill workers. All landfill workers are men of productive age. These daily workers are members of the Data Makmur community. These daily workers are paid based on daily performance and will be paid every month. The wage is around IDR 50,000 - 85,000/shift/day. Each shift is around 4 hours and in 1 day there are around 4 shifts.

The Provincial Minimum Wage in 2024 is IDR 3,460,672, this figure has increased by 1.28 percent when compared to Aceh's UMP in 2023, which is IDR 3,413,666. Based on statistical data from Aceh Province, the number of poor people in Besar Regency in 2023 is approx 58,940 people.

Public Health

Public health is crucial as it directly impacts the quality of life of the community itself. Efforts to improve and maintain public health not only have positive effects individually but also collectively contribute to the progress and stability of a community.

According to the Health Agency of Aceh Besar Regency Profile 2023, among the 10 most prevalent diseases in Aceh Besar Regency, common cold, dyspepsia, acute respiratory infection, hypertension, dermatitis, rheumatoid arthritis, diabetes mellitus, osteoarthritis, diabetes mellitus non-insulin, diabetes mellitus complications. However, common cold tops the list with the highest number of cases reaching 45,121 in 2022. This symptom is inflammation due to a viral infection in the upper respiratory tract. **Table 0-23** **Table 0-75** presents detailed data on the 10 most prevalent diseases in Aceh Besar Regency in 2021 and 2022.

Table 0-23 10 Most Reported Diseases in Aceh Besar Regency 2021 & 2022

No	2021		2022	
	Disease	Number of case	Disease	Number of case
1	Common cold	34.221	Common cold	45.121
2	Acute respiratory infection	22.502	Dyspepsia	22.205
3	Hypertension	17.560	Acute respiratory infection	19.337
4	Dyspepsia	13.790	Hypertension	17.556
5	Dermatitis	7.630	Dermatitis	13.790
6	Diabetes mellitus	3.850	Rheumatoid arthritis	8.510

No	2021		2022	
	Disease	Number of case	Disease	Number of case
7	Asthma	2.550	Diabetes mellitus	5.573
8	Diabetes mellitus non insulin	2.450	Osteoarthritis	5.351
9	Diarrhea	2.351	Diabetes mellitus non insulin	4.424
10	Cepalgia	1.095	Diabetes mellitus complications	1.554

Source: Health Agency of Aceh Besar Regency Profile 2022 & 2023

In addition to the top 10 prevalent diseases, there are also several diseases that need to be anticipated due to their dangerous nature or rapid spread, including HIV/AIDS, dengue fever, tuberculosis and malaria. Tuberculosis is a disease caused by bacteria that can be transmitted through saliva. According to **Table 0-24** **Table 0-76**, cases of tuberculosis in Aceh Besar Regency reached 437 in 2022, its number increase from year to year since 2020 with 4,35% of cases originating from Montasik and Blang Bintang Sub-Districts.

Table 0-24 Number of Cases of Several Disease in Aceh Besar Regency

Disease	2020	2021	2022
HIV/AIDS	0	7	16
DBD	71	30	0
TBC	274	355	437
Malaria	65	9	7

Source: Health Agency of Aceh Besar Regency Profile 2023

Aceh Besar Regency has quite complete health facilities, ranging from basic health facilities such as pharmacies to hospitals. According to BPS data from Aceh Besar Regency, there are 2 hospitals in Aceh Besar, namely Aceh Besar General Hospital and Ibnu Sina Hospital. At the sub-district level, health services are equipped with public health centers and auxiliary public health centers. **Table 0-25** shows the number of health facilities in the affected sub-districts and Aceh Besar district.

Table 0-25 Number of Public Health Facility in Affected Sub-District & Aceh Besar Regency

Health Facility	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2020	2021	2022	2020	2021	2022	2020	2021	2022
Hospital	0	0	0	0	0	0	3	2	2
Polyclinic	1	0	0	1	1	1	32	29	28
Public Health Center	2	2	2	1	1	1	29	29	29
Auxiliary Public Health Center	3	3	3	4	4	4	72	62	68
Pharmacy	1	1	0	0	0	0	36	35	38

Source: Aceh Besar Regency in Figure 2021 - 2023

In general, the number of medical personnel in Montasik Sub-District is bigger than the number of medical personnel in Blang Bintang Sub-District. One category of medical personnel that is quite numerous is midwife, where there will be 52 midwives in Montasik Sub-District in 2023. Meanwhile in Blang Bintang Sub-District there will be 38 midwives in 2023. The following is the number of medical personnel in the affected sub-districts and Aceh Besar Regency.

Table 0-26 Number of Medical Personnel in Affected Sub-District & Aceh Besar Regency

Medical Personnel	Montasik Sub-District			Blang Bintang Sub-District			Aceh Besar Regency		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Medical Worker	6	0	7	3	0	6	147	0	145
Nurse	21	9	26	16	10	10	443	232	371
Midwife	39	35	52	38	38	38	802	789	998
Pharmaceutical Worker	2	3	6	2	2	3	71	71	98
Public Health Worker	4	6	15	2	7	10	53	142	237
Environmental Health Worker	8	4	10	2	2	3	82	57	92
Nutritionist	5	3	6	3	2	5	87	63	91
Physical Therapist	N/A	0	0	N/A	0	0	N/A	0	11
Medical Technicians	N/A	0	9	N/A	0	9	N/A	0	96
Biomedical Enginer	N/A	0	5	N/A	0	2	N/A	0	58

Source: Aceh Besar Regency in Figure 2022 – 2024

Community Concern

Based on information from the management of Blang Bintang Landfill, there were several complaints submitted, namely the presence of egrets around the landfill which were feared to disrupt airport/aviation activities. Apart from that, complaints were also submitted by road users regarding the smell caused by the landfill.

There were demonstrations from all villages in Blang Bintang District and they closed the entrance to the landfill on March 6 2024. The community protested against the rubbish that was strewn along the road to the landfill because trucks were speeding and not covered by tarpaulin. Complaints have been submitted to the landfill and DLH but have not been responded to so the community has held demonstrations. But now there has been an improvement after the demo was carried out.

Another concern expressed by the community is that landfill waste pollutes river water so that people cannot use river water for cooking on agricultural land or for drinking for livestock.

Jepara

Environmental Baseline

Climate

Jepara Regency experiences a tropical climate, with December 2022 getting the most precipitation of the year—520 mm over 20 days. On top of that, there were high rainfall totals of 446 mm and 493 mm in January and March of 2022, as well as a number of rainy days—20 and 16 days, respectively. August, on the other hand, had the least amount of rainfall that year, with just 5 mm over the course of the month and one rainy day. In addition to that, average temperature in Jepara Regency each month ranges between 21.55o - 32.71o Celsius.

Topography, Geology, and Geomorphology

Jepara Regency is geographically categorized into four distinct regions based on the slope of the land. This classification ranges from flat plains to steep mountainous areas.

- Regions with a slope of 0-2% (flat) are characterized by their nearly level terrain and are found in parts of 12 sub-districts as well as one other specific region within the regency.
- Regions with a slope of 2-15% (undulating) areas feature gently rolling hills and undulating landscapes and encompass portions of 8 sub-districts and small sections of 2 northern regions.
- Regions with a slope of 15-40% (steep) are marked by significant inclines, indicating more challenging terrain, which include parts of 6 sub-districts, notably those surrounding Mount Muria, Trawean, Genuk, and Pucang Pendawa.
- Regions with a slope of >40% (very steep) are the most rugged terrains within Jepara Regency and are predominantly located at the peaks of Mount Muria, Trawean, Genuk, and Pucang Pendawa.

Among all the sub-districts, Pakis Aji and Kembang are recognized as the lowest areas, with elevations ranging from 0 to 1 meter above sea level. On the other hand, Nalumsari sub-district is the highest area within the regency, with elevations varying from 13 meters to as high as 736 meters above sea level.

The geological condition of Jepara Regency is characterized by two primary types of morphology and a variety of lithological compositions. The region's geological features significantly influence its topography, soil types, and land use. Undulating plain morphology is primarily found along the northern coastline of Jepara Regency, while the eastern part of Jepara Regency is dominated by hilly terrain. The lithological composition of Jepara Regency with different types of rocks and fossils indicating various environmental conditions and geological periods:

- Limestone containing small cyclopoecous foraminifera fossils serves as an age indicator
- Gravel/sandstone containing vertebrate fossils as indicator of land environments' rock formation
- Siltstone, sandstone, kaolin, andesite and volcanic breccias containing vertebrate fossils are indicative of land environments from the Middle Pleistocene age
- Gravel, sand, clay are the result of fluviovolcanic processes during the Holocene

Jepara Regency's soil types are as diverse as its geology, divided into five main soil types:

- Latosol soil: the most dominant soil type, consists of red and brown latosol, covering a land area of 65.659,972 Ha
- Mediterranean Association soil: covers a land area of 19.400,458 Ha
- Alluvial Soil: covering an area of 9,126.433 hectares, this soil type includes hydromorphic alluvial and grayish-brown alluvial soils
- Andosol Brown Soil: covers a land area of 3.525,469 Ha
- Brown Regosol Soil: covers a land area of 2.700,857 Ha

Hydrology and Hydrogeology

According to the Environmental Document for Bandengan Landfill, Jepara Regency falls within Jratun Seluna Sub-watershed area. The surface water in Jepara Regency primarily exists as river systems, and the river flow in the area is directed towards rehabilitation and sustainable utilization. In addition to surface water, groundwater in Jepara Regency is classified into three distinct areas based on water conditions:

- Freshwater areas, including the foothills of Mount Muria, is of high quality and provide a vital source of drinking water for the local population.
- Brackish groundwater areas which are transitional zones found in the lowland areas where fresh groundwater meets salty groundwater. Despite the brackish nature, it is still relatively good for various uses.
- Saltwater areas, located on plains near the coastline or beaches that extend inland and is heavily influenced by seawater, making it saline and generally unsuitable for drinking or most agricultural activities without desalination.

The hydrology condition of Bandengan landfill also can be accessed based on the secondary data taken from the Bandengan Landfill Environmental Document. The sampling was taken in 2021.

Sampling points consist of surface water and groundwater, have been strategically placed to ensure comprehensive monitoring of the landfill's water quality condition. A total of four sampling points has been established, as outlined below:

- Surface water: includes 3 sampling locations of Bandengan landfill upstream, Bandengan landfill downstream, and belik weir irrigation river
- Groundwater: includes 1 sampling location of old IPL monitoring well at Bandengan landfill

Based on Government Regulation Number 22 of 2021 concerning Implementation of Environmental Protection and Management Appendix VI, water that can be used for cultivating freshwater fish, animal husbandry, and irrigating crops is included in class III water quality. Surface water quality tests in the river closest to the Bandengan landfill indicate that some parameters did not meet class III requirements.

Table 0-27. Surface water parameters exceeding class III water quality standards

Parameters	BOD	DO	Ammonia (NH ₃ -N)	Iron (Fe)	Manganese (Mn)	Mercury (Hg)	Nitrite, as N (NO ₂ S)	Hydrogen Sulfide (H ₂ S)	Detergent (MBAS)
Concentration (mg/L)	11.5	2.56	35.6	2.3	0.391	0.002	0.36	0.03	0.21
Standards (mg/L)	6	3	0.5	-	-	0.002	0.06	0.002	0.2

Source: DPLH TPA Bandengan, 2021

The quality of monitoring wells at Bandengan landfill is based on Minister of Health Regulation Number 32 of 2017 concerning Environmental Health Quality Standards and Water Health Requirements for Hygiene Sanitation, Swimming Pools, Aqua Solus and Public Baths. According to the results of the quality test, the total coliform parameter is the only one that surpasses the quality standard.

Table 0-28. Groundwater parameter does not meet with water quality standards.

Parameters	Concentration (CFU/100mL)	Standards (CFU/100mL)
Total Coliform	100	50

Source: DPLH TPA Bandengan, 2021

Table 0-29. Surface Water Quality (River) Around Bandengan Landfill

No	Parameters	Results	Standards				Units	Methods
			I	II	III	IV		
Physical Parameters								
1.	Temperature	30.8	Dev. 3	Dev. 3	Dev. 3	Dev. 5	°C	SNI 06-6989.23-2005
2.	Total Dissolved Solid (TDS)	210	1000	1000	1000	2000	mg/L	SNI 06-6989.27-2005
3.	Total Suspended Solis (TSS)	38	50	50	400	400	mg/L	SNI 6989.3:2019
Anorganic Parameters								
1.	pH	7.38	6-9	6-9	6-9	5-9	mg/L	SNI 6989.11:2019
2.	Biological Oxygen Demand (BOD)	11.50	2	3	6	12	mg/L	SNI 6989.72:
3.	Chemical Oxygen Demand (COD)	37.90	10	25	50	100	mg/L	SNI 6989.2:2019
4.	Dissolve Oxygen (DO)	2.56	6	4	3	0	mg/L	SNI 06-6989:14-2004
5.	Total Phosphate (P)	0.41	0.20	0.20	1	5	mg/L	SNI 06-6989.31-2005
6.	Nitrate, as N (NO ₃ -N)	14.20	10	10	20	20	mg/L	SNI 6989.79:2011
7.	Ammonia (NH ₃ -N)	35.60	0.50	-	-	-	mg/L	SNI 06-6989.30-2005
8.	Arsenic (As)	0.01	0.05	1	1	1	mg/L	SNI 06-6989.54-2005
9.	Cobalt (Co)	0.0016	0.2	0.2	0.2	0.2	mg/L	SNI 6989.68:2009
10.	Barium (Ba)	0.004	1	-	-	-	mg/L	SNI 06-6989.39-2005
11.	Boron (B)	0.0028	1	1	1	1	mg/L	SNI 06-2481-1991
12.	Selenium (Se)	0.03	0.01	0.05	0.05	0.05	mg/L	US EPA 7741 A
13.	Cadmium (Cd)	0.006	0.01	0.01	0.01	0.01	mg/L	SNI 06-6989.38-2005
14.	Chromium Hexavalent (Cr ⁶⁺)	0.04	0.05	0.05	0.05	0.05	mg/L	SNI 6989.71:2009
15.	Copper (Cu)	0.0016	0.02	0.02	0.02	0.02	mg/L	SNI 6989.6:2009
16.	Iron (Fe)	2.30	0.3	-	-	-	mg/L	SNI 6989.4:2009

No	Parameters	Results	Standards				Units	Methods
			I	II	III	IV		
17.	Lead (Pb)	0.022	0.03	0.03	0.03	-	mg/L	SNI 6989.46:2009
18.	Manganese (Mn)	0.391	0.1	-	-	-	mg/L	SNI 6989.5:2009
19.	Mercury (Hg)	0.002	0.001	0.002	0.002	0.005	mg/L	SNI 6989.78:2009
20.	Zinc (Zn)	0.05	0.05	0.05	0.05	2	mg/L	SNI 6989.7:2009
21.	Chloride (Cl ⁻)	54	600	-	-	-	mg/L	SNI 6989.19:2009
22.	Cyanide (CN)	0.008	0.02	0.02	0.02	-	mg/L	SNI 6989.7:2009
23.	Fluoride (F)	0.027	0.50	1.50	1.50	-	mg/L	SNI 06-6989.29-2005
24.	Nitrite, as N (NO ₂ -N)	0.36	0.06	0.06	0.06	-	mg/L	SNI 06-6989.9-2004
25.	Sulphate (SO ₄ ²⁻)	3	400	-	-	-	mg/L	SNI 6989.20:2019
26.	Chlorine (Cl ₂)	0.02	0.03	0.03	0.03	-	mg/L	SNI 06-4824-1998
27.	Hydrogen Sulphide (H ₂ S)	0.03	0.002	0.002	0.002	-	mg/L	SNI 6989.70:2009
Microbiology Parameters								
1.	Fecal Coliform	128	100	1000	2000	2000	Total/100 mL	APHA 9221B ED 22nd
2.	Total Coliform	4800	1000	5000	10000	10000	Total/100 mL	APHA 9221B ED 22nd
Organic Parameters								
1.	Oil and Grease	0.06	1000	1000	1000	-	µg/L	SNI 6989.10:2011
2.	Detergent (MBAS)	0.21	200	200	200	-	µg/L	SNI 06-6989.51-2005
3.	Phenol (C ₆ H ₅ OH)	0.003	1	1	1	-	µg/L	SNI 06-6989.21-2004

Source: DPLH TPA Bandengan, 2021

Table 0-30. Monitoring Wells Quality at Bandengan Landfill

No	Parameters	Results	Standards	Units	Methods
Physical Parameters					
1.	Turbidity	0.72	25.00	°C	SNI 06-6989.25-2005
2.	Colour	5	50	TCU	SNI 6989.80-2011
3.	Total Dissolved Solids (TDS)	89.7	1000	mg/L	SNI 06-6989.27-2005
4.	Temperature	30.1	Air Temperature ± 3	°C	SNI 06-6989.23-2005
5.	Taste	Tasteless	Tasteless	-	Organoleptic
6.	Odour	Odourless	Odourless	-	Organoleptic
Anorganic Parameters					
1.	pH	6.7	6.5-8.5	-	SNI 6989.11:2019
2.	Iron (Fe)	0.08	1	mg/L	SNI 6989.4:2009
3.	Fluoride (F ⁻)	0.003	1.50	mg/L	SNI 06-6989.29-2005
4.	Hardness (CaCO ₃)	68.00	500	mg/L	SNI 06-6989.12-2004
5.	Manganese (Mn)	0.036	0.5	mg/L	SNI 6989.5:2009
6.	Nitrate, as N (NO ₃ -N)	0.82	10	mg/L	SNI 6989.79:2011
7.	Nitrite, as N (NO ₂ -N)	0.16	1	mg/L	SNI 06-6989.9-2004
8.	Cyanide (CN)	0.002	0.1	mg/L	SNI 6989.7:2009
9.	Total Pesticide	0.003	0.1	mg/L	SNI 6989.7:2011
10.	Mercury (Hg)	<0.001	0.001	mg/L	SNI 6989.78:2009
11.	Cadmium (Cd)	0.001	0.005	mg/L	SNI 06-6989.38-2005
12.	Chromium Hexavalent (Cr ⁶⁺)	0.006	0.05	mg/L	SNI 6989.71:2009
13.	Zinc (Zn)	0.025	15	mg/L	SNI 6989.7:2009
14.	Sulphate (SO ₄ ²⁻)	2	400	mg/L	SNI 6989.20:2019

No	Parameters	Results	Standards	Units	Methods
15.	Lead (Pb)	0.00	0.05	mg/L	SNI 6989.46:2009
16.	Benzene	0.004	0.01	mg/L	Gas Chromatography
17.	Arsenic (As)	0.01	0.05	mg/L	SNI 06-6989.54-2005
18.	Selenium (Se)	0.004	0.01	mg/L	US EPA 7741 A
Organic Parameters					
1.	Detergent (MBAS)	0.005	0.05	Total/100 mL	APHA 9221B ED 22nd
2.	Organic matter (KMnO ₄)	6.73	10	Total/100 mL	APHA 9221B ED 22nd
Microbiology Parameters					
1.	Total Coliform	100	50	µg/L	SNI 06-6989.51-2005
2.	E-Coli	0	0	µg/L	SNI 06-6989.22-2004

Source: DPLH TPA Bandengan, 2021

Noise

The information regarding noise conditions of Bandengan Landfill is gathered from Bandengan Landfill Environmental Document that published in 2021.

Noise monitoring at Bandengan Landfill conducted within 2 sampling locations, which are the location of Bandengan landfill and Kuwasen Mosque courtyard. Noise levels around Bandengan landfill are particularly influenced by transportation activities and other community activities such as agriculture. An increased noise around the activity location occurs due to waste processing operational activities such as heavy equipment operations and mobilization of employee vehicles and waste carriers. Referring to the Decree of the Minister of Environment Number 48 of 1996 concerning Noise Level Standards, the magnitude of the noise impact of Bandengan landfill is on a range of light to moderate scale.

Table 0-31. Noise Levels at Bandengan Landfill

No	Parameters	Duration	Results	Standards	Units	Methods
1.	Equivalent Noise (L EQ)	1 hour	46.2	60	dB	SNI 8427:2017
2.	Maximum Noise (L MAX)	1 hour	47.3	-	dB	SNI 8427:2017

Source: DPLH TPA Bandengan, 2021

Table 0-32. Noise Levels at the Nearest Residential Area of Bandengan Landfill (Kuwasen Village)

No	Parameters	Duration	Results	Standards	Units	Methods
1.	Equivalent Noise (L EQ)	1 hour	44.9	55	dB	SNI 8427:2017
2.	Maximum Noise (L MAX)	1 hour	46.0	-	dB	SNI 8427:2017

Source: DPLH TPA Bandengan, 2021

Air quality

The information on air quality conditions at Bandengan Landfill is sourced from the Bandengan Landfill Environmental Document published in 2021.

Air quality samplings was taken at 2 sampling points. One sampling point is taken at Bandengan Landfill, and the other sampling points are taken at nearest residential area from Bandengan Landfill (Kuwasen Village).

Ambient air quality at Bandengan landfill and nearest residential area (Kuwasen Village) is primarily influenced by the contribution of the landfill services to the increase in pollutant materials around the site, particularly those originating from vehicle exhaust emissions and decomposing waste. Standards for the measured air quality parameters refer to the Government Regulation Number 22 of 2021 regarding Implementation of Environmental Protection and Management Appendix VII. The air quality in Bandengan landfill and nearest residential area (Kuwasen Village) is identified to be in between light to moderate scale.

Table 0-33. Ambient Air Quality at Bandengan Landfill

No	Parameters	Duration	Results	Standards	Units	Methods
1.	Sulphur Dioxide (SO ₂)	1 hour	15.90	150	µg/Nm ³	SNI 7119-7:2017
2.	Carbon Monoxide (CO)	1 hour	1030.70	10000	µg/Nm ³	SNI 7119-10:2017
3.	Nitrogen Dioxide (NO ₂)	1 hour	10.53	200	µg/Nm ³	SNI 7119-2:2017
4.	Oxidant (O ₃)	1 hour	9.80	150	µg/Nm ³	SNI 7119-8:2017
5.	Total Suspended Particulate (TSP)	1 hour	91.44	-	µg/Nm ³	SNI 7119-3:2017

Source: DPLH TPA Bandengan, 2021

Table 0-34. Ambient Air Quality at the Nearest Residential Area of TPA Bandengan (Kuwasen Village)

No	Parameters	Duration	Results	Standards	Units	Methods
1.	Sulphur Dioxide (SO ₂)	1 hour	12.92	150	µg/Nm ³	SNI 7119-7:2017
2.	Carbon Monoxide (CO)	1 hour	1145.20	10000	µg/Nm ³	SNI 7119-10:2017
3.	Nitrogen Dioxide (NO ₂)	1 hour	9.37	200	µg/Nm ³	SNI 7119-2:2017
4.	Oxidant (O ₃)	1 hour	9.36	150	µg/Nm ³	SNI 7119-8:2017
5.	Total Suspended Particulate (TSP)	1 hour	98.93	-	µg/Nm ³	SNI 7119-3:2017

Source: DPLH TPA Bandengan, 2021

Leachate quality

The information on leachate quality conditions at Bandengan Landfill is sourced from the Bandengan Landfill Environmental Document published in 2021.

The water quality of the Bandengan landfill's WTP outlet was measured based on the Minister of Environment Regulation Number P.59/Menlhk/Setjen/Kum.1/7/2016 regarding Leachate Quality Standards for Businesses and/or Activities of Waste Final Processing Sites. Water quality changes are recognized to have an impact that is medium in scope.

Table 0-35. Water Quality of Bandengan Landfill's LTP Outlet Leachate

No	Parameters	Results	Standards	Units	Methods
1.	Suspended Solid (TSS)	26.00	100	mg/L	SNI 6989.3:2019
2.	Biological Oxygen Demand (BOD ₅)	10.70	150	mg/L	SNI 6989.72:2009
3.	Chemical Oxygen Demand (COD)	33.60	300	mg/L	SNI 6989.2:2019
4.	Total N	34.00	60	mg/L	SNI 06-6989.23-2005
5.	Cadmium (Cd)	0.03	0.01	mg/L	SNI 06-6989.38-2006
6.	Mercury (Hg)	0.003	0.005	mg/L	SNI 6989.78:2009
7.	pH	8.24	6.0-9.0	-	SNI 6989.11:2019

Source: DPLH TPA Bandengan, 2021

The existing condition of leachate treatment plant based on observation during field visit in May 2024, shows that the leachate treatment plant no longer operate effectively because of the aerator that stolen. To determine the condition of the leachate effluent, primary sampling is needed.

Odour

The information on odour conditions at Bandengan Landfill is sourced from the Bandengan Landfill Environmental Document published in 2021.

Odour testing at Jepara Regency was carried out at 2 sampling points, the location of Bandengan landfill and Kuwasen Mosque courtyard. Minister of Environment Decree Number 50 of 1996 concerning Odor Level Quality Standards was used as a reference in carrying out odour monitoring. The results shown in the table below demonstrate that odour conditions at Jepara Regency are still below quality standards and relatively good for the surrounding environment.

Table 0-36. Odour Quality at Bandengan Landfill

No	Parameters	Duration	Results	Standards	Units	Methods
1.	Ammonia (NH ₃)	1 hour	<0.021	2.0	ppm	SNI 19-7119.1-2005
2.	Hydrogen Sulphide (H ₂ S)	1 hour	<0.01	0.02	ppm	MASA Method:701

Source: DPLH TPA Bandengan

Table 0-37. Odour Quality at the Nearest Residential Area of TPA Bandengan (Kuwasen Village)

No	Parameters	Duration	Results	Standards	Units	Methods
1.	Ammonia (NH ₃)	1 hour	<0.017	2.0	ppm	SNI 19-7119.1-2005
2.	Hydrogen Sulphide (H ₂ S)	1 hour	<0.01	0.02	ppm	MASA Method:701

Source: DPLH TPA Bandengan

Land Use

Based on the satellite image, the land use around Bandengan Landfill comprises various types, reflecting a mixed-use nature. To the north and northeast of the landfill, there are several residential neighborhoods, indicating a significant presence of housing developments. These residential areas highlight the importance of managing any potential environmental impacts from the landfill to protect the local community's health and well-being.

Surrounding the landfill, particularly to the east and southeast, are extensive areas of agricultural land. These fields are likely used for crop cultivation or other farming activities. The proximity of these agricultural areas to the landfill necessitates careful monitoring to prevent any contamination that could affect soil and water quality.

To the west of the landfill lies a coastal area, indicating the landfill's close proximity to the sea. This coastal zone includes aquaculture or fish farming ponds. In addition to residential and agricultural land, there are some industrial and commercial facilities visible to the southwest and near the main roadways.

Green spaces and patches of vegetation are also evident around the landfill, providing ecological benefits and acting as a buffer between different land uses. These green spaces contribute to the local ecosystem and offer some mitigation against the environmental impact of the landfill.

Disaster risk

Jepara Regency faces disaster risks across its various sub-districts. Coastal erosion is a concern in areas such as Jepara, Tahunan, Kedung, Donorojo, Keling, Kembang, Mlonggo, and Karimunjawa. Strong winds pose a risk to all sub-districts in the region. Flooding is prevalent in Pecangaan, Kalinyamatan, Welahan, Mayong, Nalumsari, and Kedung. Areas at risk of both flooding and tidal waves include Jepara, Kedung, Kalinyamatan, Keling, Donorojo, Bangsri, and Mlonggo. Some regions, such as Kedung, Kembang, Keling, and Donorojo, are vulnerable to a combination of flooding, tidal waves, and drought. Pecangaan, Kalinyamatan, Welahan, Kedung, Nalumsari, and Mayong also face flood and drought risks. Tidal waves specifically threaten Jepara, while Jepara, Kedung, Donorojo, Keling, Bangsri, Kembang, Mlonggo, and Karimunjawa are at risk of both tidal waves and coastal erosion. Additionally, landslides are a hazard in Mayong, Kembang, and Keling.

In Jepara Regency, the landfill is located in Jepara District, less than 1 km from the coastal area. This district faces a combination of several natural disaster risks, making it particularly vulnerable. Specifically, Jepara District is prone to coastal erosion, strong winds, tidal waves, and coastal erosion combined with tidal waves.

Based on the interview conducted during the visit in May 2024, the local government and community reported that no disasters have occurred at the Bandengan Landfill.

Traffic

The distance between Bandengan Landfill and the main road (Jl. Mulyoharjo) is approximately 600 meters. Jl. TPA Bandengan serves as the access road to Bandengan Landfill. Currently, the road is 3-4 meters wide and in good condition. However, to accommodate the traffic from RDF transport vehicles, the access road needs to be widened to a minimum of 6 meters.

Biodiversity Baseline

A desk-based literature review covering terrestrial biodiversity was conducted to determine biodiversity in Bandengan, Jepara District. Secondary data was taken from reliable sources, such as the International Union for Conservation of Nature (IUCN) and other governmental agencies.

The closest protected area to the proposed site is Important Bird Area (IBA) Gunung Muria, 23.62 km from the proposed site. The site is already heavily impacted by agricultural activities, so there is no natural habitat to preserve. According to UKL – UKL there's not any wild fauna or plant that listed at the document. Therefore, based on IUCN data, there is 29 species have redlist status, there are six birds, 14 mammals, seven reptiles and one fish. Of the 29 identified species seven have Critically Endangered (CR), eight have Endangered (EN) and 14 have Vulnerable (VU) status. The detailed of the species can be seen in the table below.

Table 0-38. List of IUCN Redlist of Threatened Species

No	Class	Family	Species Name	IUCN Category
1	AVES	STURNIDAE	<i>Gracupica jalla</i>	CR
2	AVES	ALCEDINIDAE	<i>Alcedo euryzona</i>	CR
3	AVES	SCOLOPACIDAE	<i>Numenius madagascariensis</i>	EN
4	AVES	ALCEDINIDAE	<i>Halcyon pileata</i>	VU
5	AVES	CICONIIDAE	<i>Leptoptilos javanicus</i>	VU
6	AVES	STURNIDAE	<i>Acridotheres javanicus</i>	VU
7	MAMMALIA	MANIDAE	<i>Manis javanica</i>	CR
8	MAMMALIA	RHINOCEROTIDAE	<i>Rhinoceros sondaicus</i>	CR
9	MAMMALIA	BALAENOPTERIDAE	<i>Balaenoptera borealis</i>	EN
10	MAMMALIA	BALAENOPTERIDAE	<i>Balaenoptera musculus</i>	EN
11	MAMMALIA	CERCOPITHECIDAE	<i>Macaca fascicularis</i>	EN
12	MAMMALIA	DELPHINIDAE	<i>Orcaella brevirostris</i>	EN
13	MAMMALIA	FELIDAE	<i>Panthera tigris</i>	EN
14	MAMMALIA	NYCTERIDAE	<i>Nycteris javanica</i>	VU
15	MAMMALIA	FELIDAE	<i>Panthera pardus</i>	VU
16	MAMMALIA	DUGONGIDAE	<i>Dugong dugon</i>	VU
17	MAMMALIA	CERCOPITHECIDAE	<i>Trachypithecus auratus</i>	VU
18	MAMMALIA	PHYSETERIDAE	<i>Physeter macrocephalus</i>	VU
19	MAMMALIA	PHOCOENIDAE	<i>Neophocaena phocaenoides</i>	VU
20	MAMMALIA	DELPHINIDAE	<i>Sousa chinensis</i>	VU
21	MAMMALIA	MANIDAE	<i>Manis javanica</i>	CR
22	REPTILIA	CHELONIIDAE	<i>Eretmochelys imbricata</i>	CR
23	REPTILIA	CROCODYLIDAE	<i>Crocodylus siamensis</i>	CR
24	REPTILIA	CHELONIIDAE	<i>Chelonia mydas</i>	EN
25	REPTILIA	GEOEMYDIDAE	<i>Cuora amboinensis</i>	EN
26	REPTILIA	PYTHONIDAE	<i>Python bivittatus</i>	VU
27	REPTILIA	CHELONIIDAE	<i>Lepidochelys olivacea</i>	VU
28	REPTILIA	ELAPIDAE	<i>Ophiophagus hannah</i>	VU

No	Class	Family	Species Name	IUCN Category
29	ACTINOPTERYGII	SILURIDAE	<i>Wallago attu</i>	VU

Source: IUCN Red List of Threatened Species

Notes: VU: Vulnerable
 EN: Endangered
 CR: Critically Endangered

Social Baseline

The Bandengan landfill is located in Bandengan Village and Kuwasen Village, covering an area of 74,787 m², with 18,500 m² of it designated as part of the Bandengan Waste Processing Site (TPST). The Bandengan landfill has been operational since 1998 on land owned by the Jepara Regency Government, with additional land acquisition from the community carried out in 2017. Currently, the Bandengan landfill is surrounded by a river and moorland to the north, moorland to the east and south, and rice fields to the west. The nearest residential area in Bandengan Village, approximately 200 meters away, and Kuwasen Village, nearly 300 meters.

In the preparation of the Feasibility Study (FS) for this project, social aspects were considered by dividing the environmental impact area into two, directly affected areas and indirectly affected areas. The directly affected area is defined as the zone within a 500-meter radius from the project site, encompassing residential areas, socio-economic activities, and socio-cultural activities. Meanwhile, the indirectly affected area covers the zone within a radius of 500 meters to 1 kilometer, encompassing residential areas, socio-economic activities, and socio-cultural activities. This distinction is crucial to understand the scope and scale of the project's potential social impacts.

Bandengan Landfill

In the Regional Regulation of Jepara Regency Number 2 of 2011 concerning the Spatial Plan of Jepara Regency for 2011 - 2031, Articles 17 and 18 state that the waste management system plan includes: a) optimization of the utilization and expansion of the Bandengan, Gemulung, and Krasak landfills, and rehabilitation of the system into sanitary landfills; b) development of landfills according to service standards spread across all districts; c) addition of Waste Separation Units (UPS) to manage waste, and d) development of a system to reduce waste input to landfills through reduction, reuse, and processing at the source of waste. Based on this, the spatial planning of the Bandengan landfill complies with the Spatial Plan (RTRW) established by the Jepara Regency Government.

Based on Spatial Planning Certificate No. 650/4973, the land used for the Bandengan landfill is owned by the Jepara Regency Government and permitted to be utilized by the Jepara Regency Environmental Agency for the landfill. There are 12 usage rights certificates and 3 ownership certificates, with a total land area of 74,787 m² allocated for the landfill. The three ownership certificates initially covered community-owned land consisting of yards and agricultural fields, which were acquired since 2017, totaling 5,309 m². Currently, some of this land still has crops on it, awaiting harvest.

Demographic

There are three villages within the social boundary area, namely Bandengan, Kuwasen, and Mulyoharjo, which are part of Jepara District. In 2022, Bandengan Village had a lower population density of 1.57 people/km² compared to Kuwasen Village (2,081 people/km²) and Mulyoharjo Village (2,596 people/km²). All affected villages have a sex ratio of more than 100, indicating that the female population is higher than the male population. Detailed populations of the affected areas are presented in **Table 0-39**.

Table 0-39 Population of Affected People

Location	Category		2020	2021	2022	2023
Kuwasen Village	Area (km2)		2,72	2,72	2,72	2,72
	Gender	Men	2.944	2.723	2.840	N/A
		Women	2.867	2.716	2.821	N/A
	Total		5.811	5.439	5.661	N/A
	Sex Ratio		1,03	1,00	1,01	N/A
	Density (People/km2)		2.136	2.000	2.081	N/A
Bandengan Village	Area (km2)		6,33	6,33	6,33	6,33
	Gender	Men	4.528	4.513	4.713	N/A
		Women	4.435	4.457	4.621	N/A
	Total		8.963	8.970	9.334	N/A
	Sex Ratio		1,02	1,01	1,02	N/A
	Density (People/km2)		1.416	1.417	1.475	N/A
Mulyoharjo Village	Area (km2)		4,03	4,03	4,03	4,03
	Gender	Men	5.100	5.155	5.255	N/A
		Women	5.094	5.102	5.207	N/A
	Total		10.194	10.257	10.462	N/A
	Sex Ratio		1,00	1,01	1,01	N/A
	Density (People/km2)		2.530	2.545	2.596	N/A
Jepara Sub District	Area (km2)		27,05	27,05	27,05	27,05
	Gender	Men	41.102	41.283	42.607	42.738

Location	Category	2020	2021	2022	2023
	Women	40.736	41.001	42.134	42.413
	Total	81.838	82.284	84.741	85.151
	Sex Ratio	1,01	1,01	1,01	1,01
	Density (People/km2)	3.025	3.042	3.133	3.148

Source: Jepara Sub District in Figure 2021 – 2024

Note: N/A = data not available

Table 0-40 presents the population distribution data by age in Jepara Sub District and Jepara Regency. The dependency ratio in both areas is similar, ranging from 42 to 43 in the years 2020-2022, meaning that every 100 working-age residents support 42 to 43 non-productive age residents. In 2023, Jepara Regency has a dependency ratio reaching 46, indicating that every 100 working-age residents support 46 non-productive age residents.

Table 0-40 Population Distribution Based on Age and Sex in Jepara Regency (2020 - 2023)

Location	Age Category	2020			2021			2022			2023		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Jepara Sub-District	Age 0-14	9.991	9.573	19.564	10.056	9.414	19.470	10.248	9.623	19.871	N/A	N/A	N/A
	Age 15-64	29.101	28.085	57.186	29.107	29.097	58.204	29.779	29.740	59.519	N/A	N/A	N/A
	Age 65+	2.009	2.359	4.368	2.120	2.490	4.610	2.580	2.771	5.351	N/A	N/A	N/A
	Total	41.101	40.017	81.118	41.283	41.001	82.284	42.607	42.134	84.741	N/A	N/A	N/A
Jepara Regency	Age 0-14	142.513	135.428	277.941	141.359	134.563	275.922	140.360	133.842	274.202	152.763	143.306	296.069
	Age 15-64	418.740	412.515	831.255	419.727	413.041	832.768	420.864	413.692	834.556	435.226	432.626	867.852
	Age 65+	34.873	40.878	75.751	36.716	43.104	79.820	38.618	45.435	84.053	48.107	52.570	100.677
	Total	596.126	588.821	1.184.947	597.802	590.708	1.188.510	599.842	592.969	1.192.811	636.096	628.502	1.264.598

Source: Jepara Regency in Figure 2021 – 2024

Note: N/A = data not available

The majority of the residents of Bandengan and Kuwasen Villages adhere to Islam, based on interviews during the site visit in 2024. Islam is also the predominant religion in Jepara Sub District and even in Jepara Regency. In Jepara District, the number of Muslims reached 64,061 people (94.90%) in 2023. In Jepara Regency, the Muslim population increases annually along with the total population, reaching 640,944 people, which is about 97.75% of the total population in the regency.

Table 0-41 Population Percentage Based on Religion in Jepara Regency (2021 - 2023)

Religion	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Islam	97,04%	97,06%	94,90%	97,68%	97,72%	97,75%
Protestant	2,41%	2,40%	3,15%	1,85%	1,82%	1,80%
Catholic	0,52%	0,49%	0,06%	0,09%	0,08%	0,08%
Hindu	0,02%	0,02%	0,00%	0,04%	0,04%	0,03%
Buddha	0,02%	0,03%	1,89%	0,34%	0,34%	0,33%
Konghuchu	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Religious Beliefs	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%

Source: Jepara Regency in Figure 2022 – 2024

Socio Economic

2.4.11 The relatively high unemployment rate in Jepara Regency in 2020, which reached 4.76%, was likely due to the impact of COVID-19, causing workforce reductions. However, from 2021 to 2023, the unemployment rate in Jepara Regency began to decline, reaching 2.4% in 2023. Details of the population based on their economic activities are presented in **Table 0-42**.

Table 0-42 Population Based on Their Economic Activity in Jepara Regency (2020 - 2023)

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Economically Active												
Working	372.972	261.414	634.386	391.702	266.506	658.208	418.126	253.347	671.473	390.113	263.667	653.780
Unemployment	29.243	16.278	45.521	17.965	11.111	29.076	14.769	13.914	28.683	13.512	9.180	22.692
2. Not Economically Active												
Attending School	34.814	30.860	65.674	34.448	36.906	71.354	31.650	37.526	69.176	30.846	35.147	65.993
Housekeeping	15.982	161.534	177.516	7.660	160.726	168.386	7.385	177.099	184.484	14.032	150.519	164.551
Others	20.520	12.082	32.602	38.486	22.728	61.214	26.277	23.853	50.130	24.630	13.491	38.121
Total	473.531	482.168	955.699	490.261	497.977	988.238	498.207	505.739	1.003.946	473.133	472.004	945.137
Unemployment Rate	6,18%	3,38%	4,76%	3,66%	2,23%	2,94%	2,96%	2,75%	2,86%	2,86%	1,94%	2,40%

Source: Jepara Regency in Figure 2021 – 2024

Secondary crops is widespread throughout Jepara. As shown in **Table 0-43**, the area for rice cultivation is the largest compared to other agricultural crops, with 41,853.28 hectares and a production of 242,533.16 tons in 2023. According to **Table 0-44**, cassava has the highest production volume, amounting to 254,451.95 tons with an area of 7,874.60 hectares. Both crops can be found near the Bandengan landfill, with rice fields to the west and cassava plantations to the east.

Table 0-43 Harvested Area of Vegetables in Jepara Regency (Ha) (2021 - 2023)

Commodity	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Food Crops (Ha)						
Paddy	719,60	756,15	611,52	43.619,00	43.917,49	41.853,28
Corn	27,40	29,06	30,24	8.530,80	10.484,42	9.982,39
Peanut	30,70	50,97	49,32	5.053,70	4.282,98	3.431,86
Cassava	32,00	32,00	33,00	6.894,80	8.116,40	7.874,60
Horticulture (Ha)						
Big Chili	-	0	-	3	0	-
Curly Chili	N/A	-	0	N/A	16	13
Cayenne Pepper	-	1	0	30	22	24
Tomato	-	0	0	7	4	3
Garlic	-	-	-	-	-	-
Water Spinach	-	-	0	44	28	34
Cucumber	N/A	2	1	N/A	27	38
Estate Crops (Ha)						
Coconut	365,23	N/A	N/A	11.624,81	N/A	N/A
Cotton	82,90	N/A	N/A	11.092,96	N/A	N/A

Source: Jepara Regency in Figure 2022 – 2024

Table 0-44 Production of Vegetables in Jepara Regency (2021 - 2023)

Commodity	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Food Crops (Ton)						
Paddy	4.374,02	4.596,18	37.171,06	251.522,20	253.089,73	242.533,16
Corn	N/A	226,96	241,92	N/A	81.882,32	79.859,12
Peanut	N/A	149,44	140,11	N/A	12.557,70	9.943,41
Cassava	N/A	1.098,02	1.066,33	N/A	278.498,03	254.451,95
Horticulture (Quintal)						
Big Chili	-	7,00	-	227,00	7,00	-
Curly Chili	N/A	-	2,00	N/A	1.086,00	2.833,00
Cayenne Pepper	-	17,00	5,00	2.130,00	1.346,00	2.920,00
Tomato	-	24,00	12,00	364,00	802,00	926,00
Garlic	-	24,00	12,00	-	802,00	926,00
Water Spinach	-	-	8,00	3.566,00	3.296,00	4.268,00
Cucumber	N/A	91,00	67,00	N/A	1.920,00	6.109,00
Fruit (Ton)						
Mango	5.305,10	4.290,60	3.942,00	39.594,00	45.869,60	45.009,90
Durian	118,50	32,40	41,50	9.395,60	8.448,70	14.215,80
Banana	2.008,90	1.681,50	1.707,40	16.685,90	35.938,10	38.248,10
Papaya	93,90	86,50	75,20	1.231,60	2.176,20	3.460,40
Jackfruit	146,70	116,70	113,60	6.268,10	7.573,20	31.918,70
Rambutan	305,90	210,40	196,50	11.988,00	7.303,00	16.205,70
Estate Crops (Ton)						
Coconut	321,44	N/A	N/A	8.509,42	N/A	N/A
Cotton	22,71	N/A	N/A	2.538,44	N/A	N/A

Source: Jepara Regency in Figure 2022 – 2024

The livestock population in Jepara Regency includes horses, beef cattle, buffaloes, goats, sheep, rabbits, native chickens, laying hens, broiler chickens, ducks, geese, muscovy ducks, and pigeons. Broiler chickens are the most widely cultivated poultry in both Jepara District and Jepara Regency as a whole. The population of broiler chickens has been declining each year, with the number of broiler chickens in Jepara District reaching 12,445 in 2023, a decrease of about 50% compared to the previous year. In detail, the types of livestock raised in Jepara Regency can be seen in **Table 0-45**.

Table 0-45 Livestock Population in Jepara Regency (2021 – 2023)

Livestock	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Horse	23	20	18	85	75	71
Beef Cattle	1.159	827	732	52.958	45.935	39.247
Buffalo	8	4	4	2.562	2.379	2.183
Goat	996	1.096	1.008	64.052	63.440	58.433
Sheep	967	967	928	26.577	26.420	25.750
Rabbit	155	145	139	2.840	2.565	2.468
Native chicken	5.189	5.135	5.160	537.118	584.584	586.343
Layers	3.000	3.500	3.500	150.745	159.560	142.828
Broiler	35.000	35.000	12.445	1.310.850	1.514.250	1.162.011
Duck	-	-	450	-	35.875	23.167

Livestock	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Goose	25	-	20	1.080	970	915
Muscovy Duck	1.346	1.272	1.172	38.889	36.485	32.133
Dove	250	250	250	2.080	2.242	2.328

Source: Jepara Regency in Figure 2022 – 2024

As a region located on the northern side of Java Island, Jepara Regency directly borders the Java Sea to the north. This geographical condition leads to many people earning their livelihoods as fishermen. In Jepara Regency, fishermen are categorized into three types: skippers, workers, and open water fishermen.

In 2023, there was an increase in the number of skippers and open water fishermen compared to the previous year, while the number of workers decreased by more than 50%. The increase in the number of skippers was also significant in Jepara Regency, reaching a total of 3,223 people in 2023, up from 811 people the previous year.

Table 0-46 Number of Fishermen in Jepara Regency (2021 - 2023)

Category	Jepara Sub-District		Jepara Regency	
	2022	2023	2022	2023
Skipper	634	705	811	3.223
Workers	3.232	1.012	5.403	5.349
Open Water Fisherman	128	1.086	3.898	2.421

Source: Jepara Regency in Figure 2022 – 2024

The types of aquaculture in Jepara Regency include quiet freshwater ponds, intensive brackish water ponds, traditional brackish water ponds, and semi-intensive brackish water ponds. Among these four types of aquaculture, traditional ponds continue to be an activity that provides a substantial amount and value of production in both Jepara Subdistrict and Jepara Regency. In 2023, traditional ponds in Jepara Regency produced 10,858.17 tons with a production value reaching 534,817,769 thousand rupiah. The production and production value in Jepara Regency based on the type of aquaculture are presented in Table 0-47.

Table 0-47 Production and Production Value Based on Type of Cultivation in Jepara Regency (2022 – 2023)

Type of Cultivation	Jepara Sub-District				Jepara Regency			
	Production (Ton)		Production Value (000 Rp)		Production (Ton)		Production Value (000 Rp)	
	2022	2023	2022	2023	2022	2023	2022	2023
Quiet Freshwater Pond	78,86	90,67	1.584.410	1.631.970	5.325,93	4.979,03	94.422.441	96.239.202
Intensive Brackishwater Pond	-	410,04	-	32.803.040	2.012,40	932,84	160.992.160	74.626.916
Traditional Brackishwater Pond	431,17	535,65	30.060.520	32.139.240	9.885,08	10.858,17	509.465.827	534.817.769
Semi Intensive Brackishwater Pond	803,34	714,54	31.419.320	17.290.196	5.020,31	4.452,68	166.992.230	147.079.655

Source: Jepara Regency in Figure 2023 – 2024

Aquaculture in Jepara Regency includes tiger prawns, vannamei shrimp, white shrimp, milkfish, and catfish (Table 0-48). Vannamei shrimp is the leading aquaculture commodity in Jepara Regency,

including Jepara District. In Jepara District, vannamei shrimp is predominantly cultivated through intensive aquaculture methods, with production reaching 410.04 tons in 2023.

Table 0-48 Production and Production Value Based on Type of Commodity in Jepara Regency (2022 - 2023)

Commodity	Jepara Sub-District				Jepara Regency			
	Production (Ton)		Production Value (000 Rp)		Production (Ton)		Production Value (000 Rp)	
	2022	2023	2022	2023	2022	2023	2022	2023
Tiger Shrimp	209,53	297,04	16.762.240	26.733.330	2.095,28	1.485,19	167.622.720	133.666.650
Vaname Shrimp	206,10	410,04	16.488.320	32.803.040	4.122,09	3.416,98	329.766.800	273.358.640
White Shrimp	221,64	535,65	13.298.280	32.139.240	2.216,38	1.983,91	132.983.040	119.034.300
Milkfish	597,24	417,51	14.931.000	11.690.196	5.972,40	6.116,71	149.309.950	71.267.992
Catfish	43,01	90,67	688.160	1.631.970	4.300,95	4.317,36	68.815.216	77.712.498

Source: Jepara Regency in Figure 2023 – 2024

Scavenger in Bandengan Landfill

The number of scavengers at the Bandengan Landfill, according to the Head of the Bandengan UPT, is 24 people, consisting of 15 men and 9 women. The scavengers at the Bandengan Landfill generally work from 06.00 to 18.00 or during the landfill's operating hours. They work seven days a week, only taking time off for other personal matters or when they are ill. The items collected by the scavengers include cardboard, plastic bottles, cans, etc. In one day, a scavenger can earn between Rp 100,000 and 150,000 per day.

Within the Bandengan Landfill, there is one collector who has been operating for 20 years. He pays an annual rental fee to the UPTD, which goes into the regional treasury. The items received by the collector include plastic, paper, bones, iron, aluminum, glass bottles, and rubber sandals. The collector employs five workers, consisting of three men and two women, to sort, peel, and organize the items. The items purchased by the collector are then resold to larger middlemen, such as those in Demak and Kudus. The transportation for these goods is usually provided by the buyers, as the collector does not own transportation for moving the items.

Socio Cultural

Jepara is well known as The World Carving Center or the world carving city. Since the 19th century, Jepara has been recognized as one of the largest centers for wood carving and furniture craftsmanship in Indonesia and internationally. Jepara carvings have been recognized as an intangible cultural heritage since 2015, according to data from the Ministry of Education, Culture, Research, and Technology. Verified cultural heritage sites in Jepara Regency are presented in **Table 0-49**.

Table 0-49 List of Tangible and Intangible Cultural in Jepara Regency

Cultural Resource	Type	Year of Recognition	Description
Mantingan Tomb and Mosque	Site	1999	The construction of Mantingan Mosque (1521-1546) was carried out by Queen Kalinyamat as a tribute to her husband, Prince Kalinyamat or Sultan Hadlirin, who was believed to be a prince from the Sultanate of Aceh Darussalam. This mosque features a blend of Hindu-Buddhist, Javanese, and Chinese architectural styles.
Jepara Carving	Traditional Skills and Crafts	2015	The original carvings from Jepara are distinguished by motifs such as "Jumbai" or the

Cultural Resource	Type	Year of Recognition	Description
			tip of the sanctuary, where the leaves resemble an open fan that tapers at the tip. There are three or four fruit seeds coming out from the base of the leaf, and the stem of the sanctuary twists in a stretched and spreading style, forming small branches that fill the space or enhance it. As for the motifs, they can be seen in "trubusan" leaves consisting of two types: those emerging from the sanctuary stem and those emerging from the branches or segments.
Kentrung Jepara	Performing Arts	2022	The kentrung art form is an oral literature that incorporates storytelling, pantun (traditional Malay poetic form), and the rebana instrument. Its musical aspect can be observed in the delivery of stories and pantun through singing, as well as in the performance of the rebana instrument, which serves as a visualization of the narrative and forms rhythmic patterns.
Emprak Jepara	Performing Arts	2023	Emprak is a traditional art form from Jepara that portrays everyday life stories. Its distinctive feature lies in the opening scene where all performers appear in amusing costumes, singing and dancing together in harmony.
Jepara Torch War	Community Customs, Rites, and Celebrations	2016	The Torch War tradition is held in Tegalsambi Village as an expression of gratitude for the harvest and to ward off misfortune. The torches used are made from dry palm leaves filled with dry banana leaves. This tradition is routinely conducted every Monday Pahing night, Tuesday Pon after the main harvest.
Jembul Tulakan	Community Customs, Rites, and Celebrations	2020	The Jembul Tulakan tradition is carried out in Tulakan Village with a Jembul procession. It is held every Monday Pahing in the Apit month of the Javanese calendar. This Jembul Tulakan celebration is conducted as part of the earth thanksgiving ceremony.
Lomban Party	Community Customs, Rites, and Celebrations	2020	The Lomban Festival or Bodo Kupat is the peak event of the Syawalan week, held on the 8th day of Syawal or one week after the Eid al-Fitr celebration. It is called Bodo Kupat because the event involves enjoying the dish of <i>kupat lepet</i> , accompanied by opor and fried chili sauce.

Source: Ministry of Education and Culture, 2024

In addition to tangible and intangible cultural heritage that is recorded and registered with the Ministry of Education, Culture, Research, and Technology, Jepara also has a distinctive carving known as the tiger bracket carving, which has been developed in Mulyoharjo Village, one of the areas affected by the project. The tiger bracket statue is considered a unique Jepara sculpture because it is not found in any other city or region in Indonesia. The tiger bracket statue has a special technique in its creation, being carved from a single piece of wood without any joints throughout the carving process.

Jepara has a traditional food proposed as an intangible cultural heritage, namely Horog-horog. Horog-horog is a carbohydrate-rich substitute for rice that was first developed during the Japanese occupation of Indonesia. The main ingredient of Horog-horog is aren tree flour, which is cleaned and steamed until cooked. The cooked Horog-horog takes the form of small, chewy foam-like granules with a slightly salty taste. This dish is served with a sprinkle of grated coconut and a bit of sugar, using teak leaves or banana leaves.

In the areas directly and indirectly affected by the project, no material cultural heritage has been found. However, there are several sites considered sacred by local and non-local communities, namely the Tomb of Syeh Hasan bin Ibrohim Al-Hasni and the Tomb of Tuan Guru.

The Tomb of Syeh Hasan bin Ibrohim Al-Hasni is located on the side of the access road to the landfill and is approximately 370 meters from the landfill. This tomb has been classified as an "Object Allegedly of Cultural Heritage" and is part of an annual "haul" ceremony held on the 10th of Muharram. It is frequently visited by people from both within and outside Jepara. Meanwhile, the Tomb of Tuan Guru is situated on an empty plot of land across from the landfill, about 150 meters from the landfill. The origins of the Tomb of Tuan Guru are unknown, but it is still visited by some people seeking spiritual guidance.

Initial Stakeholder Mapping

Stakeholder identification and categorization is a process of finding out who is affected by the project, including individuals, groups, local communities and other relevant parties. This can include disadvantaged or vulnerable groups. Stakeholder identification also looks to identify those who have an interest in, or influence on, the project outcome, and who can support it. Environmental Agency of Jepara Regency and the consultant did a quick initial stakeholder identification at this stage of the FS preparation. Full stakeholder identification will be carried out as part of the ESIA. The table below provides the results of initial stakeholder identification for the Bandengan Landfill development plan.

Table 0-50 Initial Stakeholder Mapping

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
Central Government					
1	Ministry of Public Works and Housing	Facilitates the budget for procurement of waste management infrastructure and facilities	Positive	Environment and improvement of public facilities	
2	Ministry of Environment and Forestry	Monitors of waste management	Positive	Environment	
Local Government					
1	Central Java Provincial Settlement Infrastructure Agency (BPPW)	Facilitates technical work of waste infrastructure construction	Positive	Environment and improvement of public facilities	
2	Planning Agency (BAPPEDA)	Facilitates and coordinates collaboration and task allocation among stakeholders	Positive	Improvement of public facilities and enhancement of regional assets and revenue.	Regional Apparatur Organisation (OPD)
3	Environment Agency (DLH)	Carries out planning and technical studies for the construction of waste management infrastructure and implement waste	Positive	Environment and improvement of public facilities	Regional Apparatur Organisation (OPD)

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
		management activities in the regency.			
4	Management Agency of Finance, Income and Assets (BPKPAD)	Provides support and land allocation for the construction of waste management facilities, and manage assets and budgets related to the landfill.	Positive	Enhancement of regional assets and revenue.	Regional Apparatur Organisation (OPD)
5	Public Works and Spatial Planning Agency (DPUPR)	Provides support and facilitation for the status change of the prospective site land and the preparation of the DED for waste management facilities.	Positive	Improvement of public facilities	Regional Apparatur Organisation (OPD)
6	Agriculture and Food Agency	Facilitates compost quality testing and the utilization of compost produced from waste processing.	Positive	Environment, improvement of agriculture production	Regional Apparatur Organisation (OPD)
7	Community and Village Empowerment Agency	Facilitates the budgeting for village-level waste management through village funds.	Positive	Improvement of community health and social welfare	Regional Apparatur Organisation (OPD)
8	Community Health Agency	Carries out government affairs in the field of environmental health related to waste management that fall under regional authority.	Positive	Community health	Regional Apparatur Organisation (OPD)
9	Trade, Cooperatives, Small and Medium Enterprises Agency	Facilitate the processed-waste product marketing	Positive	Enhancement of community economic development	Regional Apparatur Organisation (OPD)
10	Culture and Tourism Agency	Administers governance affairs in the cultural sector related to both tangible and intangible cultural heritage falls within the jurisdiction of	Positive	Tangible and intangible cultural heritage	Regional Apparatur Organisation (OPD)

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
		the local government.			
11	Village Government	Facilitates land preparation, community mobilization and site conditioning for waste infrastructure development, and implement the waste management activities at village level.	Positive	Environment and improvement of public facilities	The entire area of Jepara Regency is regulated under a Regent Regulation regarding the implementation of village waste management.
NGO/LSM/					
1	3R Waste Management Site (TPS3R)	As the implementing agency for waste management activities at the village level, provides employment opportunities for rural communities.	Positive	Environment	4 TPS3R management institution
2	KSM Sumber Urip	Utilization of methane gas to substitute household gas	Positive	Increasing the economic value of waste and creating job opportunities.	There are 60 members who have joined, but only 45 have been served
3	Paguyuban Sedulur Pasamtan	Collects waste from house to house in the southern region of Jepara.	Positive	Creating job opportunities	
4	Adiwiyata Cadre	Manage Panggung village waste more sustainably.	Positive	Increasing the economic value of waste and creating job opportunities	Consisting of 20 women from the Panggung Village women group
Academics					
1	Adiwiyata School	Provide education and practical training on waste management in schools.	Positive	Environment and education	
2	Fatayat				
Waste Bank					
1	Jepara Main Waste Bank	Manages waste in the Jepara area.	Positive	Increasing the economic value of waste and creating job opportunities.	The main waste bank is under the Environmental Agency of Jepara Regency

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
2	Compost House	Process the composting of plant residues into organic fertilizer/compost	Positive	Increasing the economic value of waste	The compost house is under the Bandengan landfill
Community					
1	Scavengers in Bandengan Landfill	Support the waste management in the landfill	Positive	Community economic	Scavengers are local community in landfill surrounding area.

Gender Aspect and Vulnerability

Based on data from the Environmental Agency (DLH) of Jepara Regency as of July 2024, approximately 38% of the scavengers at the Bandengan Landfill are women. These women typically perform household chores before and after their scavenging activities. The UPT Bandengan Landfill also estimates that about 21% of the scavengers are elderly. Scavengers work every day except when they are sick or have important activities that cannot be postponed.

In 2024, the minimum wage in Jepara Regency increased by 7.8% to Rp 2,450,915 from Rp 2,272,626 previously. In 2023, the number of impoverished people in Jepara Regency totalled 86.75 thousand individuals, encompassing approximately 6.61% of the total population, with the poverty line set at Rp 479,131.

Community Health

Ensuring the well-being of the community is vital for the overall development and prosperity of society. By prioritizing public health, we can prevent the spread of diseases, improve the quality of life, and reduce healthcare costs.

Healthcare facilities play a crucial role in ensuring the welfare of the community by serving as pillars of public health infrastructure, providing services that contribute to a healthier society. Healthcare facilities in Jepara Regency are quite comprehensive, including hospitals, public health center, auxiliary health centers, polyclinic, and integrated health post.

Health facilities in Jepara District and Jepara Regency have not seen any improvement since 2021 (except for the addition of polyclinics). Jepara Regency has health facilities including 6 hospitals, with 4 of them located in Jepara District, 22 public health centers, 44 auxiliary health centers, 60 polyclinics, and 1,131 integrated health post with 9% of them located in Jepara Subdistrict.

Table 0-51 Health Facilities in Jepara Regency (2021 - 2023)

Facility	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Hospital	4	4	4	7	6	6
Public Health Center	1	1	1	22	22	22
Auxiliary Public Health Center	1	N/A	N/A	44	N/A	N/A
Polyclinic	6	N/A	N/A	36	56	60

Integrated Health Post	N/A	105	105	N/A	1.131	1.131

Source: Jepara Regency in Figure 2022 – 2024

In addition to healthcare facilities, healthcare professionals are also crucial aspects of public health. In 2023, the available healthcare professionals include medical specialist, general practitioners, dentists, dentist specialist, nurses, midwives, public health workers, environmental health workers, nutritionists, medical laboratory technicians, other biomedical engineering personnel, and physical appearance. The number of healthcare professionals in Jepara Regency can be seen in the following table.

Table 0-52 Number of Medical Personnel in Jepara Regency (2021 - 2023)

Medical personnel	Jepara Sub-District			Jepara Regency		
	2021	2022	2023	2021	2022	2023
Medical Specialist	90	103	99	148	164	175
General Practitioners	62	66	66	454	321	301
Dentist	6	6	6	106	79	79
Dentist Specialist	1	2	2	5	6	7
Nurse	484	649	643	1.305	1.464	1.485
Midwife	133	150	150	766	721	724
Public Health	1	2	4	74	91	93
Environmental Health	10	10	10	51	50	50
Nutritionist	19	19	19	63	70	70
Medical Laboratory Technologist	47	55	53	158	160	166
Other Biomedical Engineering Personnel	27	34	32	54	29	57
Physical Appearance	14	14	15	32	33	37

Source: Jepara Regency in Figure 2022 – 2024

Community Concern

The complaints submitted by the community around the Bandengan Landfill (TPA) regarding the landfill include odor, river water pollution, flies, and road cleanliness. All complaints have been reported by the community to the village head, and the village head has conveyed them to the Bandengan Landfill UPT and the Environmental Agency of Jepara Regency.

The most disturbing complaint felt by the community is the odor. The smell can be detected up to 2 km from the landfill site, especially when the wind blows stronger around the Jepara landfill. The time when the odor is most severe is from 20:00 to 06:00. Complaints about the odor are not only submitted by the residents of Bandengan Village and Kuwasen Village, which are directly adjacent to the landfill, but also by the residents of Mulyoharjo Village, which is located further from the landfill.

To the north of the Bandengan Landfill, there is a river that serves as an irrigation water source for the community's rice fields. About five years ago, a leakage in the landfill's leachate pond caused the river water to become polluted, turning black and murky. This contaminated water entered the rice fields, causing the farmers to experience itching. No compensation was given to the farmers. However, according to the head of Bandengan Village, the river water actually made the plants more fertile.

The flies at the Bandengan Landfill also disturb the community, especially during the rainy season. Flies swarm into residents' homes and gather around uncovered food. In addition to the flies, the transportation of waste along the roads results in litter scattered on the streets, making them dirty

and smelly. Complaints about dirty roads arise from the community of Kuwasen Village because the roads littered with waste are frequently used by the residents of Kuwasen Village.

Rembang

Environmental Baseline

Climate

Rembang Regency has a tropical climate, with wet months occurring for 4 to 5 months each year, while the remaining months fall into the moderate to dry category. In 2023, the highest rainfall was recorded in December, averaging 299 mm. The district experiencing the highest annual rainfall in 2023 was Gunem, with a total of 1,240 mm, primarily due to a high number of rainy days—85 days in total. The district with the fewest rainy days was Kaliori, experiencing only 37 rainy days throughout the year.

In 2023, Sulang Subdistrict experienced a diverse range of weather patterns. The district saw the highest rainfall in December, with an average of 200.29 mm. The total annual rainfall in Sulang was 839 mm, spread over various months.

Topography, Geology, and Geomorphology

Rembang Regency exhibits diverse topography, encompassing coastal areas, lowlands, highlands, and mountainous areas. 11.81% of the Regency is at an elevation of 0–7 m asl, 56.83% at 8–100 m asl, 28.29% at 101–500 m asl, and 3.07% at 501–1,000 m asl.

Approximately 45.72% of the Regency (46,367 hectares) features a slope of 0-2%. Another 35.84% (36,374 hectares) has a slope of 3-15%. The hilly and mountainous regions, with slopes of 16-40% and greater than 40%, account for 13.78% and 4.66% of the total area, respectively. This variation in topography influences land use patterns and agricultural practices throughout the Regency.

Rembang Regency's geology primarily supports agriculture, with fertile lands except for in mountainous areas in the southeastern part of the Regency. The soil types found in Rembang Regency are diverse, contributing to its agricultural productivity and land use as follows:

- a. Alluvial Soil: Covering about 10% of the Regency, this soil varies in characteristics and is found in the central northern plains and parts of the eastern coast. Its color ranges from gray to dark brown, and it exhibits a wide range of productivity from very low to high. This soil is typically used for agriculture and settlements.
- b. Regosol Soil: Making up 5% of the Regency, this neutral to acidic soil is found mostly along the northern coast. It is characterized by colours ranging from white to yellowish-brown and gray. Derived from beach sand sedimentation, it is primarily used for agriculture and plantations.
- c. Grumosol Soil: This gray to black soil covers 32% of the Regency and is found in the southern regions. It has low to moderate productivity and is mainly used for agriculture and plantations.
- d. Red-Yellow Mediterranean Soil: Comprising approximately 45% of the Regency, this neutral soil ranges in color from red to brown and has moderate to high productivity. It is found from the eastern coast extending southwards and is used for paddy fields, dry fields, orchards, and pastures.

Rembang Regency also has Andosol soil and deposits of various minerals, including limestone, lignite, clay, dolomite, tuff, quartz sand, and phosphate, which constitute about 8% of the Regency's area. These mineral resources present significant opportunity for mining and extraction, contributing to the local economy. This has attracted significant industrial investments, such as the establishment of a cement factory by Semen Indonesia in the Regency.

Hydrology

The hydrological conditions in Rembang Regency are influenced by both surface water and groundwater sources. The surface water system is heavily dependent on rainfall, and to manage runoff from upstream to downstream areas, numerous reservoirs and embung (small retention basins) have been constructed. Significant embung utilized for clean water sources include Embung Lodan, Embung Banyukuwung, Embung Jatimudo, and Embung Grawan. Additionally, Embung Panohan remains underutilised as a clean water source. Many smaller embung have been built in villages to meet the irrigation needs of farmers.

Rembang Regency falls within two major river basins: the Bengawan Solo and Jratunseluna river basins. The Bengawan Solo River basin covers a small area in Rembang, around the Sale District. Most of the regency is part of the Jratunseluna river basin, which includes several major rivers such as the Randugunting, Babagan, Karanggeneng, Kening, Telas, Kalipang, Sudo, and Patiyan rivers. There are 26 rivers within the Jratunseluna basin. During the dry season, many of these rivers experience reduced flow or dry up entirely, while the rainy season often brings flooding. The lack of integrated water resource management from upstream to downstream exacerbates these issues, alongside unclear jurisdictional responsibilities between the central, provincial, and local governments.

Groundwater in Rembang Regency is found within aquifers, geological formations capable of storing and transmitting water. These aquifers vary in productivity across the Regency as follows:

- a. Shallow aquifers with moderate productivity: Predominantly found in Kaliori, Rembang, Lasem, Pancur, Pamotan, Kragan, Sarang, and Sedan Subdistricts.
- b. High productivity aquifers: Present in small areas of Sale Subdistrict.
- c. Moderate productivity aquifers: Located in Bulu, Gunem, Sale, Sedan, Sarang, and Pamotan Subdistricts.
- d. Low productivity aquifers: Common in Sluke, Kragan, Sedan, Pancur, and Lasem Subdistricts.

Areas with scarce groundwater: Found in small parts of Sarang Subdistrict.

Groundwater depths in Rembang are generally greater than 90 m. However, in Sluke, Lasem, and Kragan Subdistricts, depths range between 30–60 m and 60–90 m. These groundwater sources are valuable for daily uses and irrigation.

Disaster Risk

Based on the Indonesian Disaster Risk Index (2022), Rembang Regency has an overall disaster risk index score of 117.89, categorizing it as medium risk. The region faces a high risk of floods and forest fires, with scores of 16.76 and 17.96, respectively. Earthquakes, extreme waves, coastal abrasion, droughts, and extreme weather events pose moderate risks, with scores ranging from 10.18 to 11.97. Landslides are considered low risk, with a score of 5.99.

Monitoring/Baseline Data

The environmental data, conducted by DLH of Rembang Regency, to ensure compliance with environmental standards at the Landoh landfill site was available only from 2018 monitoring. Descriptions of the results of monitoring are presented below.

Air Quality and Noise

Ambient air quality sampling in 2018 was conducted at a single point at the project site, and it was observed that the results are still within the latest acceptable limits as per the standards set by the

Annex VII of Government Regulation No. 22 of 2021. The measured concentrations of key air pollutants, such as nitrogen dioxide (NO₂) at 1.05 µg/nm³, sulfur dioxide (SO₂) at 0.25 µg/nm³, carbon monoxide (CO) at 229 µg/nm³, oxygen (O₂) at 0.59 µg/nm³, and dust at 21.37 µg/nm³, were all significantly below the respective regulatory limits.

At the time of 2018 monitoring, noise levels at the Landoh landfill site were measured at 61.1 dBA, which is well within the permissible limit of 70 dBA as stipulated by the Minister of Environment Decree No. 48/MENLH/11/1996 on Noise Level Standards. These measurements were taken under specific environmental conditions, with a temperature of 32°C, humidity at 70.3%, and wind speeds ranging from 0.1 to 0.8 m/s. The findings from 2018 baseline against the latest environmental standards are as follows.

Table 0-53 Air Quality and Noise (2018)

No	Parameters	Unit	Test Result	Quality Standard
1	Nitrogen Dioxide (NO ₂)	µg/nm ³	1.05	200*
2	Sulfur Dioxide (SO ₂)	µg/nm ³	0.25	150*
3	Carbon Monoxide (CO)	µg/nm ³	229	10,000*
4	Ozone (O ₃)	µg/nm ³	0.59	150*
5	Dust	µg/nm ³	21.37	230*
6	Noise	dBA	61.1	70**

Source: UKL UPL Landoh Landfill 2021

* Annex VII of Government Regulation No. 22 of 2021

** Minister of Environment Decree No. 48/MENLH/11/1996

Surface Water Quality

River water quality around Landoh Landfill to ensure physical and chemical quality was also available from 2018 monitoring activities. The results of the river water analysis showed that several parameters exceeded the maximum limits for Class II River water. These parameters included TSS (suspended residue), Nitrate (NO₃-N) and Nitrite as N. Other parameters were observed below the Class II River water quality standards. The results of the river water analysis are presented in the following table. Note that measurement result for DO may be considered invalid and require further follow up as it has been exceeding 20 mg/L.

Table 0-54 Surface Water Quality (2018)

No	Parameters	Unit	Value	Class II Quality Standard
A. Physical				
1	Temperature	°C	26.8	Deviation 3
2	Total Dissolved Solids (TDS)	mg/L	983	1,000
3	Total Suspended Solids (TSS)	mg/L	395	50
B. Inorganic Chemistry				
1	pH	-	6.05	6 to 9
2	BOD5	mg/L	2	3
3	COD	mg/L	10	25
4	Dissolved Oxygen (DO)	mg/L	47.43	4
5	Total Phosphate as P	mg/L	0.016	0.2
6	Nitrate (NO ₃ -N)	mg/L	35.81	10
7	Arsenic (As)	mg/L	-	0.05
8	Cobalt (Co)	mg/L	-	0.2
9	Boron (B)	mg/L	-	1
10	Selenium (Se)	mg/L	-	0.05
11	Cadmium (Cd)	mg/L	<0.001	0.01
12	Hexavalent Chromium (Cr-VI)	mg/L	-	0.05
13	Copper (Cu)	mg/L	<0.005	0.02
14	Iron (Fe)	mg/L	0.03	-
15	Lead (Pb)	µg/L	<0.008	0.03
16	Mercury (Hg)	mg/L	-	0.002
17	Manganese (Mn)	mg/L	0.326	-
18	Zinc (Zn)	µg/L	<0.005	0.05
19	Chloride	mg/L	8.99	-
20	Cyanide	mg/L	0	-
21	Fluoride	mg/L	0	1.5
22	Nitrite as N	mg/L	1.55	0.06
23	Sulfate (SO ₄)	mg/L	0.55	-
24	Sulfur as H ₂ S	mg/L	0	-

Source: UKL UPL Landoh Landfill 2021

Groundwater

The groundwater abstraction which is not use as potable water is available at the Landoh Landfill site. Laboratory analysis results from this source showed that one parameter of clean water quality i.e., TDS, did not meet the quality standards set by the Minister of Health Regulation No. 2 of 2023 concerning Implementing Regulations of Government Regulation Number 66 of 2014 concerning Environmental Health. The detailed results of the clean water quality tests at the site are presented in the following table.

Table 0-55 Clean Water Quality (2018)

No	Parameter	Unit	Value	Maximum Level
I. Physical				
1	Temperature	°C	26.6	± 3°C to air temperature
2	Odor	mg/L	None	None
3	Total Dissolved Solids (TDS)	mg/L	631	<300
4	Turbidity	NTU	0.14	<3
5	Taste	mg/L	None	None
6	Color	TCU	0.01	10
II. Chemistry				
1	Iron (Fe)	mg/L	<0.05	0.2
2	Fluoride (F)	mg/L	0	1.5
3	Cadmium (Cd)	mg/L	<0.001	0.005
4	Hardness (CaCO ₃)	mg/L	16.83	500
5	Chloride	mg/L	22.99	-
6	Chromium (Cr-VI)	mg/L	<0.004	0.01
7	Manganese (Mn)	mg/L	<0.03	0.1
8	Nitrate as N	mg/L	0.98	20
9	Nitrite as N	mg/L	0.305	3
10	pH	mg/L	7.93	6.5-8.5
11	Zinc (Zn)	mg/L	<0.005	15
12	Cyanide (CN)	mg/L	0	-
13	Sulfate (SO ₄)	mg/L	0.26	400
14	Copper (Cu)	mg/L	<0.005	-
15	Lead (Pb)	mg/L	<0.008	0.05

Source: UKL UPL Landoh Landfill 2021

The groundwater quality from residents of Landoh Village's well in 2018 showed that the parameters for TDS, pH, and Pb levels did not meet the quality standards set by the Minister of Health Regulation No. 2 of 2023 concerning Implementing Regulations of Government Regulation Number 66 of 2014 concerning Environmental Health. Based on the UKL UPL Landoh Landfill 2021 document, only one of resident's wells located south of Landoh Landfill was monitored. The detailed results of this well water quality are presented in the following table.

Table 0-56 Well Water Quality (2018)

No	Parameter	Unit	Value	Maximum Level
I. Physical				
1	Temperature	°C	27.5	± 3°C to air temperature
2	Odor	mg/L	None	None
3	Total Dissolved Solids (TDS)	mg/L	1962	<300
4	Turbidity	NTU	0.25	<3
5	Taste	mg/L	None	None
6	Color	TCU	0.01	10
II. Chemistry				
1	Iron (Fe)	mg/L	0.0035	0.2
2	Fluoride (F)	mg/L	-	1.5
3	Cadmium (Cd)	mg/L	0.0019	0.005

No	Parameter	Unit	Value	Maximum Level
4	Hardness (CaCO ₃)	mg/L	39.13	500
5	Chromium (Cr-VI)	mg/L	0.0001	0.01
6	Manganese (Mn)	mg/L	0.0291	0.1
7	Nitrate as N	mg/L	0.9669	10
8	Nitrite as N	mg/L	0.4677	1
9	pH	mg/L	5.5	6.5-8.5
10	Zinc (Zn)	mg/L	0.0297	15
11	Sulfate (SO ₄)	mg/L	185	400
12	Lead (Pb)	mg/L	0.0829	0.05

Source: UKL UPL Landoh Landfill 2021

Leachate

The Landoh landfill currently lacks a proper leachate treatment unit (IPL). The existing treatment is limited to leachate collection ponds. There are four series of collection ponds, each with dimensions of 10 m x 10 m. Ponds 1, 3, and 4 have a depth of 1.5 m, while Pond 2 has the same dimensions but with a depth of 2.5 m. These ponds are constructed from split stones plastered with a thickness of about 30 cm. Ideally, the inlet of the IPL should come from leachate collection pipes located below the waste layer. However, due to the absence of these pipes, the IPL inlet comes from drainage channels around the landfill that channel leachate from the waste. Testing was conducted at the inlet and outlet of the leachate collection ponds. Since there is no outlet hole from the IPL, the outlet sample was taken from the eastern end of the fourth collection pond. The leachate water quality was tested in 2018 from the leachate collection ponds to determine the leachate quality at Landoh landfill. The results showed that both BOD and COD levels at the inlet and outlet far exceeded the quality standards, with the inlet BOD at 2,302.66 mg/L and the outlet BOD at 1,650.44 mg/L. The COD levels were 9,210.66 mg/L at the inlet and 6,601.77 mg/L at the outlet. The leachate water quality test results are presented in the following table:

Table 0-57 Leachate Quality (2018)

No	Parameter	Unit	Inlet	Outlet	Quality Standard*
1	pH	-	7.51	7.74	6 to 8
2	BOD	mg/L	2,303.66	1,650.44	150
3	COD	mg/L	9,210.66	6,601.77	300
4	TSS	mg/L	1,358	598	100
5	Total Nitrogen	mg/L	39.41	12.5	60
6	Mercury	mg/L	-	-	0.005
7	Cadmium	mg/L	< 0.001	< 0.001	0.1

Source: UKL UPL Landoh Landfill 2021

Traffic

The Landoh landfill is accessible via Landoh Road in Kerep Village, which connects to the Blora – Rembang National Road. During a site visit, it was observed that Landoh Road is currently in poor condition, with potholes and a maximum width of 3.0 to 4.0 m. This condition is not ideal for the operation of the landfill and the RDF waste processing facility, which require a road with strong reinforcement and access to allow two trucks to pass simultaneously.

An allocation of IDR 1,500,000,000 has been budgeted for the improvement of Landoh Road to Kerep Village as part of the detailed budget for the activities of the Regional Work Unit of Rembang Regency.

The upgraded road is planned to accommodate 38 truck trips per day during operational phases and 3 truck trips per day during the construction phase.

Biodiversity Baseline

The biodiversity in Rembang Regency is enriched by the presence of nature reserves, nature tourism parks, and strategic areas for environmental functions and support. The nature reserve in Rembang Regency is the Butak Mount Nature Reserve, covering an area of 45.10 hectares. This reserve was established based on the Decree of the Minister of Agriculture of the Republic of Indonesia No. 55/KPTS/UM/2/1975, dated 17 February 1975, which designated Plot 47 in the Butak Mount Forest area as a nature reserve.

The nature tourism park in Rembang Regency is the Sumber Semen Nature Tourism Park, spanning 17.10 hectares. This park was established according to the Decree of the Minister of Agriculture of the Republic of Indonesia No. 54/KPTS/UM/2/1975, dated 17 February 1975, designating Plot 112b of the Sumber Semen Sale area as a nature tourism park. These areas offer natural and man-made attractions that cater to recreational and sports needs, located close to residential centers.

Additionally, strategic areas for environmental functions and support also contribute to the biodiversity of Rembang Regency. One such area is the Pasarbanggi Mangrove Area, a mangrove conservation center located in Pasarbanggi Village, Rembang District. This area is assumed to play a key role in promoting biodiversity growth and ecosystem protection.

According to the International Union for Conservation of Nature (IUCN), there are numerous species with Red List status located within the project area as well as its surrounding regions. The IUCN has identified a total of six (6) species that hold the Critically Endangered (CR) status, indicating they are at an extremely high risk of extinction in the wild. Additionally, there are four (4) species that have been classified as Endangered (EN), signifying they face a very high risk of extinction. Furthermore, nine (9) species are listed as Vulnerable, meaning they are at a high risk of endangerment in the medium term. Among these species, several are endemic to the region, including the Javan Pied Myna (*Gracupica jalla*), which is known for its striking black and white plumage, and the Javan Slit-Faced Bat (*Nycteris javanica*), a species notable for its unique facial structure and important role in local ecosystems.

Table 0-58 IUCN Redlist Species Around Project Location

No	Scientific Name	Class	Family	Category
Aves				
1	<i>Gracupica jalla</i>	AVES	STURNIDAE	CR
2	<i>Alcedo euryzona</i>	AVES	ALCEDINIDAE	CR
3	<i>Numenius madagascariensis</i>	AVES	SCOLOPACIDAE	EN
4	<i>Halcyon pileata</i>	AVES	ALCEDINIDAE	VU
5	<i>Leptoptilos javanicus</i>	AVES	CICONIIDAE	VU
6	<i>Acridotheres javanicus</i>	AVES	STURNIDAE	VU
7	<i>Centropus nigrorufus</i>	AVES	CUCULIDAE	VU
Mammal				
1	<i>Manis javanica</i>	MAMMALIA	MANIDAE	CR
2	<i>Rhinoceros sondaicus</i>	MAMMALIA	RHINOCEROTIDAE	CR
3	<i>Macaca fascicularis</i>	MAMMALIA	CERCOPITHECIDAE	EN
4	<i>Panthera tigris</i>	MAMMALIA	FELIDAE	EN
5	<i>Nycteris javanica</i>	MAMMALIA	NYCTERIDAE	VU
6	<i>Panthera pardus</i>	MAMMALIA	FELIDAE	VU

No	Scientific Name	Class	Family	Category
7	<i>Trachypithecus auratus</i>	MAMMALIA	CERCOPITHECIDAE	VU
Reptile				
1	<i>Chitra chitra</i>	REPTILIA	TRIONYCHIDAE	CR
2	<i>Crocodylus siamensis</i>	REPTILIA	CROCODYLIDAE	CR
3	<i>Cuora amboinensis</i>	REPTILIA	GEOEMYDIDAE	EN
4	<i>Python bivittatus</i>	REPTILIA	PYTHONIDAE	VU
5	<i>Ophiophagus hannah</i>	REPTILIA	ELAPIDAE	VU

Source : International Union for Conservation of Nature (IUCN)

The Landoh Landfill is surrounded by community plantations, namely sugar cane plantations and moorlands. Based on initial observation and information from local community, there is no presence of flora and fauna considered important, protected, or endangered. There is no reported disturbance from wild animals at the Landoh landfill. However, the area does experience an influx of rodents, such as rats, which can have an impact on community health as well as flies that are frequently found on the landfill cells and in the trees around the landfill.

Social Baseline

The Landoh Landfill is located in Landoh Village, Sulang District, Rembang Regency. Before the landfill began operations in 1997, the site was a grassy area used by the local community for grazing their livestock. Currently, the existing condition of the landfill is surrounded by moor land and sugarcane fields. The nearest residential area, which existed before the establishment of the Landoh Landfill, is approximately 300 m away.

In the preparation of the FS for this project, social aspects were considered by dividing the environmental impact area into two, directly affected areas and indirectly affected areas. The directly affected area is defined as the zone within a 500 m radius from the project site, encompassing residential areas, socio-economic activities, and socio-cultural activities. Meanwhile, the indirectly affected area covers the zone within a radius of 500 m to 1.0 kilometre (km), encompassing residential areas, socio-economic activities, and socio-cultural activities. This distinction is crucial to understand the scope and scale of the project's potential social impacts..

Based on the above criteria, the areas classified as directly affected villages are Landoh, Kerep, and Glebeg. Meanwhile, the indirectly affected include the villages of Turusgede and Kumendung. The areas included in the study location are detailed in the following table:

Table 0-59 Study Location

No	Sub District	Village	Remarks
1	Sulang	Landoh	The location of the landfill, waste transportation routes, residential areas, socio-economic and cultural activities within a 500 m radius
2		Kerep	Waste transportation routes, socio-economic activities within a 500 m radius
3		Glebeg	Socio-economic activities within a 500 m radius from Landoh landfill
4	Rembang	Turusgede	Temporary Disposal Site Location and socio-economic activities within a 500 m – 1 km radius from Landoh landfill
5		Kumendung	Socio-economic activities within a 500 m – 1 km radius from Landoh landfill

The total area of the Landoh landfill site is approximately 75,609 m², with the existing land area being 32,490 m² and the land area allocated for the landfill site development being 32,463 m². The status of the Landoh landfill site is that it is owned by the Rembang Regency Government.

Landfill

The development site for the Landoh landfill is located in Landoh Village, Sulang District, Rembang Regency. According to a letter from the Public Works and Spatial Planning Office of Rembang Regency regarding spatial planning information, 4.62 hectares of the landfill land are designated for dry land farming, and 2.44 hectares are in an area with potential for oil mining. In 2023, the Regent of Rembang Regency issued a location determination letter, No. 050/6108/2023, concerning the establishment of the Waste Processing Site in Landoh Village, Sulang District, Rembang Regency, covering an area of 7.56 hectares. The letter also states that the land used is owned by the Rembang Regency Government, with eight certificates of Use Rights. Additionally, Rembang Regency Regional Regulation No. 2 of 2023 on the Regional Spatial Plan for Rembang Regency 2023 - 2043 mentions that the Landoh landfill site is located in Sulang District.

Of the 7.56 hectares of the Landoh landfill site, approximately 32,490 square metres (m²) is the existing landfill area, and 32,463 m² is designated for the expansion of the landfill site, currently in the form of moor land and sugar cane plantation. Of the land for the expansion of the Landoh landfill, 10,656 m² is former community-owned land that was acquired in 2021 but is still being utilized by the previous owners to plant sugar cane. Discussions have been held with the DLH Rembang Regency and the former landowners to ensure that once the development begins, the former owners will no longer use the land.

The temporary landfill will be constructed in Pedak Pulo, Rembang, which is approximately 1.41 km from the Landoh landfill. Administratively, the location of this temporary landfill is situated in Turusgede Village, Rembang Sub-district, Rembang Regency. The estimated area to be used for the temporary landfill is 1 hectare, with ownership under the regency government. The existing condition of the site is dominated by mixed vegetation and based on the team's observations and information from the Rembang Regency Environmental Agency, there is no community activity within the site.

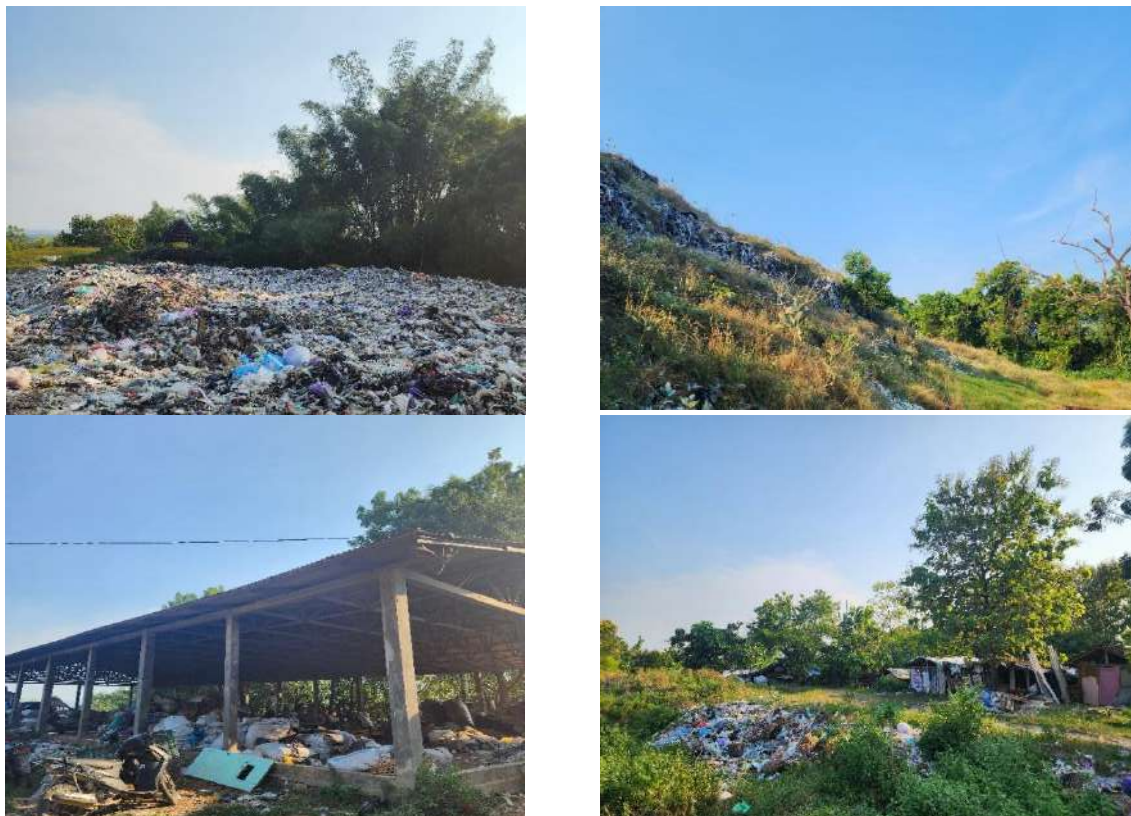


Figure 0-1 Existing Condition in Landoh Landfill

Demographic

There are five villages within the social boundary area, Landoh, Kerep, Glebek, Turusgede, and Kumendung, which are part of two districts, namely Sulang Sub District and Rembang Sub District. These five villages are within a radius of 500 - 1000 m from the Landoh landfill site. Landoh Village has a relatively high population density of 628 people per square kilometre (km²), the second highest after Kumendung Village, which has a population density of 701 people per km². Landoh Village and Turusgede Village have a sex ratio of less than 100, indicating a higher male population compared to the female population, while the other villages have a sex ratio of more than 100, indicating a higher female population compared to the male population.

Table 0-60 Population of Affected People

Location	Category		2021	2022	2023
Glebeg	Area (km2)		366.93	366.93	366.93
	Gender	Men	1,022	1,037	1,039
		Women	956	970	979
	Total		1,978	2,007	2,018
	Sex Ratio		106.90	106.91	106.13
	Density (People/km2)		539	547	550
Landoh	Area (km2)		417.12	417.12	417.12
	Gender	Men	1,263	1,309	1,298
		Women	1,274	1,324	1,321
	Total		2,537	2,633	2,619
	Sex Ratio		99.14	98.87	98.26
	Density (People/km2)		608	631	628
Kerep	Area (km2)		474.01	474.01	474.01
	Gender	Men	789	797	807
		Women	760	754	758
	Total		1,549	1,551	1,565
	Sex Ratio		103.82	105.70	106.46
	Density (People/km2)		327	327	330
Sulang Sub District	Area (km2)		8,453.99	8,453.99	8,453.99
	Gender	Men	19,538	19,671	19,780
		Women	19,586	19,661	19,828
	Total		39,124	39,332	39,608
	Sex Ratio		99.75	100	100
	Density (People/km2)		463	465	469
Turusgede	Area (km2)		423	423	423
	Gender	Men	1,165	988	986
		Women	1,204	1,006	997
	Total		2,369	1,994	1,983
	Sex Ratio		96.76	98.21	99
	Density (People/km2)		560	472	469
Kumendung	Area (km2)		226	226	226
	Gender	Men	747	788	794
		Women	766	796	790
	Total		1.513	1.584	1.584

Location	Category	2021	2022	2023
	Sex Ratio	98	98.99	101
	Density (People/km2)	670	701	701
Rembang Sub District	Area (km2)	5,376	5,376	5,376
	Gender	Men	45,687	45,527
		Women	46,218	46,091
	Total	91,905	91,618	91,555
	Sex Ratio	98.85	99	99
	Density (People/km2)	1,710	1,704	1,703

Source: Sulang Sub District in Figure 2021 – 2023 and Rembang Sub District in Figure 2021 – 2023

Table 0-61 *Table 0-61* presents data on the population distribution by age in Sulang Subdistrict, Rembang Subdistrict, and Rembang Regency. The dependency ratio for all three areas is the same, at 43, which means that for every 100 people of working age support 43 people of unproductive age.

Table 0-61 Population Distribution Based on Age and Sex in Rembang Regency (2020 – 2023)

Location	Age Category	2020			2021			2022			2023		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Sulang Sub District	Age 0-14	n.a*	n.a*	7,837	3,926	3,820	7,746	3,884	3,784	7,668	3,957	3,857	7,814
	Age 15-64	n.a*	n.a*	27,802	13,993	13,782	27,775	13,998	13,767	27,765	14,036	13,817	27,853
	Age 65+	n.a*	n.a*	3,485	1,641	2,013	3,654	1,717	2,110	3,827	1,837	2,207	4,044
	Total	n.a*	n.a*	39,124	19,560	19,615	39,175	19,599	19,661	39,260	19,830	19,881	39,711
Rembang Sub District	Age 0-14	n.a*	n.a*	20,462	10,495	9,814	20,309	10,428	9,753	20,181	10,664	10,012	20,676
	Age 15-64	n.a*	n.a*	64,781	32,288	32,669	64,957	32,434	32,736	65,170	32,647	32,932	65,579
	Age 65+	n.a*	n.a*	6,662	3,101	3,912	7,013	3,258	4,124	7,382	3,502	4,340	7,842
	Total	n.a*	n.a*	91,905	45,884	46,395	92,279	46,120	46,613	92,733	46,813	47,284	94,097
Rembang Regency	Age 0-14	70,610	66,663	137,273	69,991	66,172	136,163	69,467	65,778	135,245	70,972	67,584	138,556
	Age 15-64	230,662	227,006	457,668	231,240	227,334	458,574	231,964	227,779	459,743	233,256	229,139	462,395
	Age 65+	23,321	27,071	50,392	24,522	28,507	53,029	25,765	30,017	55,782	27,642	31,573	59,215
	Total	324,593	320,740	645,333	325,753	322,013	647,766	327,196	323,574	650,770	331,870	328,296	660,166

Source: Sulang Sub District in Figure 2021 – 2023; Rembang Sub District in Figure 2021 – 2023; and Rembang Regency in Figure 2021 – 2023

Note: n.a = data not available

The majority of the residents in Landoh Village adhere to Islam, according to information from the Secretary of Landoh Village. Islam is also the predominant religion in Sulang Subdistrict and Rembang Subdistrict. In Rembang Regency, the Muslim population reaches 640,944 people, which is approximately 99% of the total population in the Regency.

Table 0-62 Population Percentage Based on Religion in Rembang Regency (2020 – 2022)

Religion	Sulang Sub District			Rembang Sub District			Rembang Regency		
	2020 (%)	2021 (%)	2022 (%)	2020 (%)	2021 (%)	2022 (%)	2020 (%)	2021 (%)	2022 (%)
Islam	99.79	99.81	99.79	96.47	96.28	96.66	99.01	99.06	99.08
Protestant	0.16	0.16	0.18	1.70	1.83	1.67	0.49	0.48	0.47
Catholic	0.04	0.03	0.03	1.51	1.56	1.38	0.38	0.36	0.35
Hindu	0.00	0.00	0.00	0.04	0.04	0.04	0.01	0.01	0.01

Religion	Sulang Sub District			Rembang Sub District			Rembang Regency		
	2020 (%)	2021 (%)	2022 (%)	2020 (%)	2021 (%)	2022 (%)	2020 (%)	2021 (%)	2022 (%)
Budha	-	-	-	0.23	0.23	0.20	0.08	0.07	0.07
Konghucu	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01
Others	0.01	-	-	0.05	0.05	0.05	0.03	0.02	0.02

Source: Rembang Regency in Figure 2021 – 2023

The education level of the community in Rembang Regency, including in the sub-districts of Sulang and Rembang, is predominantly elementary school graduates. In 2023, junior high school graduates constituted the second highest educational attainment in Sulang Sub-district, with 8,129 individuals, while senior high school graduates were the second highest in Rembang Sub-district, with 19,972 individuals. The population based on education level is presented in the following table.

Table 0-63 Population by Education Level in Rembang Regency

Education Level	Sulang Sub District		Rembang Sub District		Rembang Regency	
	2022	2023	2022	2023	2022	2023
No school	6,035	6,113	19,649	20,725	133,720	140,248
Not finished elementary school yet	4,212	4,196	6,973	8,740	76,392	74,761
Finished elementary school	14,139	13,997	20,675	20,292	200,880	197,841
Junior High School	7,872	8,129	14,026	13,835	122,351	126,893
Senior High School	5,448	5,860	19,398	19,972	86,346	90,941
D-I/D-II	138	131	448	440	1,801	1,757
D-III	274	283	1,542	1,564	4,636	4,731
D-IV/S1	1,165	1,272	6,506	6,781	20,027	21,513
S2	40	47	333	358	794	894
S3	1	2	5	7	19	24

Source: Rembang Regency in Figure 2022 – 2023

Socio Economic

The unemployment rate in Rembang Regency was quite high in 2020 and 2021, likely due to the impact of COVID-19, which led to workforce reductions. However, in 2022 and 2023, the unemployment rate in Rembang Regency began to decrease, reaching 2.6 in 2023. A detailed breakdown of the population based on their economic activities is presented in table below **Table 0-16**.

Table 0-64 Population Based on Their Economic Activity in Rembang Regency (2023)

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Economically Active	228.091	152.074	380.165	n.a	n.a	362.020	221.038	161.299	382.337	228.091	152.074	380.165
Working	222.044	148.225	370.269	n.a	n.a	348.727	217.430	158.184	375.614	222.044	148.225	370.269
Unemployment	6.047	3.849	9.896	n.a	n.a	13.293	3.608	3.115	6.723	6.047	3.849	9.896
Not Economically Active	33.300	109.130	142.430	n.a	n.a	n.a	34.883	99.614	134.497	33.300	109.130	142.430
Attending School	15.038	13.988	29.026	n.a	n.a	n.a	16.290	16.210	32.500	15.038	13.988	29.026
Housekeeping	4.859	86.106	90.965	n.a	n.a	n.a	6.911	71.960	78.871	4.859	86.106	90.965
Others	13.403	9.036	22.439	n.a	n.a	n.a	11.682	11.444	23.126	13.403	9.036	22.439

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total	261.391	261.204	522.595	n.a	n.a	n.a	255.921	260.913	516.834	261.391	261.204	522.595
Tingkat Pengangguran Terbuka	6.40	2.45	4.83	3.69	4.83	3.67	1.63	1.93	1.76	2.65	2.53	2.60

Source: Rembang Regency in Figure 2021 – 2024

Rembang is one of the largest sugar and tobacco producing regions in Central Java. As shown in **Table 0-17** and **Table 0-18**, the area and production of sugar cane and tobacco in Rembang are the higher compared to other agricultural and plantation crops. The Landoh Landfill itself is surrounded by sugar cane plantations, with the area in Sulang Subdistrict reaching 2,250 hectares in 2023, producing 66,983 tonnes/year of sugar. In addition to sugar cane, there are tobacco plantations with an area and production in Sulang Subdistrict reaching 1,738 hectares and 3,824 tonnes/year, respectively.

The month of May marks the harvest season for sugarcane, which is widely cultivated by the community around the Landoh Landfill. Sugarcane has an annual harvest cycle. This year, the price of sugarcane is expected to reach IDR 6,800–7,000 per kilogram, making this year's harvest season better compared to the previous year.

Table 0-65 Harvested Area of Vegetables in Rembang Regency (Ha) (2020 – 2023)

Commodity	Sulang Sub District				Rembang Sub District				Rembang Regency			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Shallot	-	-	3	7	2	-	2	1	153	140	125	125
Big Chili	37	4	-	-	1	2	-	1	692	64	41	5
Curly Chili	-	-	12	9	-	-	-	-	-	-	211	669
Cayenne Pepper	53	18	22	9	-	2	-	4	1.261	1,268	1.351	1.548
Tomato	63	35	2	3	1	1	-	1	153	109	75	74
Cucumber	92	8	-	-	1	1	-	-	160	60	-	-
Water Spinach	-	-	-	5	-	-	-	2	-	-	105	151
Eggplant	57	47	5	5	1	-	-	2	170	107	84	57
Coconut	628	575	544	529	158	113	101	101	3.927	3.772	6.472	6.321
Sugar Cane	1.978	1.978	2.237	2.250	490	557	683	670	43.390	43.422	8.972	8.934
Tobacco	1.432	1.450	1.448	1.738	85	48	47	47	9.483	8.997	5.207	6.328

Source: Rembang Regency in Figure 2021 – 2024

Table 0-66 Production of Vegetables in Rembang Regency (2020 - 2023)

Commodity	Sulang Sub District				Rembang Sub District			
	2020	2021	2022	2023	2020	2021	2022	2023
Shallot	-	9	732	732	220	-	100	100
Big Chili	906	112	-	-	60	51	70	70
Curly Chili	-	-	532	532	-	-	-	-
Cayenne Pepper	1.216	470	444	444	-	20	58	58
Tomato	1.193	384	450	450	18	2	18	18

Commodity	Sulang Sub District				Rembang Sub District			
	2020	2021	2022	2023	2020	2021	2022	2023
Cucumber	779	38	-	-	42	6	-	-
Water Spinach	-	-	900	900	-	-	280	280
Eggplant	1.521	611	1.250	1.250	28	-	305	305
Coconut	274	247	247	226	22	59	59	64
Sugar Cane	10.824	11.185	12.242	66.983	1.942	22	2.706	2.654
Tobacco	3.007	2.610	2.606	3.824	136	72	71	75

Source: Rembang Regency in Figure 2021 – 2024

The livestock population in Rembang Regency includes beef cattle, goats, sheep, horses, native chickens, layer chickens, broiler chickens, and ducks. Broilers are the most widely farmed poultry in both Sulang Subdistrict and Rembang Subdistrict. The broiler population has consistently increased every year, reaching 263,250 in Sulang Subdistrict and 247,000 in Rembang Subdistrict in 2023.

Table 0-67 Livestock Population in Rembang Regency (2020 – 2023)

Livestock	Sulang Sub District				Rembang Sub District			
	2020	2021	2022	2023	2020	2021	2022	2023
Beef Cattle	11.598	12.161	12.469	12.532	8.589	8.821	9.036	9.101
Goat	14.544	14.813	15.744	15.771	12.409	12.633	13.452	13.476
Sheep	7.807	8.045	8.260	8.302	8.812	9.050	8.814	9.309
Horse	598	391	280	-	123	95	52	36
Native Chicken	62.986	63.010	63.034	63.042	79.364	79.388	79.412	79.420
Layer Chicken	1.825	3.000	3.500	3.500	-	3.000	3.000	3.000
Broiler Chicken	100.800	193.500	263.250	263.250	206.000	235.000	247.000	247.000
Duck	-	-	500	500	3.400	34.340	34.000	34.000

Source: Rembang Regency in Figure 2021 – 2024

As a region located on the northern side of Java Island, Rembang Regency directly borders the Java Sea to the north. This geographical feature has resulted in many people making their living as fishermen. In Rembang Regency, fishermen are categorized into three types: juragan (owners), pandega (crew members), and aquaculture fishermen/cultivator. In 2023, there was a significant increase in the number of pandega in Rembang Regency, reaching a total of 18,410 people.

Table 0-68 Number of Fishermen in Rembang Regency (2022 - 2023)

Location	Skipper		Worker		Cultivator	
	2022	2023	2022	2023	2022	2023
Sulang Sub District	1	1	1	1	-	-
Rembang Sub District	1.178	1.289	-	6.134	-	-

Location	Skipper		Worker		Cultivator	
	2022	2023	2022	2023	2022	2023
Rembang Regency	4.507	4.510	386	18.410	345	1.048

Source: Rembang Regency in Figure 2023 – 2024

The fisheries in Rembang Regency are quite diverse, as reflected in the various fishing fleets used for sea fishing. According to data from the Central Statistics Agency (BPS) of Rembang Regency, the majority of fishermen use fleets with a capacity of less than 5 Gross Tonnage (GT) and outboard motors.

In Sulang District, where the Landoh Landfill is located, there is only one vessel of less than 5 GT and one outboard motor. This is because Sulang District is not situated close to the coast, and the majority of its residents earn their livelihood as farmers or planters.

Table 0-69 Number of Fishing Fleet by Tonnage in Rembang Regency

Motor Boat	Sulang Sub District		Rembang Sub District		Rembang Regency	
	2022	2023	2022	2023	2022	2023
>60 GT	0	0	0	93	0	93
30 - 60 GT	0	0	158	180	235	180
10 - 30 GT	0	0	55	63	593	565
5 - 10 GT	0	0	12	12	42	42
<5 GT	1	1	953	941	3,637	3,622
Motor Ship	0	0	225	336	870	865
Outboard Motors	1	1	953	953	3,637	3,637

Source: Rembang Regency in Figure 2023 – 2024

The fishing gear used by fishermen in Rembang Regency includes *payang*, *dogol*, fishing rods, *bubu* traps, danish seine, trammel nets, gill nets, and *cotok*. According to data from the Central Statistics Agency (BPS) of Rembang Regency, the most widely used fishing gear are *bubu* traps and *cotok*, with 1,952 and 1,978 units respectively in 2023. The detailed number of fishing gear used by fishermen in Rembang Regency is presented in **Table 0-70**.

Table 0-70 Number of Fishing Gear in Rembang Regency

Fishing Equipment	Sulang Sub District		Rembang Sub District		Rembang Regency	
	2022	2023	2022	2023	2022	2023
Payang	-	-	-	8	-	18
Dogol	-	-	298	298	515	515
Pancing	-	-	30	30	121	121
Bubu	1	1	894	894	1,952	1,952
Cantrang	-	-	213	336	219	342
Trammel Net	1	1	1,184	1,184	1,719	1,719
Jaring Insang	1	1	361	361	1,367	1,367
Cotok	-	-	219	219	1,978	1,978

Source: Rembang Regency in Figure 2023 – 2024

The aquaculture widely developed by aquaculture fishermen in Rembang Regency includes milkfish, catfish, mujair, parrot fish, vannamei shrimp, and tiger shrimp. Vannamei shrimp was the most cultivated commodity in 2023, with a production of 3,191 tonnes and a production value of IDR 236,065,100,000. Although catfish had the highest production volume in 2022, amounting to 989,899

tonnes, the production value of vannamei shrimp remained the highest in 2022 at IDR 254,952,720,000 due to the inherently higher price of vannamei shrimp compared to catfish.

Table 0-71 Production (Tonne) and Production Value (Rupiah) of Pond Aquaculture in Rembang Regency (2021 – 2023)

Fish Type	Production (Ton)			Production Value (Rupiah)		
	2021	2022	2023	2021	2022	2023
Milkfish	1,521	1,499	1,505	30,425,500,000	32,972,874,000	32,576,282,000
Catfish	998,002	989,899	-	17,964,036,000	18,764,456,000	-
Mujair	132	122	49	2,112,832,000	1,945,664,000	789,984,000
Parrot Fish	263	252,853	-	6,040,996,000	6,057,919,000	-
Vanamei Shrimp	3,236	3,187	3,191	258,875,120,000	254,952,720,000	236,065,100,000
Tiger Prawns	572	556	558	45,724,960,000	44,456,160,000	41,652,380,000

Source: Rembang Regency in Figure 2023 – 2024

Scavenger in Landoh Landfill

The number of scavengers at Landoh Landfill registered by the Environmental Agency of Rembang Regency (July, 2023) is 26, comprising 12 men and 14 women. However, based on interviews (May, 2023) with the scavengers, there are approximately 39 active scavengers collecting waste at the landfill. Among these 39 scavengers, there are more women than men. About 15 of the 39 scavengers are over the age of 60.

The items collected by scavengers include hard plastic, soft plastic, paper, cardboard, and metal. According to data from the DLH Rembang Regency, the waste sorted by scavengers in July 2023 amounted to 3,754 kg of hard plastic, 5,989 kg of soft plastic, 2,828 kg of paper, 902 kg of cardboard, and 88 kg of metal. In addition to collecting these items, some scavengers also gather vegetable waste to be used as livestock feed. The quantities of waste sorted by the scavengers at Landoh landfill are presented in the following table.

Table 0-72 Name of Scavenger and Amount of Waste Sorted as of July 2023

No	Scavenger	Gender	Amount of Waste Sorted (Kg)				
			Hard Plastic	Soft Plastic	Paper	Cardboard	Metal
1	Sumin	M	123	230	120	30	5
2	Jumiasih	F	155	225	110	25	4
3	Watini	F	140	235	115	40	3
4	Suparmi	F	133	215	125	25	2
5	Aminah	F	140	230	120	20	3
6	Siti	F	155	225	65	30	4
7	Konikahah	F	145	210	50	35	2
8	Kasdi	M	225	250	90	40	2
9	Sumijan	M	175	210	80	35	4
10	Kasti	F	150	200	70	30	3
11	Sripah	F	125	215	100	40	1
12	Ngatri	F	165	263	105	55	7
13	Minto	M	170	225	160	65	8
14	Sahli	M	163	220	155	60	6
15	Jasripah	F	140	240	120	30	3

No	Scavenger	Gender	Amount of Waste Sorted (Kg)				
			Hard Plastic	Soft Plastic	Paper	Cardboard	Metal
16	Sapari	M	155	225	135	22	2
17	Dori	M	105	265	135	31	1
18	Suwati	F	106	222	98	28	3
19	Njaeni	M	145	265	110	35	3
20	Gito	M	140	235	125	45	4
21	Sumardi	M	156	251	110	43	5
22	Leles	M	145	235	135	40	3
23	Sakonah	F	115	205	115	33	2
24	Norkhamin	M	155	245	125	20	4
25	Danikah	F	103	205	75	25	2
26	Rom	F	125	243	80	20	2
Total			3,754	5,989	2,828	902	88

Source: DLH Rembang Regency, July 2023

Note : F = Female; M = Male

Based on interviews with the scavengers, almost all of the scavengers at Landoh Landfill are from the village of Landoh, with only one scavenger coming from Blora. Generally, the scavengers arrive either by walking for about 10 minutes or by riding motorcycles. They typically work every day from 07.30 to 14.00, though a few continue working until the late afternoon. The times when scavengers do not work are usually when they are ill or have important activities.

The scavengers sell their collected items to collectors around the landfill. There is no obligation for the scavengers to sell their items to a specific collector. However, some collectors provide food packages or necessities to the scavengers during Eid, which encourages the scavengers to regularly sell their items to those collectors.

At the back of Landoh landfill, there are several small huts owned by the scavengers (no more than 10 huts), used for storing the items they have collected. These huts are situated on community land, but there is no barrier such as a fence around the landfill. Next to these huts is an access road that the scavengers use to travel from the Landoh village to Landoh landfill. It will be necessary for the LG to consult with the scavengers regarding these huts and the access road, as they may be affected during the construction of the TPST especially if there is a plan to fence around the landfill.

Socio Cultural

Rembang Regency is an area located in Central Java Province, predominantly inhabited by the Javanese ethnic group, and the language used is Javanese. Rembang Regency is home to many cultural heritage sites, both tangible and intangible.

Rembang is associated with a national female hero, RA Kartini, who advocated for education, especially for women. Rembang is the final resting place of RA Kartini. Therefore, several artifacts belonging to RA Kartini are preserved in the RA Kartini Museum in Rembang, which has become a historical tourist attraction for the public.

Lasem Sub District (~ 5.8 km east of Landoh Landfill), known as “Little China” or the Heritage City, holds a wealth of socio-cultural historical records in Rembang Regency, as it is believed to be the initial landing place of the Chinese community in Java. Buildings with distinctive Chinese architecture, as well as other local structures that have integrated with other cultures such as Arab, Chinese, and Dutch, can be found in Lasem Sub District. This has led to many buildings in Lasem District being listed as

cultural heritage sites by the Ministry of Education and Culture. Verified cultural heritage sites in Rembang Regency are presented in **Table 0-73**.

Table 0-73 List of Tangible Cultural in Rembang Regency

Location	Cultural Resources	Type	Year of Recognition
Sumber Sub District (~ 6.4 km west of Landoh Landfill)	Rembang Regency Regional Development Planning Agency Office	Building	2019
	Rembang Station	Building	2019
	Cungkup Pangeran Sedo Laut Tomb	Site	2019
	Lasem Police Office	Building	2019
	Dekranasda Rembang Showroom	Building	2019
Rembang Sub District (~ 300 m north of Landoh Landfill)	Rembang Ancient Boat	Object	2010
	RA Kartini Regol Museum	Structure	2013
	RA Kartini Teaching Room	Structure	2013
	RA Kartini Museum Main Building and Hal	Building	2013
Kragan Sub District (~ 16.7 km east of Landoh Landfill)	Terjan Site	Site	2013
	Plawangan Site	Site	2020
Lasem Sub District (~ 5.8 km east of Landoh Landfill)	Tjoe An Kiong Temple	Building	2021
	Lawang Ombo / <i>Candu house</i>	Building	2021
	Bonang Site	Site	2020
	Gedongmulyo Site	Site	2021
	Babagan and Dorokandang Site	Site	2021
	Karangturi and Jolotundo Site	Site	2021
	Sumbergirang Site	Site	2021
	Lasem Canal	Structure	2021
	Tejokusumo I Tomb Lasem Jami Mosque	Building	2021
	Warehouse Ex. Lasem Station (Klungsu Warehouse)	Building	2021
	Karunia Dharma Temple	Building	2021
	Walet House I	Building	2021
	Walet House II	Building	2021
	Walet House III	Building	2021
	Walet House IV	Building	2021
	Mushola puteri Al-Hidayat	Building	2021
	St. Maria Immaculate Catholic Church	Building	2021
	GKI Lasem	Building	2021
	House in Sunan Bonang Street 66	Building	2021
	House In Masjid Tiban Street 4	Building	2021
	Willy's House	Building	2021
	PT KAI Official Home Building	Building	2021
	Dewantoro's House	Building	2021
	Yopia's House	Building	2021
	Nyah Kiok Batik House	Building	2021
	Po An Bio Temple	Building	2021
	Nyah Lasem Museum	Building	2021

Location	Cultural Resources	Type	Year of Recognition
	Nyah Lasem Guest House	Building	2021
	Kauman House No. 5	Building	2021
	Chinese Tomb	Building	2021
	Omah Idjo	Building	2021
	Oei House	Building	2021
	Lumintu Batik House	Building	2021
	Putri Marganingsih Orphanage	Building	2021
	Lasem Notary Office	Building	2021
	Indis House	Building	2021
	Limasan House	Building	2021
	Ex-Lasem Station	Building	2013
	Gie Yong Bio Babagan Temple	Building	2021
	Koditan Site	Site	2021
	Lasem Ancient City Geographical Space Unit	Area	2020
	Lasem Sector Police Office	Building	2021
	Ex Lasem Train Station Complex	Building	2021

Source: Ministry of Education and Culture, 2024

Rembang Regency also possesses several intangible heritage elements such as dances, arts, and customs that have been passed down through generations. The intangible heritage that is still practiced by the community of Rembang Regency includes the following:

- Rembang Kumandang Dance

Rembang Kumandang Dance is a form of colossal dance performed in costumes made from local Rembang products, such as batik and accessories, as part of a promotional effort.
- Gandaria Dance

Gandaria Dance was created by Mr. Rusdiyanto in 1965 and has since flourished in Krikilan Village, Sumber Sub District, Rembang Regency. The name Gandaria is taken from one of the *gendhing* (traditional Javanese musical compositions) and depicts young people who are in love.
- Tong Tong Klek

Tong Tong Klek is a musical art form where the instruments played are *kentongan* (traditional bamboo slit drums) accompanied by either traditional or modern music. This art form is usually performed during the fasting month leading up to Eid al-Fitr. The players of Tong Tong Klek parade around the city of Rembang, bringing a set of musical instruments transported on vehicles such as cars or large trucks, and equipped with a large sound system.
- Emprak

Emprak is a form of traditional drama art developed in Kaliori Subdistrict, Rembang Regency. It is called "*emprak*" because the performers stage their acts on the terrace of houses and sit on the floor (*nglemprak*). At the beginning of the performance, a dance attraction featuring child dancers of the Remong dance is presented, accompanied by gamelan music combined with instruments like the tambourine, using the rhythmic art of *kenprung*.

- **Pathol Sarang**
Pathol Sarang is a traditional wrestling art unique to Rembang. Initially popularized by fishermen in Sarang Subdistrict, this art form showcases acrobatic contests of strength between different groups. The players are prohibited from punching, kicking, or elbowing each other.
- **Keleman**
Keleman is an expression of gratitude by farmers and a hope that rice plants will be free from pests and diseases and yield a bountiful and blessed harvest. *Keleman* is performed when the rice plants begin to bear grains (enter the reproductive stage).
- **Sedekah Bumi**
Sedekah Bumi is an annual ritual conducted in every village, aimed at expressing gratitude for the abundance of blessings received from the land. The *Sedekah Bumi* ceremony takes place at various locations such as wells, rice fields, and mosques.
- **Sedekah Laut**
Sedekah Laut is similar to *Sedekah Bumi* in that it is a community practice to express gratitude, typically held around a week after Eid al-Fitr. One of the rituals in *Sedekah Laut* is called "*larung sesaji*," where offerings are scattered into the sea using miniature boats.
- **Tawur Sego**
Tawur Sego is a tradition practiced by the community with the intention of expressing gratitude, cleansing the village from calamities, and hoping for prosperity and abundant harvests. Those attending the event bring rice, which is then collected and piled into a mound at a designated location. The tradition begins with prayer led by village elders. This is followed by a performance of orek-orek dance by local residents. Subsequently, participants engage in a symbolic clash using the collected rice.
- **Ngemblok**
Ngemblok tradition is a custom where women propose to men by bringing a significant amount of food, drinks, or other items. It is believed that these offerings serve as ties or tokens to the man being proposed to. However, over time, this tradition has gradually fallen out of practice.

In addition to tangible and intangible cultural heritage, there are also sacred sites revered by the community. Inside the Landoh landfill, 15 m west of waste cells, there is a sacred site in the form of a place of *petilasan*. This place is believed by the locals to be where someone meditated for a considerable period, leaving traces on a stone. Although the stone itself no longer exists, there is a semi-permanent structure at the *petilasan* site. According to information from the DLH Rembang, the *petilasan* site is still visited by some people who perform rituals using incense during the night of 1 Suro. Sura or Suro is the first day of the month of Javanese calendar, which coincides with the first of Muharram in the Islamic calendar⁹.

Based on information gathered from village officials and community leaders of Landoh Village, the sacred site existed before the landfill was established. There have been several incidents within and around the landfill that the community has associated with this sacred site. Due to some rather serious incidents that occurred, in the early 2000s, the community requested several village leaders to perform rituals at the sacred site, one of which led to the construction of the current semi-permanent

⁹ Dian, Monika. (2015). AN ANALYSIS OF SYMBOLISM ON SATU SURO IN KERATON YOGYAKARTA. Jurnal Ilmiah Bahasa dan Sastra. 2. 153. 10.21067/jjibs.v2i2.1150.

structure. Village officials and community leaders hope that the sacred site will not be demolished or disturbed; instead, they aim to preserve and protect it for the future.

About 250 m from the Landoh landfill, there is a sacred grave known as the Tomb of Mbah Sentono. This grave is still visited, and an annual commemoration is held on the last Friday of the month of Shawwal. There is also a revered grave located approximately 800 m from the Landoh landfill, known as the Tomb of Mbah Tauhid. This grave is also frequently visited, and an annual commemoration is held every 10th of Muharram. Both figures are believed to have been instrumental in spreading Islam or in founding Landoh Village.

Initial Stakeholder Mapping

Stakeholder identification and categorization is a process of finding out who is affected by the project, including individuals, groups, local communities and other relevant parties. This can include disadvantaged or vulnerable groups. Stakeholder identification also looks to identify those who have an interest in, or influence on, the project outcome, and who can support it. DLH Rembang and the consultant did a quick initial stakeholder identification at this stage of the FS preparation. Full stakeholder identification and consultation is being carried out as part of the ESIA. The Table below provides the results of initial stakeholder identification for the Landoh Landfill development plan.

Table 0-74 Initial Stakeholder Mapping

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
Central Government					
1	Ministry of Public Works and Housing	Facilitates the budget for procurement of waste management infrastructure and facilities	Positive	Environment and improvement of public facilities	
2	Ministry of Environment and Forestry	Monitors of waste management	Positive	Environment	
Local Government					
1	Central Java Provincial Settlement Infrastructure Agency (BPPW)	Facilitates technical work of waste infrastructure construction	Positive	Environment and improvement of public facilities	
2	Planning Agency (BAPPEDA)	Facilitates and coordinates collaboration and task allocation among stakeholders	Positive	Improvement of public facilities and enhancement of regional assets and revenue.	Regional Apparatur Organisation (OPD)
3	Environment Agency (DLH)	Carries out planning and technical studies for the construction of waste management infrastructure and implement waste management	Positive	Environment and improvement of public facilities	Regional Apparatur Organisation (OPD)

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
		activities in the regency.			
4	Management Agency of Finance, Income and Assets (BPKPAD)	Provides support and land allocation for the construction of waste management facilities, and manage assets and budgets related to the landfill.	Positive	Enhancement of regional assets and revenue.	Regional Apparatur Organisation (OPD)
5	Public Works and Spatial Planning Agency (DPUPR)	Provides support and facilitation for the status change of the prospective site land and the preparation of the DED for waste management facilities.	Positive	Improvement of public facilities	Regional Apparatur Organisation (OPD)
6	Agriculture and Food Agency	Facilitates compost quality testing and the utilization of compost produced from waste processing.	Positive	Environment, improvement of agriculture production	Regional Apparatur Organisation (OPD)
7	Community and Village Empowerment Agency	Facilitates the budgeting for village-level waste management through village funds.	Positive	Improvement of community health and social welfare	Regional Apparatur Organisation (OPD)
8	Community Health Agency	Carries out government affairs in the field of environmental health related to waste management that fall under regional authority.	Positive	Community health	Regional Apparatur Organisation (OPD)
9	Trade, Cooperatives, Small and Medium Enterprises Agency	Facilitate the processed-waste product marketing	Positive	Enhancement of community economic development	Regional Apparatur Organisation (OPD)
10	Culture and Tourism Agency	Administers governance affairs in the cultural sector related to both tangible and intangible cultural heritage falls within the jurisdiction of the local government.	Positive	Tangible and intangible cultural heritage	Regional Apparatur Organisation (OPD)

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest	Notes
11	Village Government	Facilitates land preparation, community mobilization and site conditioning for waste infrastructure development, and implement the waste management activities at village level.	Positive	Environment and improvement of public facilities	The entire area of Temanggung Regency is regulated under a Regent Regulation regarding the implementation of village waste management.
NGO/LSM					
1	3R Waste Management Site (TPS3R)	As the implementing agency for waste management activities at the village level, provides employment opportunities for rural communities.	Positive	Environment	10 TPS3R management institution
Waste Bank					
1	Waste Bank Unit Group	Manages waste in their respective areas.	Positive	Increasing the economic value of waste and creating job opportunities.	In the entire area of Rembang Regency, there are a total of 108 waste bank units of which 60% are active and 1 main waste bank.
Climate Village Program					
1	Climate Village Program	In the climate program, waste management activities are implemented to reduce pollution and greenhouse gas emissions.	Positive	Reduce pollution and greenhouse gas emissions	There are 25 villages in Rembang Regency participating in the climate village program.
Community					
1	Scavengers in Landoh Landfill	Support the waste management in the landfill	Positive	Community economic	Scavengers are local communities in landfill's surrounding area.

Gender and Vulnerable Aspects

Around 54% of the scavengers at Landoh landfill are women, according to data from the DLH Rembang Regency as of July 2023. Typically, these female scavengers attend to household chores before and after their scavenging activities. Based on interviews with the scavengers, approximately 38% of them are elderly. Scavengers work every day except when they are ill, as scavenging is their primary source of livelihood.

In 2024, the Minimum Wage of Rembang Regency increased by 4.2% to IDR 2,099,689 from the previous IDR 2,015,927. In 2023, the number of poor people in Rembang Regency was 91,970, accounting for approximately 14.17% of the total population, with the poverty line set at IDR 477,514.

Public Health

Public health is crucial as it directly impacts the quality of life of the community itself. Efforts to improve and maintain public health not only have positive effects individually but also collectively contribute to the progress and stability of a community.

According to the Rembang Regency in Figure (2021), among the 10 most prevalent diseases in Rembang Regency, acute pharyngitis, acute respiratory infections, hypertension, Rheumatoid Arthritis, influenza, dyspepsia, diabetes mellitus, nerve pain, headache, dermatitis and eczema. However, acute pharyngitis tops the list with the highest number of cases reaching 69,899. This disease is characterized by inflammation in the throat, which can cause itching or pain. The table below **Table 0-75** presents detailed data on the 10 most prevalent diseases in Rembang Regency in 2020.

Dermatitis and eczema are diseases to which scavengers are particularly susceptible. According to information from officials in Landoh Village, many scavengers from the village suffer from skin diseases due to scavenging at the landfill. In Rembang Regency itself, dermatitis and eczema reached 12,124 cases in the year 2020.

Table 0-75 Number of Cases of the 10 Most Diseases in Rembang Regency (2020)

Diseases	Number of Cases
Acute Pharyngitis	69,899
Acute Respiratory Infection	24,942
Hypertension	23,674
Rheumatoid Arthritis	17,795
Influenza	16,427
Dyspepsia	15,661
Diabetes mellitus	15,534
Nerve Pain	13,967
Headache	13,602
Dermatitis and Eczema	12,124

Source: Rembang Regency in Figure 2021

In addition to the top 10 prevalent diseases, there are also several diseases that need to be anticipated due to their dangerous nature or rapid spread, including HIV/AIDS, sexually transmitted infections, dengue fever, diarrhoea, and tuberculosis. Diarrhoea is a disease that is particularly vulnerable due to consumption of contaminated water or food. According to **Table 0-76**, cases of diarrhoea in Rembang Regency reached 5,801 in 2023, with 20% of cases originating from Sulang and Rembang Subdistricts.

Table 0-76 Number of Cases of Several Diseases in Rembang Regency (2020 - 2023)

Diseases	Sulang Sub District				Rembang Sub District				Rembang Regency			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
HIV/AIDS	12	9	n.a	5	16	28	n.a	19	114	126	n.a	119
Sexually Transmitted Infections	0	0	n.a	0	0	0	n.a	12	0	2	n.a	68
DBD	10	29	n.a	2	7	41	n.a	27	58	194	n.a	182
Diarrhea	0	38	n.a	340	0	226	n.a	829	0	950	n.a	5801
TBC	27	51	n.a	79	212	199	n.a	182	584	612	n.a	1245

Source: Rembang Regency in Figure 2021 – 2024

Healthcare facilities play a crucial role in ensuring the welfare of the community by serving as pillars of public health infrastructure, providing services that contribute to a healthier society. Healthcare facilities in Rembang Regency are quite comprehensive, including hospitals, polyclinics, health centers, auxiliary health centers, and pharmacies.

Compared to Sulang Subdistrict, Rembang Subdistrict has more extensive healthcare facilities due to its central location in the Regency, making it the primary healthcare location in Rembang Regency. However, Sulang Subdistrict also supports healthcare services with 1 puskesmas and 4 auxiliary health centers. Landoh Village, where the landfill is located, has several health facilities such as 1 auxiliary health center, 2 practicing doctors and 2 practicing midwives.

Table 0-77 Health Facilities in Rembang Regency (2020 - 2021)

Health Facility	Sulang Sub District		Rembang Sub District		Rembang Regency	
	2020	2021	2020	2021	2020	2021
Hospital	0	0	3	3	3	3
Polyclinic	0	0	3	5	4	7
Public Health Center	1	1	2	2	17	17
Auxiliary Health Center	5	4	6	5	70	66
Pharmacy	2	1	13	12	41	43

Source: Rembang Regency in Figure 2024

In addition to healthcare facilities, healthcare professionals are also crucial aspects of public health. In 2023, the available healthcare professionals include doctors, dentists, nurses, midwives, pharmacists, public health workers, environmental health workers, nutritionists, and medical laboratory technicians. The number of healthcare professionals in Rembang Regency can be seen in the following table.

Table 0-78 Number of Medical Personnel in Rembang Regency (2020 - 2023)

Medical Personnel	Sulang Sub District				Rembang Sub District				Rembang Regency			
	2020	2021	2022	2023	2020	2021	2022	2023	2020	2021	2022	2023
Doctor	3	3	n.a	4	144	144	n.a	175	199	199	n.a	261
Dentist	n.a	n.a	n.a	1	n.a	n.a	n.a	7	n.a	n.a	n.a	23
Nurse	21	21	n.a	18	585	585	n.a	686	871	871	n.a	1077
Midwife	27	27	n.a	28	167	167	n.a	192	545	545	n.a	625
Pharmacist	4	4	n.a	3	82	82	n.a	72	144	144	n.a	129

Public Health Worker	2	2	n.a	4	19	19	n.a	14	42	42	n.a	53
Environmental Health Worker	2	2	n.a	3	25	25	n.a	13	42	42	n.a	42
Nutritionist	1	1	n.a	2	11	11	n.a	23	24	24	n.a	70
Medical Laboratory Technician	2	2	n.a	4	43	43	n.a	104	66	66	n.a	154

Source: Rembang Regency in Figure 2021 – 2024

Community Concern

The complaints raised by the community around Landoh landfill regarding the landfill include odor, water pollution, flies, and cleanliness of the roads. During the rainy season, the odor from the landfill is particularly disturbing to the surrounding community, with the smell of waste being detectable up to 3 km away from the landfill.

According to information from the Environmental Agency of Rembang Regency, Sulang Sub-district is one of the areas facing difficulties in accessing clean water, which makes water pollution a significant concern, including in Desa Landoh. The water source for Desa Landoh comes from PAMSIMAS through dug wells ranging from 6.0 to 9.0 m deep. Currently, only two out of four PAMSIMAS wells are still in use, as the other two have become contaminated.

The pollution of the wells in Landoh village has caused the water to turn reddish-brown in color, emit a foul odor, and foam. It is suspected that the contamination is due to leachate, resulting in a change in the types of crops grown; previously, rice was cultivated, but now crops such as fodder crops are grown for livestock feed.

During August and September, especially during mango season, Landoh village experiences a significant influx of flies. According to interviews with village officials, these flies originate from Landoh landfill, attracted by the aroma of mangoes, which causes disturbance to the residents. The flies not only swarm around mangoes but also affect food inside every household.

Complaints have also been received not only from Landoh village but also from Kerep village, where the access road to Kerep village is the same as the route taken by waste trucks to Landoh landfill. The community complains about litter scattered along this access road by the waste transport vehicles. According to information from the DLH Rembang Regency, there are indeed several waste transport vehicles that have deteriorated, which increases the likelihood of waste spilling onto the road.

Tasikmalaya

Environmental Baseline

Topography, Geology, and Geomorphology

The Tasikmalaya Regency area ranges from 0 – 2,500 meters above sea level (AMSL). Most of the region features undulating to hilly terrain, with the exception of the northern districts, which are mountainous. The slope conditions in Tasikmalaya Regency are as follows:

- Slopes of more than 40% (very steep) cover 33.39% of the regency.
- Slopes of 25 – 40% (steep) cover 20.54% of the regency.
- Slopes of 15 – 25% (moderately steep) cover 24.54% of the regency.
- Slopes of 8 – 15% (gentle) cover 14.36% of the regency.
- Slopes of 0 – 8% (flat) cover 7.17% of the regency.

The topography of Tasikmalaya Regency is generally unfavourable for the development of regional infrastructure and facilities, as 78.47% of the area has slopes ranging from moderately steep to very steep. Only 21.53% of the total area, which primarily surrounds district towns, is suitable for residential development.

Geological conditions in the Tasikmalaya Regency area can be divided into 3 (three) groups, namely:

Geology of the Depression Landscape

1. This area is filled with volcanic materials due to the volcanic emergence of Mount Galunggung, Mount Sawal, and Galunggung Cakrabuana.
2. Landscape Geology of Folded Mountains and Faults
3. The rocks in this area are different, both in type and nature and can be divided into two groups, namely:
 - First group: Limestone rocks
 - Second group: Marine Sandstone
4. Landscape Geology of the South Coast Plain
5. This material consists of clayey sandstone, limestone, and beach sand sediments, sometimes in the form of coastal swamps.

Based on its geomorphological conditions, the Tasikmalaya Regency area can be grouped into 4 (four) units, namely:

High Relief Volcanic Unit

Most rocks are formed from volcanic eruptions and have a radial flow pattern. The Ciwulan River accommodates almost all of this unit's tributaries. This unit stretches like a circular horse's hoof and opens towards the South.

Sedimentary Hills Unit

This unit is distributed in high and medium relief with rocks as clastic sediments, with a dendritic and almost parallel flow pattern. This unit area is drained by five rather large rivers almost parallel to the south and occupies the central part of the volcanic hill unit's footprint.

Medium Relief Kara Unit

This unit consists of limestone, overall has a dendritic flow pattern, and several rivers flow below the ground surface. This unit spreads below the ground surface in a circle of folded sedimentary hill units.

Peneplain Unit

This unit consists of volcanic rocks and the oldest clastic sediments found in Tasikmalaya, has low relief, and has a flow pattern almost parallel to the river that accommodates it.

Based on the rock formations, the Tasikmalaya Regency area consists of 4 (four) formations, namely Jampang Formation

The rocks consist of volcanic eruptions and are interbedded with sandstone, limestone, siltstone, and claystone, as well as several rocks above. This formation is of lower Miocene age and has a span with rocks composed of Acid Tuff interbedded with limestone.

Pamutuan Formation

The only member of this formation is Calcarene, which is classic limestone interspersed with marl and is Middle Miocene in age.

Barrier Formation

This formation consists of sandstone and claystone with inserts of calcareous sandstone, sandy limestone, breccia, and conglomerate; the lower part is dominantly lithic sandstone, and towards the top is dominantly marlstone.

Span Formation

This formation consists of tuffaceous sandstone, calcareous sandstone with inserts of tuff breccia, conglomerate, sandstone, claystone, well-layered tuff. Sukaraja is included in this formation, the rocks are reef limestone interspersed with sandy limestone.

The distribution of soil types in Tasikmalaya Regency can generally be classified into 6 soil types, namely alluvial, brown forest, andosol, podzolic merah kuning, latosol and regosol. For more details, see **Table 0-79**.

Table 0-79 Distribution of Soil Types by District

No	District	Soil Type	No	District	Soil Type
1	Cipatujah	Alluvial	26	Sukarame	Brown Forest
		Brown Forest			Podsol Merah Kuning
		Podsol Merah Kuning	27	Cigalontang	Andosol
2	Karangnunggal	Alluvial			Latosol
		Brown Forest			Podsol Merah Kuning
		Podsol Merah Kuning	28	Leuwisari	Andosol
3	Cikalong	Alluvial			Latosol
		Brown Forest			Podsol Merah Kuning
		Podsol Merah Kuning			Regosol
4	Pancatengah	Brown Forest	29	Sariwangi	Andosol
		Podsol Merah Kuning			Latosol
5	Cikatomas	Brown Forest			Podsol Merah Kuning
		Podsol Merah Kuning			Regosol
6	Cibalong	Brown Forest	30	Padakembang	Podsol Merah Kuning
		Podsol Merah Kuning			Regosol
7	Parungponteng	Brown Forest	31	Sukaratu	Andosol
		Podsol Merah Kuning			Regosol
8	Bantarkalong	Podsol Merah Kuning	32	Cisayong	Andosol
9	Bojongasih	Brown Forest			Latosol
		Podsol Merah Kuning			Regosol
10	Culamega	Podsol Merah Kuning	33	Sukahening	Andosol
11	Bojonggambir	Podsol Merah Kuning			Alluvial
12	Sodonghilir	Podsol Merah Kuning			Latosol
13	Taraju	Podsol Merah Kuning			Regosol
14	Salawu	Podsol Merah Kuning	34	Rajapolah	Alluvial
15	Puspahiang	Podsol Merah Kuning			Latosol
16	Tanjungjaya	Brown Forest			Regosol
		Podsol Merah Kuning	35	Jamanis	Andosol
17	Sukaraja	Brown Forest			Alluvial
		Podsol Merah Kuning			Latosol
18	Salopa	Brown Forest			Regosol
		Podsol Merah Kuning	36	Ciawi	Andosol
19	Jatiwaras	Brown Forest			Latosol
		Podsol Merah Kuning			Regosol
20	Cineam	Podsol Merah Kuning	37	Kadipaten	Andosol
		Regosol			Alluvial
21	Karangjaya	Podsol Merah Kuning			Latosol
22	Manonjaya	Podsol Merah Kuning	38	Pagerageung	Andosol
		Regosol			Alluvial
23	Gunungtanjung	Brown Forest			Latosol

No	District	Soil Type	No	District	Soil Type
		Podsol Merah Kuning			Andosol
		Regosol			Latosol
24	Singaparna	Podsol Merah Kuning	39	Sukaresik	Alluvial
		Regosol			Latosol
25	Mangunreja	Podsol Merah Kuning			Regosol

Source: RTRW Tasikmalaya Regency, 2018-2038

Hydrology

Hydrological conditions based on function in Tasikmalaya Regency are divided into water sources (raw water) from rivers, springs and lakes.

River

The river areas in Tasikmalaya Regency consist of large watersheds and small rivers, which are part of a drainage system influenced by topographic conditions and physiographic structure. The Ciwulan Watershed (DAS) is a source of clean surface water traversing Mangunreja District. The distance between the spring water Ciwulan River and the TPA Nangkaleah is around 20 km.

Water springs

The only groundwater source in Tasikmalaya Regency is a spring Tasikmalaya Regency is a spring which is used as raw water for drinking water with locations spread in Tasikmalaya Regency. Based on RTRW Tasikmalaya Regency 2018 - 2038, there are 97 water springs that spread across districts in Tasikmalaya Regency, namely in Leuwisari, Sariwangi, Parungponteng, Puspahiang, Sodonghilir, Pancatengah, Cikalong, Cipatujah, Bantarkalong, Cisayong, Sukahening, Sukaresik and Pagerageung.

Lakes

There are 39 lakes that are used for agricultural and tourism activities with total area of the lakes is 139.02 Ha (RTRW Tasikmalaya Regency, 2018).

Climate

The average annual temperature of Tasikmalaya Regency in the lowland areas is 34°C with humidity of 50%. Meanwhile, in the highland areas, the temperature is 18°C – 22°C with humidity ranging from 61% – 73%. The average yearly rainfall is 2,171.95 mm, with an effective number of rainy days during one year of 84 days. The highest rainfall occurs in November, with the rainy season between October – May and the dry season between June and September. For more detail on the distribution of rainfall, see **Table 0-80**.

Table 0-80 *Distribution of Rainfall by Districts in Tasikmalaya Regency*

No	Rainfall	District
1	2500 – 3000 mm/year	Sukaraja, Cibalong, Salopa, Pagerageung, Ciawi and Jamanis
2	3000 – 3500 mm/year	Cipatujah, Bantarkalong, Karangnunggal, Salopa, Sodonghilir, Cineam and Manonjaya
3	3500 – 4000 mm/year	Bojonggambir, Sodonghilir, Singaparna, Cisayong, Rajapolah, Cikalong, Pancatengah, Cikatomas, part of Pagerageung area
4	Above 4000 mm/year	Taraju, Salawu, Cigalontang, Leuwisari and Cisayong

Source: RTRW Tasikmalaya Regency, 2018-2038

Disaster risk

The Regency/City Disaster Risk Index is the result of calculations for multiple threats and is ranked based on the total score for Tasikmalaya Regency in 2022, which is 174.11 and is categorized as high risk. Moreover, based on Indonesian Disaster Risk Index (IRBI, 2023) Tasikmalaya is ranked 3rd of the district/city most vulnerable to natural disasters with an index of 159.14. Furthermore, according to the Risk Index per Threat:

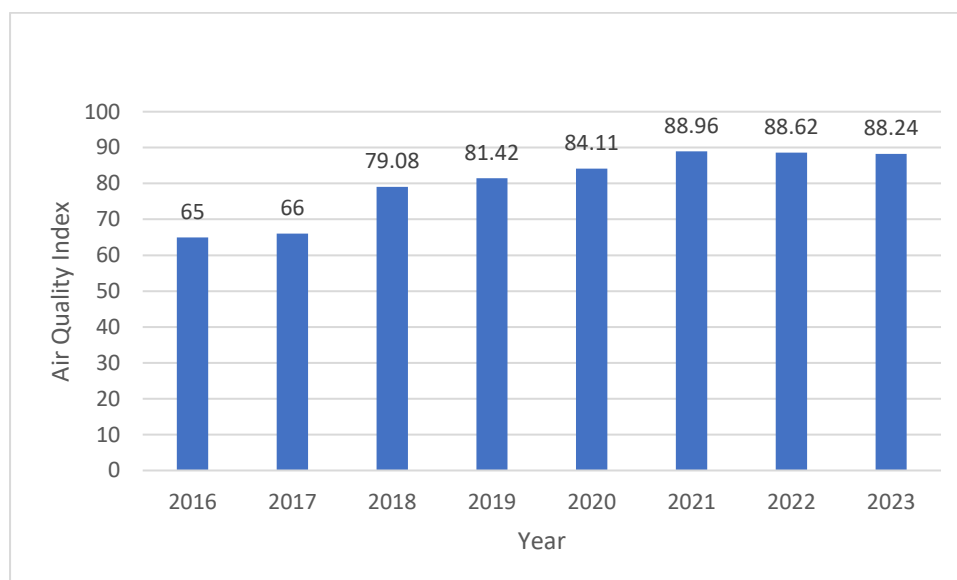
1. Earthquake Disaster Risk Index (13.95 classified as HIGH)

2. Flood Disaster Risk Index (21.70 classified as HIGH)
3. Tsunami Disaster Risk Index (15.50 classified as HIGH)
4. Forest and Land Fires Disaster Risk Index (23.25 classified as HIGH)
5. Landslide Disaster Risk Index (15.50 classified as HIGH)
6. Extreme Waves and Abrasion Disaster Risk Index (23.25 classified as HIGH)
7. Drought Disaster Risk Index (23.25 classified as HIGH).
8. Extreme Weather Disaster Risk Index (8.78 classified as MEDIUM)

Air quality

The Environmental Agency of Tasikmalaya Regency launched the Environmental Management Performance Information 2023 document. This comprehensive document details the strategies and measures required for protecting and preserving the environment at the regional level. The air quality index value of 88.24 indicates that air quality in Tasikmalaya in 2023 is categorized as 'good', shown in **Figure 0-2**.

Figure 0-2 Air Quality Index Tasikmalaya Regency



Traffic

The project is located in the Mangunreja District, bordering the southern side of the Singaparna District, which is the administrative center of Tasikmalaya Regency. Based on physical conditions, the road access to the location is fully paved with asphalt. The distance between the center of Tasikmalaya Regency and the project site is approximately 6 km, which translates to a travel time of about 15 to 20 minutes, depending on traffic conditions. However, the road is quite narrow, around 3 – 4 m, along Cipongol – Cikeusal Street stretches for 2.5 km from the Mangunreja Highway. Although Cipongol – Cikeusal Street is not a major road, it is important to be cautious if there are two vehicles approaching from opposite directions.

Traffic conditions along the route to the TPA Nangkaleah are typically only congested on Mangunreja Highway, which is the main thoroughfare leading to the central area of Tasikmalaya Regency. Traffic density on this highway increases during peak hours. In contrast, as vehicles turn from Mangunreja

Highway onto Cipongal - Cikeusal Street, the traffic significantly decreases. This road traverses a series of villages and is primarily used for local access rather than through traffic. This results in a generally low traffic volume in the immediate vicinity of the TPA site. The access road to TPA Nangkaleah is shown in **Figure 0-3**.

Figure 0-3 Local Road to TPA Nangkaleah



Environmental Planning

Tasikmalaya Regency's Regional Medium Term Development Plan (RPJMD) 2021-2026 focuses on community welfare and improving environmental quality, which identifies the following:

VISION	WITH THE SPIRIT OF GOTONG ROYONG, CREATE A TASIKMALAYA DISTRICT THAT IS RELIGIOUS/ISLAMIC, COMPETITIVE AND PROSPEROUS
MISSION	Creating a conducive investment climate to encourage business development and job creation through the development of local, national, regional and global scale cooperation
OBJECTIVE	Increasing regional investment
TARGETS	Increasing Housing Availability and Access to Decent Settlement Infrastructure Increasing the quality of the living environment Increased monitoring and enforcement of environmental laws
STRATEGY	Development of Waste Systems and Management in Regency/City Areas Developing community participation in environmental and waste management

POLICY DIRECTION	Increasing the quantity and quality of waste infrastructure Growing cadres of environmental and waste managers Strengthening the institutions of community self-help groups managing the environment and waste Creation and development of environmental and waste management information systems Intensification of guidance and monitoring of business managers and/or activities in environmental management Strengthening coordination with stakeholders in monitoring the imposition of sanctions

Biodiversity Baseline

Tasikmalaya Regency has high biodiversity potential, spread across various ecoregions. According to the Spatial Planning (RTRW) of Tasikmalaya Regency for 2011 – 2031, there are protected areas including protected forests, coastal conservation areas, areas around lakes, beach borders, river borders, and spring borders. According to the Main Report of the Strategic Environmental Assessment (KLHS) for the Regional Long-Term Development Plan (RPJPD) of Tasikmalaya Regency, there are 6 protected flora and 43 protected fauna species in Tasikmalaya Regency. The following table lists the protected flora and fauna found in Tasikmalaya Regency.

Table 0-81 List of Protected Flora and Fauna in Tasikmalaya Regency

No	Species Name	Local Name
Flora		
1	<i>Amorphophallus decussilvae</i>	<i>Bunga bangkai jangkung</i>
2	<i>Amorphophallus titanum</i>	<i>Bunga bangkai raksasa</i>
3	<i>Ceratolobus glaucescens</i>	<i>Palem jawa</i>
4	<i>Pinanga javana</i>	<i>Pinang jawa</i>
5	<i>Ascocentrum miniatum</i>	<i>Anggrek kebutan</i>
6	<i>Nepenthes spp.</i>	<i>Kantong semar</i>
Fauna		
1	<i>Cuon alpinus</i>	<i>Ajag</i>
2	<i>Cynocephalus variegates</i>	<i>Kubung/Tando/Walangkekes</i>
3	<i>Felis bengalensis</i>	<i>Kucing hutan/meong congkok</i>
4	<i>Hylobatidae</i>	<i>Owa/kera tidak berekor</i>
5	<i>Hystrix brachyura</i>	<i>Landak</i>
6	<i>Iomys horsfieldi</i>	<i>Bajing terbang ekor merah</i>
7	<i>Lariscus insignis</i>	<i>Bajing tanah/tupai tanah</i>
8	<i>Manis javanica</i>	<i>Trenggiling/Peusing</i>
9	<i>Muntiacus muntjak</i>	<i>Kidang/muncak</i>
10	<i>Mydaus javanensis</i>	<i>Sigung</i>
11	<i>Nycticebus caucang</i>	<i>Malu-malu</i>
12	<i>Panthera pardus</i>	<i>Macan kumbang, macan tutul</i>
13	<i>Petaurista elegans</i>	<i>Cukbo/bajing terbang</i>
14	<i>Presbytis aygula</i>	<i>Surili</i>
15	<i>Ratufa bicolor</i>	<i>Jelarang</i>
16	<i>Tragulus sp</i>	<i>kancil/pelanduk/napu</i>
17	<i>Ziphiidae</i>	<i>Lumba-lumba air laut</i>
18	<i>Accipitrinidae</i>	<i>Alap-alap</i>
19	<i>Alcedinidae</i>	<i>Raja udang</i>
20	<i>Bubulcus ibis</i>	<i>Kuntul/bangau putih</i>
21	<i>Bucerotidae</i>	<i>Julang/rangkong/enggang/kangkareng</i>

No	Species Name	Local Name
22	<i>Elanus caeruleus</i>	Alap-alap putih/tikus
23	<i>Falconidae</i>	Elang
24	<i>Spizaetus bartelsi</i>	Elang jawa
25	<i>Fregeta andrewsi</i>	Burung gunting/bintayung
26	<i>Lophozosterops javanica</i>	Burung kacamata leher abu abu
27	<i>Megalamima armillaris</i>	Tulang tumpul/bultok jawa
28	<i>Pandionidae</i>	Semua jenis <i>Pandionidae</i>
29	<i>Pavo muticus</i>	Burung merak
30	<i>Pittidae</i>	Burung paok/burung cacing
31	<i>Caretta caretta</i>	Penyu tempayan
32	<i>Chelonia mydas</i>	Penyu hijau
33	<i>Cracodylus porosus</i>	Penyu muara
34	<i>Dermochelys coriacea</i>	Penyu belimbing
35	<i>Eretmochelys imbricata</i>	Penyu sisik
36	<i>Natator depnessa</i>	Penyu pipih
37	<i>Prits</i>	Pari sentani/hiu sentani
38	<i>Anthipates spp</i>	Akar bahar, koral hitam
39	<i>Cassis cornuta</i>	Kepala kambing
40	<i>Charanica tritonis</i>	Triton terompet
41	<i>Cassis cornuta</i>	Kepala kambing
42	<i>Trochus niloticus</i>	Susur bundar
43	<i>Tridacna squamosa</i>	Kima sisik

Source: Main Report of the Strategic Environmental Assessment (KLHS) for the Regional Long-Term Development Plan (RPJPD) of Tasikmalaya Regency 2025 – 2045

Based on interviews conducted with the local community near the Nangkaleah Landfill, various flora and fauna were reported to be distributed around the project site. The flora found around the Nangkaleah Landfill includes sengon (*Albizia chinensis*), bamboo (*Bambusa* sp.), and albizia (*Falcataria moluccana*). The fauna that can be found in the vicinity of landfill can be divided into two categories: domestic and wild animal. The domestic animals found at the project location includes cats (*Felis domesticus*) and dogs (*Canis familiaris*). The wild animals found at the project location includes cicadas (Hemiptera), snakes (Serpentes), sooty-headed bulbul (*Pycnonotus aurigaster*), yellow-vented bulbul (*Pycnonotus goiavier*), spotted dove (*Spilopelia chinensis*), and civet (Viverridae).

Based on IUCN data, there are 23 identified species which have red list status (five birds, 13 mammals, and five reptiles). Of those 23 identified species, seven have Critically Endangered (CR) status, four have Endangered (EN) and 11 have Vulnerable (VU) status. The detail of the red list species can be seen in the table below.

Table 0-82 IUCN Red List Species List

No	Species Name	Class	Family	IUCN Category
1	<i>Gracupica jalla</i>	Aves	Sturnidae	CR
2	<i>Alcedo euryzona</i>	Aves	Alcedinidae	CR
3	<i>Halcyon pileata</i>	Aves	Alcedinidae	VU
4	<i>Leptoptilos javanicus</i>	Aves	Ciconiidae	VU
5	<i>Acridotheres javanicus</i>	Aves	Sturnidae	VU
6	<i>Manis javanica</i>	Mammalia	Manidae	CR
7	<i>Rhinoceros sondaicus</i>	Mammalia	Rhinocerotidae	CR
8	<i>Nycticebus javanicus</i>	Mammalia	Lorisidae	CR
9	<i>Hylobates moloch</i>	Mammalia	Hylobatidae	EN
10	<i>Panthera tigris</i>	Mammalia	Felidae	EN

No	Species Name	Class	Family	IUCN Category
11	<i>Macaca fascicularis</i>	Mammalia	Cercopithecidae	EN
12	<i>Lutrogale perspicillata</i>	Mammalia	Mustelidae	VU
13	<i>Nycteris javanica</i>	Mammalia	Nycteridae	VU
14	<i>Panthera pardus</i>	Mammalia	Felidae	VU
15	<i>Trachypithecus auratus</i>	Mammalia	Cercopithecidae	VU
16	<i>Arctictis binturong</i>	Mammalia	Viverridae	VU
17	<i>Presbytis comata</i>	Mammalia	Cercopithecidae	VU
18	<i>Manis javanica</i>	Mammalia	Manidae	CR
19	<i>Crocodylus siamensis</i>	Reptilia	Crocodylidae	CR
20	<i>Cuora amboinensis</i>	Reptilia	Geoemydidae	EN
21	<i>Gonocephalus kuhlii</i>	Reptilia	Agamidae	VU
22	<i>Python bivittatus</i>	Reptilia	Pythonidae	VU
23	<i>Ophiophagus hannah</i>	Reptilia	Elapidae	VU

Source: IUCN Red List of Threatened Species

Notes:

VU: Vulnerable

EN: Endangered

CR: Critically Endangered

Social Baseline

The Nangkaleah landfill is located in Sukasukur Village, Mangunreja Sub-district, Tasikmalaya Regency. The Nangkaleah landfill is surrounded by dry agricultural land (*tegalan*) and is situated approximately 300 m from the nearest residential area. Within a 500-m radius, several public facilities are also found, including a mosque and a school. All areas within this 500-m radius are considered directly impacted and are located in Sukasukur Village and Pasirsalam Village. The indirectly impacted area lies within a 1 km radius from the project site and encompasses four villages: Sukasukur, Pasirsalam, Sukaluyu, and Mangunreja. Public facilities within the indirectly impacted area include mosques, schools, volleyball courts, clinics, farms, and residential areas.

TPA Land

The Nangkaleah Landfill currently covers an area of 6.28 hectares, with plans to expand to 7.28 hectares to accommodate additional area for TPST. The designation of the Nangkaleah Landfill location is based on a letter from the Regent of Tasikmalaya, Number 13/729/LH.01/DLH/2021, which states that the Nangkaleah Landfill is located in Cioray Village, Sukasukur Village, Mangunreja Sub-District, Tasikmalaya Regency. This location is in accordance with the Spatial Planning (RTRW) of Tasikmalaya Regency for 2021 – 2041, as detailed in the letter from the Regent of Tasikmalaya, Number P/1171/PU.D2/DLH/2021.

The land intended for the TPST facilities is currently in the process of payment settlement, which is expected to be completed by the end of June 2024. Initially, this land was owned by eight individuals and was categorized as dryland farming. All the landowners are residents of Sukasukur Village, Mangunreja Sub-District.

Figure 0-4 The Land Intended For The TPST Facilities



Demographic

Mangunreja Sub-district covers an area of 35.21 km² and had a population of 42,725 people in 2023. The population density of Mangunreja Sub-district was 1,213 people per km² in 2023, having increased over the past four years. Sukasukur Village is the largest village in Mangunreja Sub-district, covering an area of 8.75 km² or 25% of the total area of Mangunreja Sub-district. The areas of other affected villages compared to the total area of Mangunreja Sub-district are as follows: Pasirsalam Village (22%), Sukaluyu Village (13%), and Mangunreja Village (10%). Mangunreja Village had the highest population density among the affected villages, with a density of 2,204 people per km² in 2023.

The population composition in Mangunreja Sub-district is predominantly male, as indicated by a sex ratio of 105.00 in 2023. This ratio has been increasing over the past four years, suggesting that the increase in the number of male residents is greater than that of female residents. Among the affected villages, Mangunreja Village is the only one with a sex ratio below 100. In 2023, Mangunreja Village had a sex ratio of 98.79, indicating that the number of females were higher than number of male residents. The complete population numbers for the affected villages and Mangunreja Sub-district are as follows:

Table 0-83 Population of Affected Villages

Location	Category		2020	2021	2022	2023
Sukasukur Village	Area (km ²)		8.75	8.75	8.75	8.75
	Gender	Men	3,428	3,670	3,803	3,543
		Women	3,311	3,510	3,617	3,441
	Total		6,739	7,180	7,420	6,984
	Sex Ratio (%)		103.53	104.56	105.14	102.96
	Density (People/km ²)		770	821	848	798
Pasirsalam Village	Area (km ²)		7.65	7.65	7.65	7.65
	Gender	Men	2,925	3,077	3,195	3,068
		Women	2,897	3,077	3,171	2,914

Location	Category		2020	2021	2022	2023
	Total		5,822	6,154	6,366	5,982
	Sex Ratio (%)		100.97	100.00	100.76	105.28
	Density (People/km ²)		761	804	832	782
Sukaluyu Village	Area (km ²)		4.46	4.46	4.46	4.46
	Gender	Men	2,465	2,628	2,721	2,627
		Women	2,572	2,578	2,691	2,596
	Total		5,037	5,206	5,412	5,223
	Sex Ratio (%)		95.84	101.94	101.11	101.19
	Density (People/km ²)		1,130	1,168	1,215	1,172
Mangunreja Village	Area (km ²)		3.66	3.66	3.66	3.66
	Gender	Men	4,004	4,893	4,964	4,011
		Women	4,086	4,789	4,839	4,060
	Total		8,090	9,682	9,803	8,071
	Sex Ratio (%)		97.99	102.17	102.58	98.79
	Density (People/km ²)		2,209	2,644	2,677	2,204
Mangunreja Sub-District	Area (km ²)		35.21	35.21	35.21	35.21
	Gender	Men	19,167	20,997	21,570	21,884
		Women	18,949	20,472	20,932	20,841
	Total		38,116	41,469	42,502	42,725
	Sex Ratio (%)		101.15	102.56	103.05	105.00
	Density (People/km ²)		1,083	1,178	1,207	1,213

Source:

- i. Tasikmalaya Regency in Figure 2021 – 2024
- ii. Mangunreja Sub-District in Figure 2021 – 2023
- iii. Sukasukur Village Profile 2023
- iv. Pasirsalam Village Profile 2023
- v. Sukaluyu Village Profile 2023
- vi. Mangunreja Village Profile 2023

In general, the population of productive age (15–64 years) is greater than the population aged 0–14 or 65 years and above. As shown in **Table 0-84**, all the affected villages and the Mangunreja Sub-district have seen a year-over-year increase in the number of residents of productive age.

Table 0-84 Population Distribution based on Ages

Village/ Sub-District	Age Category	2020			2021			2022		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
Sukasukur Village	Age 0-14	768	734	1,502	929	870	1,799	895	820	1,715
	Age 15-64	2,140	2,109	4,249	2,473	2,407	4,880	2,562	2,479	5,041
	Age 65+	452	416	868	268	233	501	346	318	664
	Total	3,360	3,259	6,619	3,670	3,510	7,180	3,803	3,617	7,420
Pasirsalam Village	Age 0-14	695	684	1,379	706	751	1,457	671	702	1,373
	Age 15-64	2,074	2,066	4,140	2,128	2,099	4,227	2,205	2,168	4,373

Village/ Sub-District	Age Category	2020			2021			2022		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
	Age 65+	147	138	285	243	227	470	319	304	623
	Total	2,916	2,888	5,804	3,077	3,077	6,154	3,195	3,174	6,369
Sukaluyu Village	Age 0-14	531	597	1,128	662	582	1,244	647	557	1,204
	Age 15-64	1,655	1,659	3,314	1,800	1,806	3,606	1,873	1,890	3,763
	Age 65+	277	319	596	166	190	356	201	244	445
	Total	2,463	2,575	5,038	2,628	2,578	5,206	2,721	2,691	5,412
Mangunreja Village	Age 0-14	1,492	1,385	2,877	1,280	1,123	2,403	1,154	1,036	2,190
	Age 15-64	2,501	2,498	4,999	2,821	2,815	5,636	3,389	3,271	6,660
	Age 65+	130	224	354	323	394	717	421	512	933
	Total	4,123	4,107	8,230	4,424	4,332	8,756	4,964	4,819	9,783
Mangunreja Sub-District	Age 0-14	5,452	5,243	10,695	5,283	4,883	10,166	4,972	4,571	9,543
	Age 15-64	12,262	12,297	24,559	14,270	14,047	28,317	14,749	14,352	29,101
	Age 65+	1,345	1,344	2,689	1,444	1,542	2,986	1,849	2,009	3,858
	Total	19,059	18,884	37,943	20,997	20,472	41,469	21,570	20,932	42,502

Source: Mangunreja Sub-District in Figure, 2021 – 2023

Regarding religious life, the majority of the population in Tasikmalaya Regency adheres to Islam. The regency also uses the Arabic Pegon script for writing the names of government institutions and the Hijri calendar in several official documents. This practice aims to promote the ideology of Islam Nusantara to the people of Tasikmalaya in particular and to Indonesians in general. At the Mangunreja Sub-district level, data from BPS 2023 identified one non-Muslim resident. The majority of the population in all the affected villages are followers of Islam. Detailed information on the number of religious adherents in the affected villages can be seen in **Table 0-85**.

Table 0-85 Number of People by Religion in 2022

Village/Sub-District	Islam	Protestant	Catholic	Others
Sukasukur	6,355	-	-	-
Pasirsalam	6,403	-	-	-
Sukaluyu	5,423	-	-	-
Mangunreja	9,806	-	1	-
Mangunreja Sub-District	42,610	-	1	-

Source: Mangunreja Sub-District in Figure, 2023

Social Economic

The majority of the population in Tasikmalaya Regency is employed in the agricultural sector, and this is also true on a smaller scale in the affected villages. According to the 2023 profiles of these villages, a significant portion of the community works as farmers. Data from the Mangunreja Sub-district BPS indicates that paddy fields have the largest area compared to other commodity lands, although their size has decreased from 2022 to 2023. The largest paddy fields in Mangunreja Sub-district are located in Sukaluyu Village, while Mangunreja Village has the smallest area of paddy fields in the sub-district.

The commodity that has seen an increase in both land area and production volume is coconut. The area of coconut plantations increased from 6 hectares to 54 hectares between 2020 and 2023.

Similarly, the production volume rose from 1 ton to 42 tons over the same period. The detailed land area and production volume for various commodities in Mangunreja Sub-district can be found in **Table 0-86** and **Table 0-87**.

Table 0-86 Harvesting Area of Agriculture in Mangunreja Sub-District (ha)

Comodity	2020	2021	2022	2023
Paddy Field	2,369	2,525	2,591	1,974
Cassava	-	15	8	4
Sweet Potato	-	17	14	4
Big Chili	3	15	6	9
Curly Chili	-	N/A	6	N/A
Cayenne Chili	-	9	6	9
Tomato	5	20	12	13
String Bean	3	19	5	-
Long Bean	12	19	12	14
Coconut	6	54	54	54
Coffee	12	13	13	13

Source: Tasikmalaya Regency in Figure 2021 - 2024

Table 0-87 Production of Agriculture in Affected Villages (ton)

Comodity	2020	2021	2022	2023
Paddy Field	15,480	17,627	19,843	13,615
Cassava	-	285	152	76
Sweet Potato	-	257	211	64
Big Chili	12	27	64	96
Curly Chili	-	N/A	61	N.A
Cayenne Chili	-	69	47	66
Tomato	20	182	102	115
String Bean	3	153	47	-
Long Bean	24	141	107	116
Mango	-	49		5
Durian	-	354	205	6
Orange	-	34	23	-
Banana	1,620	4,516	4,447	991
Papaya	1,104	268	370	2
Mangosteen	1,634	2,885	1,192	-
Avocado	-	129	36	-
Coconut	1	26	38	42
Coffee	-	39	16	17

Source: Tasikmalaya Regency in Figure 2021 – 2024

In addition to the agricultural and plantation sub-sectors, Tasikmalaya Regency, particularly Mangunreja Sub-district, also has livestock and fisheries sub-sectors. Livestock commodities in Mangunreja Sub-district have been declining year by year across all commodities. According to the Tasikmalaya Regency BPS, there was a drastic decrease in the population of several commodities, such as laying hens and broiler chickens, from 2021 to 2022. In the fisheries sector, the largest production commodity is tilapia, with production numbers remaining relatively stable year after year. Detailed

information on the livestock populations and fishery production in Mangunreja Sub-district can be found in Table 0-88 and Table 0-89.

Table 0-88 Livestock Population in Mangureja Sub-District

Comodity	2020	2021	2022	2023
Beef Cattle	N/A	832	175	165
Buffalo	N/A	33	98	90
Horse	N/A	27	13	12
Goat	N/A	1,529	5,142	5,141
Sheep	N/A	5,854	9,670	9,679
Native Chicken	N/A	69,706	27,628	27,626
Layer	N/A	167,455	6,377	6,381
Broiler	N/A	534,065	1,585	1,585
Manila Duck	N/A	8,871	379	380

Source: Tasikmalaya Regency in Figure 2021 - 2024

Table 0-89 Production of Fisheries in Mangunreja Sub-District

Comodity	2020	2021	2022	2023
Giant Gouramy	N/A	140	180	50
Nilem	N/A	221	221	221
Torpedo Shaped Catfish	N/A	25	305	25
Nila	N/A	3.300	3.200	3.300
Mas	N/A	1.441	672	120

Source: Tasikmalaya Regency in Figure 2021 - 2024

According to the BPS of Tasikmalaya Regency, the majority of the population is economically active, which aligns with the population distribution data indicating that most residents are of working age. In 2023, 67.83% of the population in Tasikmalaya Regency were economically active, a figure that includes both employed individuals and the unemployed. Conversely, not economically active population comprises those still in school, managing households, or engaged in other activities, accounting for 32.17% in 2023.

The unemployment rate in Tasikmalaya Regency has been decreasing over the past four years, reaching 2.83% in 2023, down from 4.95% in 2020. Male unemployment rates and female unemployment rates also decreased from 2020 to 2023. **Table 0-90**Table 0-107 shows the detailed distribution of the economically active and not economically active population in Tasikmalaya Regency, along with the unemployment trends over the past four years.

Table 0-90 Distribution of Economically Active and Not Economically Active Population

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Economically Active												
Working	520,485	356,931	877,416	520,485	356,931	877,416	N/A	N/A	901,466	551,357	350,109	901,466
Unemployment	46,022	21,268	67,290	46,022	21,268	67,290	N/A	N/A	39,247	21,725	17,522	39,247
2. Not Economically Active												
Attending School	39,905	41,170	81,075	39,905	41,170	81,075	N/A	N/A	99,231	50,889	48,342	99,231

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Housekeeping	26,921	248,819	275,740	26,921	248,819	275,740	N/A	N/A	284,615	9,886	274,729	284,615
Others	33,050	23,858	56,908	33,050	23,858	56,908	N/A	N/A	62,340	46,336	16,004	62,340
Total	666,383	692,046	1,358,429	666,383	692,046	1,358,429	N/A	N/A	1,386,899	680,193	706,706	1,386,899
Unemployment Rate	6.91%	3.07%	4.95%	6.91%	3.07%	4.95%	N/A	N/A	2.83%	3.19%	2.48%	2.83%

Source: Tasikmalaya Regency in Figure 2021 - 2024

Land Use and Description

The Nangkaleah landfill is planned to be expanded by 1 hectare to accommodate the construction of TPST . The land for this expansion was purchased from eight residents and was originally dry agricultural land (*tegalan*). During the construction phase, waste disposal will be redirected to an alternative location. There are two potential sites for the temporary landfill during construction: the first is an empty plot of land to the east of the Nangkaleah landfill, and the second is the Cinangsih landfill. The empty plot to the east of the Nangkaleah landfill is currently covered with *tegalan* and is still owned by the Tasikmalaya Regency Government.

The Cinangsih landfill is one of the options for a temporary landfill because it served as a disposal site before waste was redirected to the Nangkaleah landfill. One of the reasons for the closure of the Cinangsih landfill was the protests from the surrounding community, particularly from the police barracks, regarding the impacts caused by the landfill. Both options will require permits before they can be used as temporary landfills during the construction period.

Figure 0-5 First Option: Current Condition of Land in The East of Nangkaleah Landfill



Figure 0-6 Second Option: Current Condition of Cinangsih Landfill and Police Barrack Near Landfill



Scavengers in Existing TPA

There are 57 scavengers at the Nangkaleah landfill, with women making up 58% of the total scavenger population. According to data from the DPUTRLH Tasikmalaya Regency, only 2 scavengers are over the age of 58. All the scavengers come from Sukasukur Village, Mangunreja Sub-district. Although they come from the same village, they originate from different hamlets: 79% are residents of Ciorang Hamlet, 12% are from Kerenceng Hamlet, and 9% are from Ciandalem Hamlet.



Figure 0-7 Scavanging Activities in Landfill



Figure 0-8 Interview with Scavangers

The activities of scavengers at the Nangkaleah landfill start at 07:00 and end at 16:00. Each scavenger has their own hut, with approximately 50 plots available. Scavengers usually return home at midday for lunch and prayer, as there is no water source at the Nangkaleah landfill. They typically return to the landfill at 13:00. The collected waste is sold to a collector (Pak Heri). The types of waste usually collected by the scavengers include cups, plastic bags, sacks, cardboard, bottles, paper, cans, and metal. Scavengers can sell waste to the collector twice a week. Each sale typically earns them between Rp60,000 and Rp75,000. In addition to scavenging, some scavengers also work part-time as seasonal farm laborers.

Table 0-91 List of Scavangers in TPA Nangkaleah

No	Name	Sex	Age	Origin	No	Name	Sex	Age	Origin
1	Oyoh I	Female	50	Cioray	30	Ajay	Male	40	Cioray
2	Yani	Female	37	Cioray	31	Sandi	Male	28	Cioray
3	Itoh	Female	52	Cioray	32	Rohmanah	Female	38	Cioray
4	Mae	Female	40	Cioray	33	Imi	Female	60	Cioray
5	Anih	Female	42	Cioray	34	Neni	Female	44	Cioray
6	Idah	Female	36	Cioray	35	Binen	Male	60	Cioray
7	Anih	Female	35	Cioray	36	Eni	Female	50	Kerenceng
8	Etik	Female	40	Cioray	37	Yuni	Female	35	Kerenceng
9	Dadah	Female	41	Cioray	38	Uju	Female	47	Kerenceng
10	Lukman	Male	27	Cioray	39	Eluk	Male	56	Kerenceng
11	Engkom	Female	43	Cioray	40	Yayat	Female	42	Kerenceng
12	Engkoy	Female	40	Cioray	41	Entin	Female	40	Kerenceng
13	Nia	Female	39	Cioray	42	Dede	Female	41	Ciandalem
14	Mamah	Female	46	Cioray	43	Amir	Male	39	Ciandalem

No	Name	Sex	Age	Origin	No	Name	Sex	Age	Origin
15	Omon	Male	55	Cioray	44	Ari	Male	29	Ciandalem
16	Yani	Female	38	Cioray	45	Adang	Male	40	Ciandalem
17	Dagus	Male	35	Cioray	46	Tana	Male	22	Ciandalem
18	Ade	Female	47	Cioray	47	Dede	Female	46	Cioray
19	Ajip	Female	56	Cioray	48	Iyan	Male	44	Cioray
20	Dede	Female	43	Cioray	49	Sahman	Male	56	Cioray
21	Entin	Female	50	Cioray	50	Mamun	Male	42	Cioray
22	Ari	Female	40	Cioray	51	Ipan	Male	44	Kerenceng
23	Rohayati	Female	36	Cioray	52	Ajo	Male	41	Cioray
24	Juhandi	Male	55	Cioray	53	Yayah	Female	43	Cioray
25	Dede	Female	40	Cioray	54	Aki	Male	40	Cioray
26	Wahyu	Male	39	Cioray	55	Entang	Male	47	Cioray
27	Oyoh E	Female	44	Cioray	56	Herman	Male	39	Cioray
28	Iya	Male	49	Cioray	57	Abud	Male	40	Cioray
29	Sarip	Male	56	Cioray					

Source: DPUTRLH Tasikmalaya Regency, 2024

Based on interviews conducted with the waste collectors, it was found that the collectors employ 13 workers to assist in sorting the waste. The workforce is divided into three categories: contract workers, sorting workers, and daily workers. Contract workers are typically paid Rp1,000 per kilogram, while sorting workers and daily workers (who handle tasks such as transporting, weighing, and pressing waste) receive a daily wage of Rp80,000. The working hours for the collectors usually start at 07:00 and end at 15:30. In a month, a collector can earn around Rp10,000,000. In addition to receiving waste from scavengers, collectors also provide loans to scavengers in need. Scavengers usually repay these loans through a scheme where a portion of their earnings from selling waste to the collectors is deducted.

Socio Cultural

Tasikmalaya Regency is one of the ten regencies/cities within the Parahyangan/Priangan region. Etymologically, the word "Parahyangan" means the place of the gods. This belief has existed since the era of the Sunda Kingdom, which held that the Priangan region (the central mountain range of West Java) was a sacred area where the hyang (deities) resided. One Sundanese legend recounts that the Priangan land was created when the gods smiled and bestowed all their blessings and grace upon it. Tasikmalaya itself has a hilly topography, which significantly influences the social and cultural life in the region. One of the indigenous communities found in Tasikmalaya Regency is the Kampung Naga community. Kampung Naga is located in Neglasari Village, Salawu Sub-district, Tasikmalaya Regency, approximately 9 km from the Nangkaleah landfill site. Kampung Naga borders the Ci Wulan River (Kali Wulan), which sources its water from Mount Cikuray in the Garut area. The residents of Kampung Naga are Muslims who continue to uphold their traditional customs and ancestral beliefs.

Figure 0-9 Kampung Naga



Source: <https://kebudayaan.kemdikbud.go.id/>

One distinctive feature that sets Kampung Naga apart is the architecture of their houses, which still follows traditional practices. The houses in Kampung Naga are built on stilts and made of bamboo and wood. The roofs must use materials such as *nipah*, *ijuk*, or *alang-alang*. The floors are typically made from bamboo or wooden planks. Additionally, the houses in Kampung Naga must face either north or south, with the length of the house aligned east-west. Their walls are made from woven bamboo using the *sasag* weaving technique. It is important to note that these houses must not be painted and must not use brick materials.

Historically, Tasikmalaya Regency, formerly known as Sukapura, was one of the regions controlled by the Mataram Sultanate. According to the Charter of Sultan Agung of Mataram, Sukapura was established on the 9th of Muharram, Year Alip. In the 18th century, the Sukapura region was handed over to the Dutch East India Company (VOC). The long history of Tasikmalaya Regency has shaped the local culture, which is predominantly Sundanese and Islamic. The following table lists the tangible and intangible cultural resource that can be found in Tasikmalaya Regency.

Table 0-92 List of Tangible and Intangible Cultural Resources in Tasikmalaya Regency

No	Name	Origin/Location	Category	Year of Recognition	Picture
1	Angklung Sered	Sukaluyu Village, Mangunreja Sub-District, Tasikmalaya Regency	Intangible Cultural Resource	2020	

No	Name	Origin/ Location	Category	Year of Recognition	Picture
2	Masjid Agung Manonjaya	Manonjaya, Tasikmalaya Regency	Tangible Cultural Resource	1999	

Source: budaya.data.kemdikbud.go.id

In addition to the tangible and intangible cultural heritage found in Tasikmalaya Regency, an ancient manuscript called Naskah Sanghyang Raga Dewata, dating back to the 16th century, has been discovered in Sukaraja Sub-District. The manuscript is written on nipah leaves in Pranagari and ancient Sundanese languages. This manuscript contains myths about the creation of the universe. According to the manuscript, daylight was awakened from darkness by the power of Sang Bayu, who then created the earth, moon, sun, and stars. Humans are viewed as the microcosm of the universe, with their entire lives dedicated to following the teachings (siksa) of Sang Hyang Darma to achieve eternal heaven.

Figure 0-10 Manuscript of Sanghyang Raga Dewata



Source: <http://sribaduga.jabarpov.go.id/koleksi/item/7>

Initial Stakeholder Mapping

Stakeholder identification and categorization is a process of finding out who is affected by the project, including individuals, groups, local communities and other relevant parties. This can include disadvantaged or vulnerable groups. Stakeholder identification also looks to identify those who have an interest in, or influence on, the project outcome, and who can support it. DPUTRLH Tasikmalaya and the consultant carried out initial stakeholder identification at this stage of the FS preparation. Full stakeholder identification will be carried out in the ESIA. The results of initial stakeholder identification for the Nangkaleah Landfill & TPST development plan are provided in the table below:

Table 0-93 Stakeholder Identification

No	Name/Institution/ Organisation	Role	Influence	Interest	Notes
National Government					
1	Ministry of Public Works and Housing	Will facilitate the budgeting for the procurement of waste management infrastructure and facilities.	Positive	Environment and improvement of public facilities	
Regional Government					
1	West Jawa Provincial Infrastructure and Settlement Agency (BPPW)	Facilitate the technical work for waste management infrastructure development	Positive	Environment and improvement of public facilities	
NGO					
1	Group for Utilization and Maintenance (KPP)/Community Self-Help Group (KSM)/Village-Owned Enterprises (BUMDes)/3R Waste Management Site (TPS3R)/Village Waste Management Site (TPSD).	As the implementing agency for waste management activities at the village level, it provides employment opportunities for the local community	Positive	Environment	23 TPS3R management institutions
Educational Institute					
1	Adiwiyata Schools (Elementary, Middle, and High Schools)	Providing education and hands-on practice in waste management at schools	Positive	Environment and education	27 schools
Waste Bank					
1	Waste bank groups	Managing waste in their respective areas	Positive	Enhancing the economic value of waste and creating job opportunities	The entire region of Tasikmalaya Regency has 1 Main Waste Bank and 37 Unit Waste Banks
Community					
1	Irham Hindasah, a waste management activist	Actively helps educate the community about waste management	Positive	Environment and social	Provides education to the community on waste management through socialization and mentoring

Community Concern and Perception

The local community, particularly in Cikalapa Hamlet, has reported an unpleasant odor emanating from the small river that flows through their area. This river originates from beneath the Nangkaleah landfill. The foul smell becomes more pronounced during the dry season. Additionally, the flow of the river also irrigates the rice fields in Cikalapa Village. According to information from the Chairman of the Village Consultative Body (BPD) of Cikalapa Village, the rice in these fields grows well but is less productive due to the low yield.

Based on interviews with scavengers at the Nangkaleah landfill, they are concerned that the construction will disrupt their access to their livelihoods. Additionally, one of the options for the temporary landfill at the Cinangsih landfill may further restrict their access to their livelihoods. This concern arises because scavengers in Tasikmalaya Regency adhere to territorial principles, meaning scavengers around the Nangkaleah landfill cannot scavenge in other areas. Conversely, utilizing the Cinangsih landfill as a temporary site could provide livelihood opportunities for the community around that landfill.

Utilizing the Cinangsih landfill as one of the options for a temporary landfill also raises concerns among the community, given that it was previously closed due to protests from the local residents. Furthermore, the residential area around the Cinangsih landfill has become more densely populated, and there are now many shops and stalls along the access road to the landfill.

Public Facilities

Public facilities around the Nangkaleah landfill include schools and mosques. There are three schools and seven mosques/musholas identified within a 1 km radius of the project site. According to data from the Tasikmalaya Regency BPS, Mangunreja Sub-district has a comprehensive range of educational facilities, from primary schools to senior high schools. The level of education with the highest teacher-student ratio in Mangunreja Sub-district is Madrasah Tsanawiyah (Islamic junior high school) with a ratio of 37, meaning one teacher is responsible for 37 students. In contrast, the level of education with the lowest teacher-student ratio is senior high school, with a ratio of 11 (one teacher responsible for 11 students). **Table 0-94** provides the number of educational facilities in each affected village from 2022 to 2023.

The community in Mangunreja Sub-district is almost entirely Muslim. As a result, it is very easy to find worship facilities for Muslims in Mangunreja. According to data from the Mangunreja Sub-district BPS, Pasirsalam Village has the most worship facilities among the affected villages. **Table 0-95** provides the number of worship facilities in each affected village.

Table 0-94 Number of Educational Facilities in Affected Villages

Village/Sub-District	Category	2020/2021			2021/2022			2022/2023			2023/2024			Ratio (2023/2024)
		School	Student	Teacher	School	Student	Teacher	School	Student	Teacher	School	Student	Teacher	
Sukasukur Village	SD (Elementary school)	3	513	29	3	630	23	3	620	32	N/A	N/A	N/A	N/A
	MI (Islamic elementary school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	SMP (Junior high school)	1	162	22	1	229	18	1	234	23	N/A	N/A	N/A	N/A
	MTs (Islamic junior high school)	1	80	15	1	99	9	1	127	13	N/A	N/A	N/A	N/A
	SMA (High school)	1	84	10	1	81	7	1	66	10	N/A	N/A	N/A	N/A
	SMK (Vocational high school)	1	122	27	1	173	19	1	108	20	N/A	N/A	N/A	N/A
	MA (Islamic high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Pasirsalam Village	SD (Elementary school)	3	410	22	3	497	22	3	487	25	N/A	N/A	N/A	N/A
	MI (Islamic elementary school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	SMP (Junior high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	MTs (Islamic junior high school)	1	74	15	1	71	15	1	80	15	N/A	N/A	N/A	N/A
	SMA (High school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	SMK (Vocational high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	MA (Islamic high school)	1	53	15	1	53	15	1	52	15	N/A	N/A	N/A	N/A
Sukaluyu Village	SD (Elementary school)	1	332	12	1	335	11	2	329	11	N/A	N/A	N/A	N/A
	MI (Islamic elementary school)	1	158	9	1	144	9	1	143	9	N/A	N/A	N/A	N/A
	SMP (Junior high school)	1	52	10	1	93	8	1	121	10	N/A	N/A	N/A	N/A
	MTs (Islamic junior high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	SMA (High school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	SMK (Vocational high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	MA (Islamic high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Mangunreja Village	SD (Elementary school)	5	803	50	5	917	39	5	900	50	N/A	N/A	N/A	N/A
	MI (Islamic elementary school)	1	268	13	1	273	15	1	276	16	N/A	N/A	N/A	N/A

Village/Sub-District	Category	2020/2021			2021/2022			2022/2023			2023/2024			Ratio (2023/2024)
		School	Student	Teacher	School	Student	Teacher	School	Student	Teacher	School	Student	Teacher	
	SMP (Junior high school)	2	515	48	2	748	39	2	723	45	N/A	N/A	N/A	N/A
	MTs (Islamic junior high school)	1	219	24	1	243	30	1	251	21	N/A	N/A	N/A	N/A
	SMA (High school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
	SMK (Vocational high school)	1	50	10	1	61	4	1	19	7	N/A	N/A	N/A	N/A
	MA (Islamic high school)	-	-	-	-	-	-	-	-	-	N/A	N/A	N/A	N/A
Mangunrejo Sub-District	SD (Elementary school)	19	3105	172	19	3608	141	20	3.556	225	20	3.603	163	22
	MI (Islamic elementary school)	2	426	22	2	417	24	2	419	25	6	783	54	15
	SMP (Junior high school)	5	995	98	5	1510	82	6	1.545	103	6	2.707	143	19
	MTs (Islamic junior high school)	4	433	65	4	473	65	4	523	N/A	7	3.066	83	37
	SMA (High school)	1	84	10	1	81	7	1	66	10	2	537	47	11
	SMK (Vocational high school)	3	209	48	3	308	28	3	202	36	4	949	81	12
	MA (Islamic high school)	1	53	15	1	53	15	1	52	15	3	2.011	123	16

Source:

- i. Tasikmalaya Regency in Figure 2021 – 2024
- ii. Mangunrejo Sub-District in Figure 2021 - 2023

Table 0-95 Number of Worship Place in Affected Villages (2021)

Village/Sub-District	Mosque	Mushola	Monastery	Church
Sukasukur Village	11	32	0	0
Pasirsalam Village	17	40	0	0
Sukaluyu Village	11	33	0	0
Mangunreja Village	16	30	0	0
Mangunreja Sub-District	78	172	0	0

Source: Mangunreja Sub-District in Figure 2023

Gender Aspect and Vulnerability

In Tasikmalaya Regency, the minimum wage increased by 1.41% in 2024 compared to 2023, from Rp2,499,954.13 to Rp2,535,204. The poverty line in Tasikmalaya Regency was set at Rp378,958 per person per month in 2023. The number of individuals residing in poverty decreased to 186,900 in 2023. Households below the poverty line are considered vulnerable.

Interviews conducted with several scavengers at the Nangkaleah landfill revealed that the majority of scavengers are women. This finding is supported by data from DPUTRLH, which indicates that 58% of the scavengers are women. Many of these women reported that they primarily worked as farm laborers before becoming scavengers in 2014. Some of them continue to work as farm laborers as a secondary job.

The lack of facilities, particularly clean water, at the Nangkaleah landfill requires scavengers to bring their own water from home for drinking and washing their hands. Scavengers must return home if they need to use clean water for other purposes or to use the restroom.

Community Health

The villages affected by the Nangkaleah landfill fall under the jurisdiction of the Mangunreja Health Center (UPT Puskesmas Mangunreja). This health center is located in Mangunreja Village, Mangunreja Sub-district. In addition to the main health center, other healthcare facilities available in Mangunreja Sub-district include Subsidiary of Public Health Center (Pustu). These auxiliary centers are located in Sukasukur Village, Pasirsalam Village, and Sukaluyu Village. The affected villages are also equipped with integrated healthcare center (posyandu). A complete list of the healthcare facilities in the affected villages can be found in **Table 0-96**.

Table 0-96 Number of Public Health facilities in Affected Villages

Village/Sub-District	Facility	2020	2021	2022	2023
Sukasukur Village	Puskesmas (Public Health Center)	0	0	0	N/A
	Pustu (Subsidiary of Public Health Center)	1	1	1	N/A
	Posyandu (Integrated Healthcare Center)	8	8	8	N/A
Pasirsalam Village	Puskesmas (Public Health Center)	0	0	0	N/A
	Pustu (Subsidiary of Public Health Center)	1	1	1	N/A
	Posyandu (Integrated Healthcare Center)	8	8	8	N/A
Sukaluyu Village	Puskesmas (Public Health Center)	0	0	0	N/A
	Pustu (Subsidiary of Public Health Center)	1	1	1	N/A
	Posyandu (Integrated Healthcare Center)	9	9	9	N/A
Mangunreja Village	Puskesmas (Public Health Center)	1	1	1	N/A

Village/Sub-District	Facility	2020	2021	2022	2023
Mangunreja Sub-District	Pustu (Subsidiary of Public Health Center)	0	0	0	N/A
	Posyandu (Integrated Healthcare Center)	9	9	9	N/A
	Poliklinik (Polyclinic)	1	2	3	3
	Puskesmas (Public Health Center)	1	1	1	1
	Pustu (Subsidiary of Public Health Center)	3	4	4	4
	Polindes (Village Maternity Center)	N/A	3	3	3
	Posyandu (Integrated Healthcare Center)	N/A	48	48	N/A

Source:

- i. Tasikmalaya Regency in Figure 2021 – 2024
- ii. Mangunreja Sub-District in Figure 2021 – 2023

The 2024 Statistic Indonesia data shows an increase in the number of doctors in Tasikmalaya Regency in 2023, accompanied by a rise in the number of nurses and pharmacists. However, the number of midwives has decreased compared to 2022. At the Mangunreja Sub-District level, there were no dentists recorded in 2023. The following is the number of medical personnel in Mangunreja Sub-District and Tasikmalaya Regency by category.

Table 0-97 Number of Medical Personnel in Mangunreja Sub-District and Tasikmalaya Regency

No	Medical Personnel	Mangunreja Sub-District			Tasikmalaya Regency		
		2021	2022	2023	2021	2022	2023
1	Doctor	3	2	3	99	125	128
2	Dentist	N/A	N/A	0	N/A	N/A	28
3	Nurse	12	15	12	726	1.026	1.062
4	Midwife	21	21	21	991	1.124	1.111
5	Pharmacist	3	4	4	103	125	126
6	Nutritionist	1	1	N/A	56	65	N/A

Source: Tasikmalaya Regency in Figure 2022 – 2024

According to the 2023 data from Mangunreja Public Health Center (Puskesmas), the most frequently reported disease was acute respiratory infections (ISPA), with 1,731 cases in 2023. The second most common condition was dyspepsia, with 566 cases, followed by the supervision of normal pregnancy, with 312 cases. The list of the top 10 most reported diseases at Mangunreja Community Health Center can be seen in **Table 0-98**.

Table 0-98 10 Most Reported Disease in Puskesmas Mangunreja

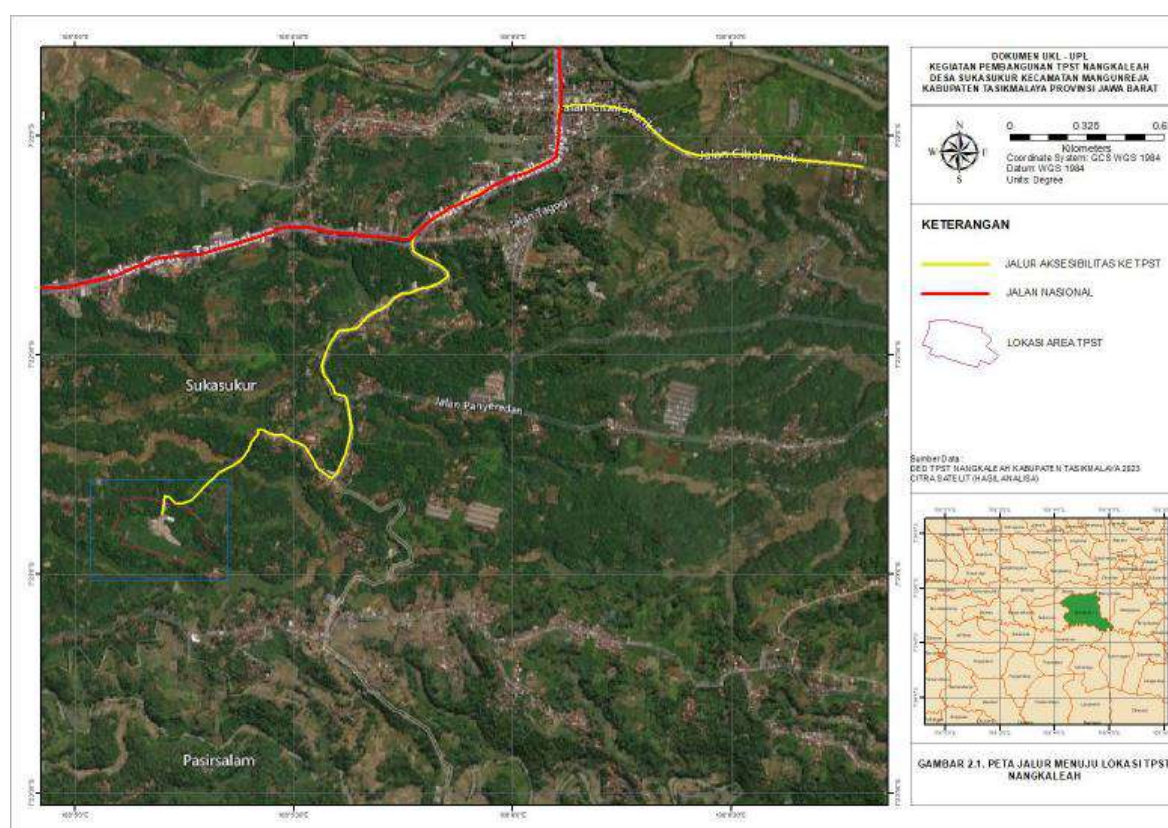
No	2022		2023	
	Disease	Number of Case	Disease	Number of Case
1	Acute upper respiratory infection, unspecified	1,174	Acute upper respiratory infection, unspecified	1,731
2	Dyspepsia	299	Dyspepsia	566
3	Allergic contact dermatitis	291	Supervision of normal pregnancy	312
4	Other headache syndromes	291	Allergic contact dermatitis	271
5	Rheumatoid arthritis, unspecified	160	Tension-type headache	230
6	Myalgia	151	Rheumatoid arthritis, unspecified	107

No	2022		2023	
	Disease	Number of Case	Disease	Number of Case
7	Acute nasopharyngitis [common cold]	67	Necrosis of pulp	94
8	Gastritis and duodenitis	64	Contraceptive management	40
9	TBC Klinis	54	Gastritis and duodenitis	34
10	Hypertensive heart disease	9	Acute nasopharyngitis (common cold)	21

Source: Puskesmas Mangunreja Profile 2023

Access Road

Figure 0-11 Access Road to TPA Nangkaleah



Source: UKL-UPL TPST Nangkaleah 2023

The access road to the Nangkaleah landfill connects from Jalan Raya Mangunreja, which also serves as a connecting road between Garut Regency and Tasikmalaya Regency. The road connected to Jalan Raya Mangunreja (marked in yellow on the left side of **Figure 0-11**) is partly an asset owned by Tasikmalaya Regency, while the other part is still an asset of Sukasukur Village. The portion that remains village property starts from in front of SMPN 2 Mangunreja and extends to the front of the Nangkaleah landfill. This section of the road is planned to be widened and reclassified as property of Tasikmalaya Regency. The road widening is scheduled for 2025 and is not part of the TPST Nangkaleah project. The section of the road from Jalan Raya Mangunreja to the front of the Nangkaleah landfill has been undergoing land clearance by the Public Works Department since 2003.

Temanggung

Environmental Baseline

Climate

Temanggung Regency has a tropical climate with two seasons a year, the dry season which occurs between April and September and the rainy season between October and March. The average annual air temperature in Temanggung is 20 – 30 degrees Celsius. The average annual rainfall in Temanggung Regency is around 2,250 mm/year, with rainfall in the lowlands less than in the highlands.

Topography, Geology, and Geomorphology

The slope of the soil in Temanggung Regency varies into 4 classes, between flat, undulating, steep and very steep, as seen on the grade of the slope below:

- Slope of 0 – 2% (flat) covering an area of 968 Ha (1.17%)
- Slope of 2 – 15% (undulating) covering 32,492 Ha (39.31%)
- Slopes of 15 – 40% (steep) covering an area of 31,232 Ha (37.88%)
- Slopes of more than 40% (very steep) covering 17,983 Ha (21.64%)

The topographic conditions of the project location can be described as follows:

- Soil type: sandy, silt
- Land surface: extreme slope 1 – 50 meters
- Location: Jl. Sanggrahan Kranggan Forest
- Area: 60,000 m²

Temanggung Regency consists of a large basin surrounded by hills or mountains, including Mount Sumbing, Mount Sindoro and Mount Prah. Two large rivers flow through the middle of these mountains (the Progo river and the Bodri river), with several tributary branches that spring on the slopes of these mountains. The Regency's strategic location is surrounded by mountains and rivers, making the land in Temanggung Regency fertile and rich in water reserves.

Temanggung Regency is strategically located between two large cities, Yogyakarta and Semarang. Geoeconomically, the Temanggung Regency area is traversed by 3 central cities of economic activity, namely Semarang City (77 Km), Yogyakarta City (64 Km), and Purwokerto City (134 Km). Temanggung Regency is also located between the economic routes, namely Semarang - Magelang - Temanggung - Purwokerto and Semarang - Temanggung - Magelang - Yogyakarta - Solo, thus facilitating accessibility and encouraging economic development in Temanggung Regency.

Hydrology

Temanggung Regency has high rainfall and has water sources that can be utilized for agricultural, household, and industrial needs as well as other needs. The Temanggung Regency area is in the Progo and Bodri River Watersheds (DAS). The Progo Watershed contains quite large rivers, namely the Progo Hulu River, Tangsi River, and Elo River. The Progo Watershed covers areas in the Districts of Ngadirejo, Jumo, parts of Kandangan, Kaloran, Kedu, Parakan, Bansari, Kledung, Bulu, Tlogomulyo, Temanggung, Tembarak, Kranggan, Pringsurat, and Selopampang. Meanwhile, the Bodri Watershed is in the Districts of Wonobojo, Candiroto, Tretep, Bejen Gemawang, and parts of Kandangan.

Disaster risk

Based on the 2021 Indeks Risiko Bencana Indonesia (IRBI) Book, Temanggung Regency's disaster risk index is 121.33 (medium category).

Furthermore, according to the Risk Index per Threat:

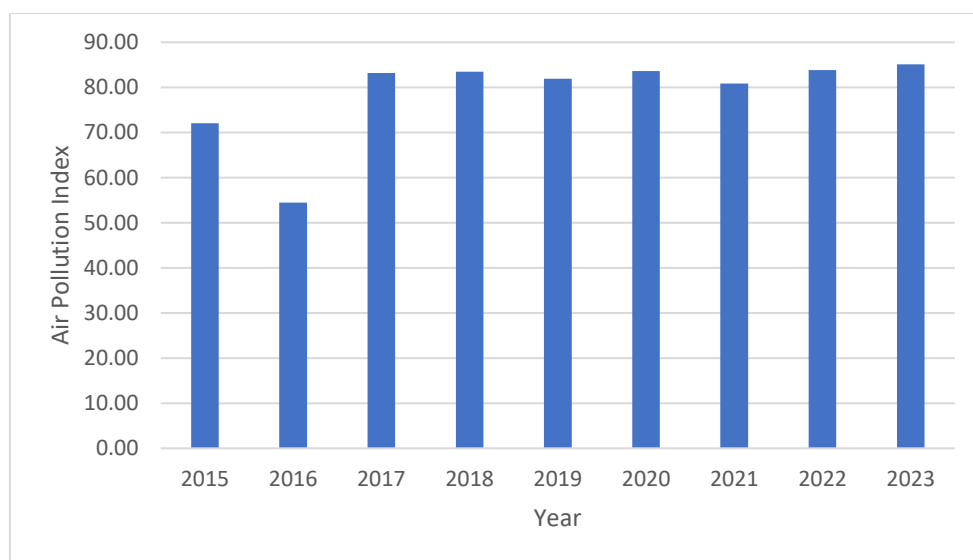
- Earthquake Disaster Risk Index (13.66 high)
- Volcano Risk Index (16.18 high)
- Land and Forest Fire Disaster Risk Index (22.77 high)
- Landslide Disaster Risk Index (15.18 high)
- Drought Disaster Risk Index (15.18 high).

Based on data from the Temanggung Regency RTRW for 2011-2031, Kranggan District is not included as a location prone to hurricanes, landslides, and floods. However, Kranggan District has the potential for drought disasters.

Air quality

The Environmental Agency of Temanggung Regency launched the Environmental Management Performance Information 2023 document. This comprehensive document details the strategies and measures required for protecting and preserving the environment at the regional level. The air quality index value of 85.10 indicates that air quality in Temanggung is categorized as ‘good’ see **Figure 0-12**.

Figure 0-12 Temanggung’s Air Quality Index



Source: LKjIP DPRKPLH Temanggung Regency 2023

Traffic

The project site is situated in the southern part of Temanggung Regency and is accessible via a well-maintained road network. Based on direct observation, the road access to the location is considered excellent as the road is fully paved. The distance between the center of Temanggung Regency and the project site is approximately 8.6 km, which translates to a travel time of about 15 to 30 minutes, depending on traffic conditions.

The route to the Sanggrahan TPA is fully paved with asphalt. The narrowest section of this route is the access road from Kranggan-Kaloran Street leading to the TPA, which is 6 m wide and stretches for about 1.3 km. Despite its narrower width, this access road is well-maintained and adequate for the required traffic flow to the project site.

Traffic conditions along the route to the Sanggrahan Landfill are typically only congested on Kranggan Highway, which is the main thoroughfare leading to the central area of Temanggung Regency. Traffic density on this highway increases during peak hours. In contrast, as vehicles turn from Kranggan Highway onto Kranggan-Kaloran Street, the traffic significantly decreases. This road traverses a series of sub-districts and villages and is primarily used for local access rather than through traffic. The project site is located 1.3 km off Kranggan-Kaloran Street, on a lesser-used local road, resulting in a generally low traffic volume in the immediate vicinity of the site.

Environmental planning

Temanggung Regency’s Regional Long Term Development Plan (RPJPD) 2005-2025 focuses on community welfare while maintaining natural resources and environmental sustainability. The RPJPD identifies the following:

VISION	Temanggung is increasingly advanced, independent, safe, fair and prosperous
MISSION	Realizing sustainable regional development by managing and utilizing natural resources and the environment sustainably based on the active participation of all stakeholders and paying attention to spatial dimensions.
TARGETS	The increasing quality of management and utilization of natural resources oriented towards environmental preservation is reflected in maintaining their function, carrying capacity, and recovery capacity in supporting the harmonious and balanced quality of social and economic life.
INDICATOR	Environmental Quality Index Disaster Risk Index
PRIORITY PROGRAM	Waste management program
POLICY DIRECTION	Improved waste management, Waste managed by community groups, especially waste banks, impacts increasing household income.

Biodiversity Baseline

According to the scoping and desktop study, a variety of flora and fauna have been identified both at and around the project site. The Sanggrahan Landfill is also not located within a conservation area (Environmental and Social Protection Document (*Dokumen Pengamanan Lingkungan dan Sosial*, 2023) for the Sanggrahan Landfill).

The vegetation at the project area is primarily composed of hardy plants and dry fields, given that the project area is a garden area. Herbaceous vegetation includes Sensitive plants (*Mimosa pudica*) and various grasses such as Bermuda grass (*Cynodon dactylon*), nutgrass (*Cyperus rotundus*), and bitter bush (*Eupatorium odoratum*), among others.

The vegetation surrounding the project site is dominated by rice plants (*Oryza sativa*), cultivated by local farmers. Along the boundaries of the land, there are sengon trees (*Albizia chinensis*). Types of grasses found around the project site include elephant grass (*Pennisetum purpureum*), nutgrass (*Cyperus rotundus*), and Bermuda grass (*Cynodon dactylon*).

The animals present at the project site and its vicinity include the following:

- In the class Mammalia, there are rats (*Rattus* sp.)
- In the class Aves, the species observed are Javan munia (*Lonchura leucogastroides*), sooty-headed bulbul (*Pycnonotus aurigaster*), and yellow-bellied prinia (*Abroscopus superciliaris*)
- Within the class Reptilia, skinks (*Mabouya multifasciata*) have been identified
- Class Insecta includes ants (*Monomorium monomorium*), crickets (*Acheta domestica*), grasshoppers (*Melanoplus femurrubrum*), and dragonflies (*Aeshna* sp.)
- Finally, in the class Amphibia, both frogs (*Rana* sp.) and toads (*Bufo* sp.) have been observed

According to The International Union for Conservation of Nature (IUCN), there are some flora and fauna from that has been identified from various taxa that are around the project location. Among these, there are six species that hold the status of Critically Endangered (CR), indicating they are at an extremely high risk of extinction in the wild. Additionally, three species have been classified as Endangered (EN), signifying they face a very high risk of extinction. Furthermore, eight species are listed as Vulnerable (VU), which means they are at a high risk of endangerment in the medium term. There also some endemic species like Myna Pied Java (*Gracupica jalla*) and Javan Slow Loris (*Nycticebus javanicus*).

Table 0-99 IUCN Red List Species Around Project Location

Scientific Name	Class	Family	Category
Aves			
<i>Gracupica jalla</i>	Aves	Sturnidae	CR
<i>Alcedo euryzona</i>	Aves	Alcedinidae	CR
<i>Halcyon pileata</i>	Aves	Alcedinidae	VU
<i>Leptoptilos javanicus</i>	Aves	Ciconiidae	VU
<i>Acridotheres javanicus</i>	Aves	Sturnidae	VU
Mammal			
<i>Manis javanica</i>	Mammalia	Manidae	CR
<i>Rhinoceros sondaicus</i>	Mammalia	Rhinocerotidae	CR
<i>Nycticebus javanicus</i>	Mammalia	Lorisidae	CR
<i>Macaca fascicularis</i>	Mammalia	Cercopithecidae	EN
<i>Panthera tigris</i>	Mammalia	Felidae	EN
<i>Nycteris javanica</i>	Mammalia	Nycteridae	VU
<i>Panthera pardus</i>	Mammalia	Felidae	VU
<i>Trachypithecus auratus</i>	Mammalia	Cercopithecidae	VU
Reptile			
<i>Crocodylus siamensis</i>	Reptilia	Crocodylidae	CR
<i>Cuora amboinensis</i>	Reptilia	Geoemydidae	EN
<i>Python bivittatus</i>	Reptilia	Pythonidae	VU
<i>Ophiophagus hannah</i>	Reptilia	Elapidae	VU

Source: IUCN Red List of Threatened Species

Notes:

VU: Vulnerable

EN: Endangered

CR: Critically Endangered

The wildlife observed at the project site and its surrounding area can be classified into the following categories:

Mammal class there are Rats (*Rattus* sp.). In the Aves class there are founded Javan munia (*Lonchura leucogastroides*), sooty-headed bulbul (*Pycnonotus aurigaster*), yellow-bellied prinia (*Abroscopus superciliaris*). The class Reptilia has been identified within the project site, with the presence of skinks (*Eutrophis multifasciata*). The class Insecta includes ants (*Monomorium monomorium*), crickets (*Acheta domestica*), grasshoppers (*Melanoplus femurrubrum*), and dragonflies (*Aeshna* sp.). Finally, the class Amphibia has been observed at the project site, with the presence of frogs (*Rana speciosa*) and toads (*Bufo* sp.).

Social Baseline

The Sanggrahan landfill site is located in Sanggrahan Village, within the Kranggan sub-district of Temanggung Regency. The area is primarily surrounded by drylands and agricultural fields.

In preparing the Feasibility Study (FS) for this project, the social aspect is considered by dividing the environmental impact areas into two components: directly impacted and indirectly impacted. The direct impact encompasses areas within a 500-meter radius, which includes residential areas, social and cultural activities, and socio-economic activities, while the indirectly impacted area extends to a radius of 1-km. This distinction is crucial for understanding the scope and scale of the project's potential social and environmental impacts.

The 500-meter radius encompasses several public facilities, including mosques, cemeteries, and residential areas. Sanggrahan Village is the most directly impacted community. A 1-km radius expansion of the indirect impact zone reveals additional villages, including Pendowo, Klepu, and Gentan. The broader area includes not only residential zones but also community facilities such as more mosques, schools, Islamic Education Center (TPQ), and livestock farms. These illustrate a diverse range of community activities and livelihoods that may be affected by landfill operations. The proximity of these facilities and communities to the landfill site highlights the need for comprehensive planning and environmental management to mitigate any adverse impacts on the local population and their way of life. Furthermore, it is vital to implement regular monitoring and community engagement to help ensure that the development and operation of the landfill site are in line with sustainable and responsible environmental practices.

TPA Land

TPA and TPST Sanggrahan are situated on a land area of 60,278 m², which has been approved for non-business activity use through the Spatial Utilization Activity Compatibility (KKPR) in 2023. The existing land designated for the development of TPST Sanggrahan is currently utilized as a landfill, and includes areas classified as plantation land, non-irrigated rice fields, and certain plots designated as Protected Rice Fields (LSD) and Sustainable Food Agricultural Land (LP2B). In accordance with Spatial Utilization Activity Compatibility Approval (PKKPR) No. 053/KKPR/2023 dated 29 December 2023, the LSD spatial pattern will be excluded through a recommendation from the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN), and the LP2B has been regulated under the prevailing laws and regulations. The land ownership is verified by nine Certificates of Right to Use (*Sertifikat Hak Pakai*) under the name of the Temanggung Regency Government.

The 60,278 m² of land includes 12,697 m² of additional land acquired through a land swap with village-owned "bengkok" land. This land was originally allocated by the village of Sanggrahan to four village officials. As part of the land swap, the local government provided replacement land in Krajan Hamlet, Sanggrahan Village. The swapped land was agricultural dry land to paddy field land. The land replacement is more productive than the previous land. The land swap process began in 2020 and was completed in 2023 through the Land Acquisition Appraisal Activity for the landfill site.

Demographic

Kranggan Sub-district covers an area of 57.61 km² and had a population of 50,764 people in 2023. The population density of Kranggan Sub-district was 881 people per km² in 2023, having increased over the past four years. Gentan Village is the largest village in Kranggan Sub-district, covering an area of 6.98 km² or 12.11% of the total area of Kranggan Sub-district. The areas of other affected villages compared to the total area of Kranggan Sub-district are as follows: Sanggrahan Village (7.71%), Pendowo Village (10.00%), and Klepu Village (5.98%). Sanggrahan Village had the highest population density among the affected villages, with a density of 946 people per km² in 2023.

The population composition in Kranggan Sub-district is predominantly female, as indicated by a sex ratio of 98.00 in 2023. This ratio has been decreasing over the past four years, suggesting that the increase in the number of female residents is greater than that of male residents. Among the affected villages, Klepu Village is the only one with a sex ratio above 100. In 2022, Klepu Village had a sex ratio of 100.52, indicating that the number of male and female residents was nearly equal, though there were slightly more males. The complete population numbers for the affected villages and Kranggan Sub-district are as follows.

Table 0-100 Population of Affected Villages and Sub-District

Location	Category	2020	2021	2022	2023
	Area (km ²)	4.44	4.44	4.44	4.44

Location	Category		2020	2021	2022	2023
Sanggrahan Village	Gender	Men	2,048	2,084	2,092	2,096
		Women	2,060	2,074	2,104	2,103
	Total		4,108	4,158	4,196	4,199
	Sex Ratio (%)		99.42	100.48	99.43	99.67
	Density (People/km ²)		925	936	945	946
Pendowo Village	Area (km ²)		5.76	5.76	5.76	5.76
	Gender	Men	2,315	2,376	2,433	2,493
		Women	2,418	2,505	2,508	2,592
	Total		4,733	4,881	4,941	5,085
	Sex Ratio (%)		95.74	94.85	97.01	96.18
	Density (People/km ²)		822	847	858	883
Klepu Village	Area (km ²)		3.44	3.44	3.44	3.44
	Gender	Men	1,471	1,521	1,533	N/A
		Women	1,460	1,493	1,525	N/A
	Total		2,931	3,014	3,058	N/A
	Sex Ratio (%)		100.75	101.88	100.52	N/A
	Density (People/km ²)		852	876	889	N/A
Gentan Village	Area (km ²)		6.98	6.98	6.98	6.98
	Gender	Men	2,199	2,286	2,307	N/A
		Women	2,201	2,288	2,333	N/A
	Total		4,400	4,574	4,640	N/A
	Sex Ratio (%)		99.91	99.91	98.89	N/A
	Density (People/km ²)		630	655	665	N/A
Kranggan Sub-District	Area (km ²)		57.61	57.61	57.61	57.61
	Gender	Men	24,429	24,716	24,935	25,126
		Women	24,783	25,034	25,299	25,638
	Total		49,212	49,750	50,234	50,764
	Sex Ratio (%)		98.57	98.73	98.56	98.00
	Density (People/km ²)		854	864	872	881

Sources:

- i. Temanggung Regency in Figure 2021 – 2024
- ii. Kranggan Sub-District in Figure 2021 - 2023
- iii. Sanggrahan Village Profile 2023
- iv. Pendowo Village Profile 2023

Kranggan Sub-district has a working-age population comprising approximately 70% of the total population. According to data from the BPS of Kranggan Sub-district, this percentage has decreased from 72% in 2021 to 69% in 2023. The percentage of the elderly population increased from 6% in 2021 to 8% in 2022. The following table shows the population numbers based on age groups in Kranggan Sub-district.

Table 0-101 Population Distribution Based on Ages in Kranggan Sub-District

Age Category	2020			2021			2022		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Age 0-14	5,327	4,994	10,321	5,736	5,339	11,075	6,494	6,153	12,647
Age 15-64	17,373	17,781	35,154	17,097	17,597	34,694	19,755	19,244	38,999
Age 65+	1,610	1,716	3,326	1,360	1,385	2,745	2,118	2,378	4,496
Total	24,310	24,491	48,801	24,193	24,321	48,514	28,367	27,775	56,142

Source: Kranggan Sub-District in Figure, 2023

Temanggung Regency has a diverse population in terms of religious background. The composition of the population by religion in Temanggung Regency in 2023 was as follows: Islam (96.01%), Christianity (2.01%), Catholicism (0.78%), Hinduism (0.02%), Buddhism (1.13%), and others (0.04%). In Kranggan Sub-district, the majority of the population also adheres to Islam, with a percentage of 96.64% in 2023. **Table 0-102** shows the distribution of the population by religion in percentage in both Kranggan Sub-district and Temanggung Regency.

Table 0-102 Percentage of People by Religion in Kranggan Sub-District and Temanggung Regency

Sub-District	Year	Islam	Christian	Catholic	Hinduism	Buddhism	Other
Kranggan Sub-District	2021	96.589%	2.944%	0.429%	0.016%	0.016%	0.004%
	2022	96.594%	2.944%	0.431%	0.010%	0.016%	0.004%
	2023	96.640%	2.968%	0.362%	0.010%	0.016%	0.004%
Temanggung Regency	2021	95.849%	1.974%	0.960%	0.024%	1.147%	0.047%
	2022	95.880%	1.951%	0.969%	0.023%	1.130%	0.047%
	2023	96.014%	2.010%	0.783%	0.023%	1.127%	0.044%

Source: Temanggung Regency in Figure 2022 - 2023

Socio Economic

The topography of Temanggung Regency is generally characterized by a basin situated at an elevation between 500 and 1,450 meters above sea level. This area is flanked by Mount Sumbing and Mount Sindoro to the south and west. The region's mountainous terrain supports agricultural production. This is also evident in Kranggan District, where various agricultural commodities are produced. In 2022, Kranggan sub-district recorded 1,425 hectares of paddy fields and 4,335.93 hectares of non-paddy land (including residential areas, dry fields, plantations, etc.). The detailed list of agricultural land areas and the production of each commodity can be found in **Table 0-103** and **Table 0-104**.

Table 0-103 Harvesting Area of Agriculture in Kranggan Sub-District (ha)

Commodity	Kranggan Sub-District			
	2020 (ha)	2021 (ha)	2022 (ha)	2023 (ha)
Paddy	1,297	1,159.1	1,126.81	874.1
Corn	557.8	425.8	436.56	330.7
Cassava	14.7	16.6	30.7	20
Sweet Potato	50.2	12.1	39.72	34.1
Peanut	52.5	39.2	37.33	60.2
Curly Chili	0	58	47	81
Cayenne Pepper	57	83	178	314
Cabbage	0	0	0	1
Tomato	0	1	1	7

Commodity	Kranggan Sub-District			
	2020 (ha)	2021 (ha)	2022 (ha)	2023 (ha)
Palm	31	31	33.5	34
Coconut	233.81	205	208.38	208.38
Robusta Coffee	448.5	517.91	535	530
Cocoa	7	7	6	4
Sugar cane	35	23.16	22.2	21.7
Tobacco	19	18	7	8

Source: Temanggung Regency in Figure 2024

Table 0-104 Production of Agriculture in Kranggan Sub-District (ton)

Commodity	Kranggan Sub-District			
	2020 (ton)	2021 (ton)	2022 (ton)	2023 (ton)
Paddy	7,652.3	6,838.69	7,121.44	5,533.05
Corn	2,733.22	1,916.1	2,012.54	1,521.22
Cassava	462.49	546.31	1,043.8	680
Sweet Potato	1,413.55	293.43	1,097.27	942.01
Peanut	93.75	58.8	65.7	105.95
Curly Chili	N/A	5,129	6,630	12,862
Cayenne Pepper	619	7,912	20,942	18,481
Cabbage	0	0	0	150
Tomato	0	220	45	705
Mango	0	0	0	39.1
Durian	2,259.6	1,335.5	2,700.3	9,476.4
Orange	0	0	0	93.7
Banana	220.2	243.3	122	482.8
Papaya	165.9	226.8	158.9	451.2
Salak	67.1	347.7	236.3	325.4
Avocado	N/A	24.9	208.7	398.8
Guava	N/A	66	27.2	77.1
Palm	65.1	65.1	100.5	85
Coconut	210.43	92.25	93.77	93.77
Robusta Coffee	224.25	233.06	240.75	238.5
Cocoa	14	14	1.2	0.8
Sugar cane	1.25	70.33	67.89	91.33
Tobacco	11.02	104.4	4.2	4.7

Source: Temanggung Regency in Figure 2024

The livestock sub-sector in Kranggan sub-district encompasses a diverse range of commodities. The population numbers for these livestock commodities have remained relatively stable over the past three years, with the exception of beef cattle. The number of beef cattle decreased by approximately 50% in 2023 compared to 2022. The total population of various livestock commodities can be seen in **Table 0-105**.

Table 0-105 Livestock Population in Kranggan Sub-District

Commodity	2020	2021	2022	2023
Dairy Cattle	0	0	0	3
Beef Cattle	4,095	4,186	3,171	1,575
Buffalo	135	136	136	33
Horse	12	12	12	12
Goat	2,138	2,150	2,153	2,289
Sheep	33,861	33,986	32,462	35,406
Rabbit	381	383	403	405
Native Chicken	71,956	68,397	68,054	68,995
Layer	70,665	70,847	71,147	71,147
Duck	9,771	9,776	9,655	9,628
Swan	2,482	2,492	2,496	2,502
Quail	5,089	4,746	4,800	4,854
Goose	670	674	672	674

Source: Temanggung Regency in Figure 2024

A portion of the community in Kranggan District also cultivates aquatic commodities. These commodities are cultivated in fishponds, fish in rice fields, rivers, and fish puddles. Capture fisheries production has increased over the past three years, accompanied by a rise in production from fishponds and fish in rice fields. However, there has been a decline in production from rivers and fish puddles. The complete production figures for each commodity are presented in **Table 0-106**.

Table 0-106 Production of Fisheries in Kranggan Sub-District (ton)

Commodity	2020 (ton)	2021 (ton)	2022 (ton)	2023 (ton)
Fishpond	512.92	240.4	253.56	314.96
Fish in Rice Field	37.78	25.53	33.59	21.78
River	39.55	36.26	27.15	11.02
Fish Puddle	7.45	7.4	5.88	2.24
Total	597.7	309.59	320.18	350.00

Source: Temanggung Regency in Figure 2024

According to the BPS of Temanggung Regency, the majority of the population is economically active, which aligns with the population distribution data indicating that most residents are of working age. In 2023, 75.80% of the population in Temanggung Regency were economically active, a figure that includes both employed individuals and the unemployed. The not economically active population comprises those still in school, managing households, or engaged in other activities, accounting for 24.20% in 2023.

The unemployment rate in Temanggung Regency has been decreasing over the past four years, reaching 2.32% in 2023, down from 3.85% in 2020. However, male unemployment rates increased from 2021 to 2022, while female unemployment rates rose from 2022 to 2023. **Table 0-107** shows the detailed distribution of the economically active and not economically active population in Temanggung Regency, along with the unemployment trends over the past four years.

Table 0-107 *Distribution of Economically Active and Not Economically Active Population*

Main Activity	2020			2021			2022			2023		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Economically Active												
Working	173,579	169,821	343,400	257,193	185,816	443,009	260,615	200,150	460,765	267,248	204,211	471,459
Unemployment	7,750	6,006	13,756	7,613	4,305	11,918	9,641	2,383	12,024	5,578	5,614	11,192
2. Not Economically Active												
Attending School	18,943	15,544	34,487	16,668	20,707	37,375	18,356	18,983	37,339	18,467	18,967	37,434
Housekeeping	90,763	99,588	190,351	5,525	84,473	89,998	6,606	78,479	85,085	8,342	78,315	86,657
Others	13,042	13,109	26,151	20,429	11,944	32,373	15,438	10,336	25,774	18,707	11,252	29,959
Total	304,077	304,068	608,145	307,428	307,245	614,673	310,656	310,331	620,987	318,342	318,359	636,701
Unemployment Rate	4.27%	3.42%	3.85%	2.87%	2.26%	2.62%	3.57%	1.18%	2.54%	2.04%	2.68%	2.32%

Source: Temanggung Regency in Figure, 2021 - 2024

Scavenger in The Existing TPA

The scavengers working at the Sanggrahan Landfill are part of the Non-Organic Waste Sorters Association (PPSNO). This association has been in existence since the establishment of the Sanggrahan Landfill. The majority of the scavengers (73%) are women, and 36% of the total scavengers are over the age of 58. These scavengers come from villages surrounding the landfill, including Sanggrahan Village, Pendowo Village, Klepu Village, Gentan Village, and Kramat Village.

The activities of the scavengers begin at dawn and continue until night. Male scavengers in their 40s often search for waste early in the morning or at night. Female scavengers usually go to the Sanggrahan Landfill after completing various household chores. Scavengers collect their waste at their respective collection points. Collectors typically visit the landfill twice a week to weigh the collected waste. There are three collectors who come to the Sanggrahan Landfill to gather the waste. These collectors take turns visiting the landfill each week. On average, a collector can earn around Rp35,000 per day, or even up to Rp50,000 if they spend more time collecting waste.

The Non-Organic Waste Sorters Association (PPSNO) holds an annual event, a thanksgiving ceremony on the 1st of Suro. The existence of this association facilitates donors or other parties who wish to engage in activities involving the scavengers at the Sanggrahan Landfill. The scavengers benefit from various activities, such as free health check-ups provided by the local health center. Apart from that, scavengers also receive outreach from fire fighters regarding initial handling if a fire occurs at the landfill. This is very useful for scavengers who carry out their daily activities at the landfill considering the potential for fires due to dangerous gases emitted by piles of rubbish. A complete list of PPSNO members can be found in **Table 0-108**.

Table 0-108 List of Scavengers in TPA Sanggrahan

No	Name	Sex	Status	Age	Origin	Scavanging Period	Number of Children	Notes
1	Ruwani	Female	Married	60	Temandang, Desa Pendowo	14	1	Wife of Yadi
2	Munarsih	Female	Married	60	Losari, Desa Sanggrahan	7		Wife of Yamidi
3	Siti Khotijah	Female	Married	48	Wonogiri, Desa Gentan	5	1	Wife of Suyadi
4	Lelet	Female	Married	63	Losari, Desa Sanggrahan	12		Head of Family
5	Iswoyo	Male	Married	45	Temandang, Desa Pendowo	6	2	Head of Family
6	Yamini	Female	Married	42	Temandang, Desa Pendowo	6	2	Wife of Iswoyo
7	Romlah	Female	Married	56	Temandang, Desa Pendowo	13	1	Head of Family
8	Sarjilah	Female	Married	35	Losari, Desa Sanggrahan	11	2	Wife of Mukadi
9	Sarmi	Female	Married	44	Losari, Desa Sanggrahan	4	2	Wife of Saroji
10	Mutinah	Female	Married	59	Tambaksari, Desa Sanggrahan	8		Wife of Mujilan
11	Mardiyah	Female	Married	53	Tambaksari, Desa Sanggrahan	13		Wife of Suparman
12	Muridah	Female	Married	56	Losari, Desa Sanggrahan	10	2	Wife of Maryanto
13	Madyo	Male	Married	68	Temandang, Desa Pendowo	11		Head of Family
14	Sartimah	Female	Married	66	Malangsari, Desa Kramat	6		Wife of Parwiyoto
15	Sukarmi	Female	Married	66	Temandang, Desa Pendowo	11		Wife of Madyo
16	Markun	Male	Married	53	Losari, Desa Sanggrahan	9		Head of Family
17	Rantinah	Female	Married	53	Losari, Desa Sanggrahan	11		Wife of Markun
18	Kumpul	Male	Married	55	Losari, Desa Sanggrahan	12	1	Head of Family
19	Karsih	Female	Married	49	Losari, Desa Sanggrahan	12	1	Wife of Kumpul
20	Sumarno	Male	Married	56	Losari, Desa Sanggrahan	8		Head of Family
21	Sutini	Female	Married	55	Losari, Desa Sanggrahan	7		Wife of Sumarno
22	Suratmi	Female	Married	61	Losari, Desa Sanggrahan	10		Wife of Ruwani
23	Yatin	Male	Married	59	Malangsari, Desa Kramat	2	2	Head of Family

No	Name	Sex	Status	Age	Origin	Scavanging Period	Number of Children	Notes
24	Saryatun	Female	Married	48	Malangsari, Desa Kramat	2	2	Wife of Yatin
25	Maridah	Female	Death Divorced	61	Losari, Desa Sanggrahan	13	2	Head of Family
26	Sarwidi	Male	Married	67	Losari, Desa Sanggrahan	14		Head of Family
27	Winarti	Female	Married	45	Losari, Desa Sanggrahan	9	2	Wife of Rani Slamet
28	Tumini	Female	Married	62	Losari, Desa Sanggrahan	10		Wife of Gimani
29	Parsini	Female	Married	65	Losari, Desa Sanggrahan	10		Wife of Tulus
30	Barsiyah	Female	Married	45	Losari, Desa Sanggrahan	9	1	Wife of Tunut
31	Marsini	Female	Married	52	Losari, Desa Sanggrahan	10	1	Wife of Kamis
32	Ronjiyah	Female	Death Divorced	58	Losari, Desa Sanggrahan	10	1	Head of Family
33	Walmyiatun	Female	Married					
34	Sukir	Male	Married	48	Madusari, Desa Sanggrahan	7	2	Head of Family
35	Sela	Male	Married	56	Kelpu, Desa Kelpu	3	2	Head of Family
36	Sunarti	Female	Married	48	Kelpu, Desa Kelpu	3	2	Wife of Sela
37	Sarminah	Female	Death Divorced	73	Temandang, Desa Pendowo	13		Head of Family
38	Juwariyah	Female	Married	59	Losari, Desa Sanggrahan	9	2	Wife of Markuat
39	Priyatman	Male	Married	45	Losari, Desa Sanggrahan	10	1	Head of Family
40	Imbuh	Male	Married	43	Losari, Desa Sanggrahan	14	1	Head of Family
41	Suparmi	Female	Married	45	Losari, Desa Sanggrahan	6	1	Wife of Imbuh
42	Siyami	Female	Married	46	Losari, Desa Sanggrahan	10	2	Wife of Sa'in
43	Sumini	Female	Married	53	Losari, Desa Sanggrahan	12		Wife of Pardi
44	Dahyono	Male	Married	52	Losari, Desa Sanggrahan	9	2	Head of Family
45	Urip	Female	Married	52	Losari, Desa Sanggrahan	9	2	Wife of Dahyono
46	Maryati	Female	Married	48	Madusari, Desa Sanggrahan	7	2	Wife of Sukir
47	Marsidah	Female	Married	62	Tambaksari, Desa Sanggrahan	7		Wife of Suyoto
48	Samini	Female	Married	50	Tambaksari, Desa Sanggrahan	8	3	Wife of Hamsyar

No	Name	Sex	Status	Age	Origin	Scavanging Period	Number of Children	Notes
49	Sukoyo	Male	Married	48	Losari, Desa Sanggrahan	12	3	Head of Family
50	Mutiyah	Female	Married	47	Losari, Desa Sanggrahan	12	3	Wife of Sukoyo
51	Siyami	Female	Married	57	Losari, Desa Sanggrahan	14	1	Wife of kasmuri
52	Sugito	Male	Married	79	Losari, Desa Sanggrahan	14		Head of Family
53	Daimah	Female	Married	71	Losari, Desa Sanggrahan	14		Wife of Sugito
54	Suranti	Female	Married	53	Losari, Desa Sanggrahan	13	1	Wife of Suyat
55	Eko Anggoro	Male	Married	38	Losari, Desa Sanggrahan	8	2	Head of Family
56	Sarikah	Female	Married	33	Losari, Desa Sanggrahan	4	2	Wife of Eko Anggoro
57	Samini	Female	Death Divorced	72	Temandang, Desa Pendowo	14		Head of Family
58	Markuwat	Male	Married	47	Temandang, Desa Pendowo	12	2	Head of Family
59	Darsih	Female	Married	42	Temandang, Desa Pendowo	8	2	Wife of Markuat
60	Sarminah	Female	Married	58	Temandang, Desa Pendowo	10	1	Wife of Jamil
61	Ispadi	Male	Married	65	Temandang, Desa Pendowo	14		Head of Family
62	Marsinah	Female	Married	58	Temandang, Desa Pendowo	14		Wife of Ispadi
63	Sri Sutirah	Female	Death Divorced	71	Temandang, Desa Pendowo	14	2	Parent
64	Walmiyatun	Female	Married	34	Losari, Desa Sanggrahan	3	2	Wife of Hidup
65	Imam Supriyadi	Female	Married	29	Kalipucung, Desa Kramat	3	1	Head of Family
66	Fitriyani	Male	Married	24	Kalipucung, Desa Kramat	3	1	Wife of Imam S
67	Budi Yani	Female	Married	39	Dejarak, Desa Gentan	6	3	Wife of Sulisman

Figure 0-13 Medical Check-Up for Scavengers in TPA Sanggrahan



Figure 0-14 Socialization from Firefighters



Based on information sourced during a site visit, there are 4 lead “collectors” who take turns collecting rubbish at the Sanggrahan TPA every week. Based on an interview with one collector who was collecting rubbish at that time, it was revealed that the collector is from Sanggrahan Village, specifically in Dusun Losari. The collected waste is transported using private vehicles to various areas such as Pikatan, Solo, and Kebumen. The waste is collected not only from the Sanggrahan Landfill but also from other areas such as Ngadirejo, Magelang, and other regions in Temanggung.

There are two types of workers employed by the collectors. The first type is the waste sorter, who is paid according to the amount of waste sorted. Waste sorters earn Rp500 per kilogram of sorted waste. The second type of worker is the waste weigher. Waste weighers work twice a week and are paid between Rp150,000 and Rp225,000 per day, depending on the amount of waste. The collector's net income averages Rp7,000,000 per month. In addition to collecting waste from the scavengers, the collector often helps pickers in need of financial loans. The scavengers can repay these loans through instalments deducted each time they deliver waste to the collector.

Socio Cultural

The population of Temanggung Regency is predominantly of Javanese ethnicity. Being part of the Mataram Sultanate has resulted in the majority of its residents practicing Islam. This influence extends beyond religious beliefs to the cultural practices of Temanggung Regency. In addition to the Mataram Sultanate's impact, the Region was previously under the rule of the Medang Kingdom, also known as the Ancient Mataram Kingdom. This historical connection is evident through various historical relics, such as temples and inscriptions found in Temanggung Regency. **Table 0-109** displays a variety of cultural resources, both tangible and intangible, present in Temanggung Regency.

Table 0-109 Tangible and Intangible Cultural Resources in Temanggung Regency

No	Name	Location	Category	Year of Recognition	Picture
1	Jaranan Margowati	Temanggung	Intangible Cultural Resource	2019	
2	Situs Liyangan	Liyangan, Purbosari Village, Ngadirejo Sub-District	Tangible Cultural Resource	2018	
3	Candi Pringapus	Pringapus Village, Ngadirejo Sub-District	Tangible Cultural Resource	2018	
4	Candi Gondosuli	Gondosuli Village, Bulu Sub-District	Tangible Cultural Resource	2018	

No	Name	Location	Category	Year of Recognition	Picture
5	Prasasti Gondosuli	Gondosuli Village, Bulu Sub-District	Tangible Cultural Resource	2018	
6	Prasasti Wanua Tnah II	Pangayoman Temanggung Pavillion Complex	Tangible Cultural Resource	2018	
7	Eks Kantor Camat Parakan	Parakan Kauman Village, Parakan Sub-District	Tangible Cultural Resource	2018	
8	Rumah Dinas Camat Parakan	Parakan Wetan Village, Parakan Sub-District	Tangible Cultural Resource	2018	
9	Masjid Darussalam	Temanggung Sub-District	Tangible Cultural Resource	2010	

Source: <https://budaya.data.kemdikbud.go.id/>

Various art groups are thriving in Temanggung Regency. This is evident from the large number of art groups and the diversity of the arts present. The table below shows the top 10 types of arts along with the number of groups for each type in Temanggung Regency.

Table 0-110 10 Arts with The Largest Number of Groups in Temanggung Regency in 2024

No	Art Category	Number of Groups	Number of People
1	Jaran Kepang	651	30,202
2	Rebana	496	10,825
3	Topeng Ireng	252	10,585
4	Warok	110	N/A
5	Drum Band/Marching Band	92	4,433
6	Kubro	86	4,431
7	Kethoprak	80	2,935
8	Karawitan	59	1,303
9	Soreng/Prajuritan	58	2,455
10	Sholawat	57	1,536

Source: Culture and Tourism Agency of Temanggung, 2024

Within the vicinity of the Sanggrahan Landfill, there are two sites that are considered sacred by the local community. These sites are located approximately 500 meters from the landfill. The two sites are the Tomb of Mbah Selo Werso (*Kramatan Bulu*) and the Petilasan of Nyi Putri/Nyi Gandik.

- **Tomb of Mbah Selo Werso:** Mbah Selo Werso was the first person to settle in Sanggrahan Village. According to the story, he drives his wooden staff to create a water channel that flows to Sanggrahan Village. The burial site at Kramatan Bulu contains not only the tomb of Mbah Selo Werso but also those of his two wives, Nyi Saroh and Nyi Gadung Mlati. The local community performs the annual sadranan ritual at Mbah Selo Werso's tomb on Friday Wage in the month of Ruwah (Rajab).
- **Petilasan Nyi Putri/Nyi Gandik:** Nyi Putri (Diah Ayu Permatasari), often referred to as Nyi Gandik, was the granddaughter of Ki Ageng Selo, a renowned spiritualist from the Demak Kingdom. The site of Nyi Putri is commonly visited by the community for pilgrimage. On certain occasions, a goat is sacrificed at the site, followed by prayer and communal meals.

Figure 0-15 Makam Mbah Selo Werso



Figure 0-16 *Petilasan Nyi Putri*



In addition to the two ceremonies held at Mbah Selo Werso's Tomb and Nyi Putri's Petilasan, various traditional ceremonies are conducted in the affected villages. According to data from the Agency of Culture and Tourism, the affected villages that hold traditional ceremonies are Sanggrahan Village and Gentan Village. Below is a list of the traditional ceremonies performed in these affected villages.

Table 0-111 List of Traditional Ceremonies in Affected Villages

No	Village	Name of Ceremony	Location	Category of Ceremony	Period of Ceremony	Memorable Figures	Process of Ceremony
1	Sanggrahan	Sadranan	Krajan	Punden	Ruwah	Kyai Campur	Tahlilan
		Sadranan	Gunungpring	Punden	Ruwah	Kyai Gunung	Tahlilan
		Sadranan	Madusari	Punden	Ruwah	Kyai Madu	Tahlilan
		Sadranan	Rowo Kulon	Punden	Ruwah	Kyai Niti Wijoyo	Tahlilan
		Sadranan	Rowo Wetan	Punden	Ruwah	Kyai Gumbeng Rawe	Tahlilan
		Sadranan	Rowo Wetan	Punden	Ruwah	Kyai Iskar	Tahlilan
		Sadranan	Tambak Sari	Punden	Ruwah	Kyai Selowerso	Tahlilan
		Sadranan	Tegalombo	Punden Kramat	Sapar	Nyai Gandik	Tahlilan
2	Gentan	Sadranan	Gentan	Nyadran Punden	Sapar	Mbah Kyai Gandek Perti	Nyadran and Art Performance
				Nyadran Kuburan	Ruwah	Mbah Juwahir	
		Sadranan	Suruh	Nyadran Punden	Sapar	Mbah Kyai Gandek Perti	Nyadran and Art Performance
				Nyadran Kuburan	Ruwah	Mbah Amat Dahir	
		Sadranan	Kalimayung	Nyadran Kuburan	Ruwah	Mbah Kyai Amat Tohir	Nyadran and Art Performance
		Sadranan	Setro	Nyadran Kali	Mulud	Kudup	Nyadran and Art Performance
		Sadranan	Mudal	Nyadran Kuburan	Ruwah	Mbah Kyai Kopek	Nyadran and Art Performance
				Nyadran Kali	Mulud	Sono, Setangkring	
		Sadranan	Keji	Nyadran Kuburan	Ruwah	Mbah Kyai Sarinem, Kyai Kopek	Nyadran and Art Performance
				Nyadran Kali	Mulud	Belik, Ngasinan, Menthuk, Blimbang Gede	
		Sadranan	Karangmulyo	Nyadran Kuburan	Ruwah	Mbah Kyai Dumuk	Nyadran and Art Performance
				Nyadran Kali	Mulud	Secawanan	
		Sadranan	Kalimundu	Nyadran Kuburan	Ruwah	Mbah Kyai Bajang	Nyadran and Art Performance
				Nyadran Kali	Mulud	Kalimundu	
		Sadranan	Karanganyar	Nyadran Kuburan	Ruwah	Mbah Kyai Bajang	Nyadran and Art Performance

No	Village	Name of Ceremony	Location	Category of Ceremony	Period of Ceremony	Memorable Figures	Process of Ceremony
		Sadranan	Dukoh	Nyadran Punden	Ruwah	Mbah Kyai Gandek Perti	Nyadran and Art Performance
				Nyadran Kuburan	Ruwah	Mbah Joyo	
		Sadranan	Traju	Nyadran Punden	Mulud	Mbah Jenggot	Nyadran, Obar-Abir, and Art Performance
				Nyadran Kali	Sapar	Ngasinan, Umbul, Sekakas, Bambang Merak (Ra. Gadung Melati)	
				Nyadran Kuburan	Ruwah	Mbah Kyai Jenggot (R. Brontoyudo)	
		Sadranan	Samponsari	Nyadran Punden	Mulud	Mbah Jenggot	Nyadran, Obar-Abir, and Art Performance
				Nyadran Kali	Sapar	Sekuwok	
				Nyadran Kuburan	Ruwah	Mbah Kyai Jenggot (R. Brontoyudo)	
		Sadranan	Wonogiri	Nyadran Kuburan	Ruwah	Mbah Bodro	Nyadran, Obar-Abir, and Art Performance
				Nyadran Kali	Mulud	Kali Wetan	
		Sadranan	Dempel	Nyadran Kuburan	Ruwah	Mbah Reti Wongso	Nyadran and Art Performance
				Nyadran Kali	Ruwah	Kali Kadep	
		Sadranan	Sejarak	Nyadran Punden	Ruwah	Mbah Kyai Sarjiah	Nyadran and Art Performance
				Nyadran Kali	Sapar	Ndelik, Senongko, Sawak, Ipek, Klawean	

Source: Culture and Tourism Agency of Temanggung, 2024

Initial Stakeholder Mapping

Stakeholder identification and categorization is a process of finding out who is affected by the project, including individuals, groups, local communities and other relevant parties. This can include disadvantaged or vulnerable groups. Stakeholder identification also looks to identify those who have an interest in, or influence on, the project outcome, and who can support it. DPRKPLH Temanggung and the consultant carried out initial stakeholder identification at this stage of the FS preparation. Full stakeholder identification will be carried out in the ESIA. The results of initial stakeholder identification for the Sanggrahan Landfill & TPST development plan are provided in the table below:

Table 0-112 Stakeholder Identification

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest
National Government				
1	Ministry of Public Works and Housing	Facilitate the budget for procurement of waste management infrastructure and facilities	Positive	Environment and improvement of public facilities
2	Ministry of Environment and Forestry	Monitoring of waste management	Positive	Environment
Local Government				
1	Central Java Provincial Settlement Infrastructure Agency (BPPW)	Facilitate technical work of waste infrastructure construction	Positive	Environment and improvement of public facilities
2	Planning Agency (BAPPEDA)	Facilitate and coordinate collaboration and task allocation among stakeholders	Positive	Improvement of public facilities and enhancement of regional assets and revenue.
3	Housing, Settlement Areas, and Environment Agency (DPRKPLH)	Carry out planning and technical studies for the construction of waste management infrastructure and implement waste management activities in the regency.	Positive	Environment and improvement of public facilities
4	Management Agency of Finance, Income and Assets (BPKPAD)	Provide support and land allocation for the construction of waste management facilities, and manage assets and budgets related to the landfill.	Positive	Enhancement of regional assets and revenue.
5	Public Works and Spatial Planning Agency (DPUPR)	Provide support and facilitation for the status change of the prospective site land and the preparation of the DED for waste management facilities.	Positive	Improvement of public facilities
6	Food Security, Agriculture and Fisheries Agency (DKPPP)	Facilitate compost quality testing and the utilization of compost produced from waste processing.	Positive	Environment, improvement of agriculture production
7	Community and Village Empowerment Agency (Dinpermades)	Facilitate the budgeting for village-level waste management through village funds.	Positive	Improvement of community health and social welfare
8	Community Health Agency	Carry out government affairs in the field of environmental health	Positive	Community health

No	Name/Agency/Organisation	Roles and Responsibilities	Influence	Interest
		related to waste management that fall under regional authority.		
9	Cooperatives, Small and Medium Enterprises, and Trade Agency (DINKOPDAG)	Facilitate the processed-waste product marketing	Positive	Enhancement of community economic development
10	Village Government	Facilitate of land preparation, community mobilization and site conditioning for waste infrastructure development, and implement the waste management activities at village level.	Positive	Environment and improvement of public facilities
NGO/LSM (Lembaga Swadaya Masyarakat)				
1	Group for Utilization and Maintenance (KPP)/Community Self-Help Group (KSM)/Village-Owned Enterprises (BUMDes)/3R Waste Management Site (TPS3R)/Village Waste Management Site (TPSD). (38 TPS3R management institution dan 94 TPSD)	As the implementing agency for waste management activities at the village level, provide employment opportunities for rural communities.	Positive	Environment
Academics				
1	Adiwiyata School (Target 108 schools: Elementary school, Junior high school, High school)	Provide education and practical training on waste management in schools.	Positive	Environment and education
Waste Bank				
1	Waste Bank Unit Group (In the entire area of Temanggung Regency, there are a total of 119 Waste Banks.)	Managing waste in their respective areas.	Positive	Increasing the economic value of waste and creating job opportunities.
Community				
1	Darmo Yanto, Head of <i>Dewan Persampahan</i> (The Waste Council) (Dewan Persampahan) is part of the "Temanggung Bebas Sampah" Community Movement.)	Assist in providing education to the community about waste management.	Positive	Environment and social
2	Scavengers in Sanggrahan Landfill	Support the waste management in the landfill	Positive	Community economic

Public Facilities

The nearest public facilities around the Sanggrahan Landfill include a school and a place of worship. Additionally, there is a volleyball court identified within a 1 km radius of the landfill. It is identified that

within a 500-meter radius, there is 1 mosque, 1 housing complex, and 1 cemetery. Within a 1 km radius, there are 7 mosques scattered in Sanggrahan Village and Pendowo Village, 1 church in Sanggrahan Village, 3 TPQs (Islamic Education Centers) in Sanggrahan Village and Pendowo Village, 1 Islamic boarding school in Pendowo Village, and 1 elementary school in Sanggrahan Village. The table below shows the number of educational and worship facilities in the affected villages.

Table 0-113 Number of Educational Facilities in Affected Villages (2023)

Category	Sanggrahan Village	Pendowo Village	Klepu Village	Gentan Village	Kranggan Sub-District
Playgroup	N/A	1	-	N/A	N/A
Kindergarten/Raudlatul Athfal	2	3	2	N/A	28
Elementary School/Madrasah Ibtidaiyah	2	3	2	N/A	35
Junior High School/Madrasah Tsanawiyah	2	1	-	N/A	10
High School/Madrasah Aliyah	1	1	-	N/A	4
Islamic Education Center	9	10	6	N/A	N/A
Islamic Boarding School	-	2	-	N/A	N/A

Source:

- i. Temanggung Regency in Figure, 2024
- ii. Sanggrahan Village Profile, 2023
- iii. Pendowo Village Profile, 2023

Notes:

NA = Not Available

Table 0-114 Number of Place of Worships in Affected Villages (2023)

Village/Sub-District	Mosque/Musholla	Protestant Church	Catholic Church	Temple	Monastery
Sanggrahan Village	18	1	0	0	0
Pendowo Village	26	0	0	0	0
Klepu Village	15	1	0	0	0
Gentan Village	21	0	0	0	0
Kranggan Sub-District	241	8	0	1	0

Source: Kranggan Sub-District in Figure, 2024

Gender Aspect & Vulnerability

In 2024, the minimum wage in Temanggung Regency increased by 4.05% compared to 2023, rising from Rp2,027,569 to Rp2,109,690. The poverty line for 2023 was set at Rp388,369 per person per month, with the number of individuals living below this line decreasing from 79,090 in 2021 to 72,960 in 2023. These households are considered vulnerable and require further support.

Based on data from the UPT (*Unit Pelaksana Teknis*), it is identified that 73% of scavengers at the Sanggrahan Landfill are women, and 36% are elderly. Most rely primarily on waste picking for income, although some also work as construction laborers or agricultural workers. Additionally, many scavengers receive Direct Cash Assistance (BLT) and work alongside their families. These individuals lack formal

education, experience, and skills, which makes them vulnerable in the development plans for Sanggrahan TPA and TPST. While they have expressed support for the development plans, they are concerned about losing their livelihoods during project construction. Some women bring their children to the landfill because they have no one to care for them at home, and the children are accustomed to accompanying their mothers to the landfill site.

Community Health

According to the 2023 Profile Data of Kranggan Community Health Center (Puskesmas), there are several public facilities distributed across various villages within the operational area of the UPT Kranggan Community Health Center. These include 1 non-inpatient community health center (Puskesmas), 7 mobile community health centers, 1 auxiliary community health center, 1 primary clinic, 2 independent general practitioner practices, 1 independent specialist doctor practice, 7 independent midwife practices, and 3 pharmacies.

Based on data collection conducted by the Kranggan Community Health Center, the top 10 diseases prevalent in Kranggan Subdistrict are quite varied. Hypertension was the most reported disease in Kranggan Subdistrict in 2023 and 2021, while acute respiratory infections (ISPA) were the most reported in 2022. The table below provides information regarding the 10 most reported diseases at the Kranggan Community Health Center over the past three years.

Table 0-115 10 Most Reported Disease in Puskesmas Kranggan (2021 - 2023)

No	2023		2022		2021	
	Disease	Number of Case	Disease	Number of Case	Disease	Number of Case
1	Essential (primary) hypertension	15.72%	Other acute upper respiratory infections of multiple sites	19.64%	Essential (primary) hypertension	23.14%
2	Other general examinations	13.44%	Essential (primary) hypertension	12.74%	Others	18.18%
3	Antenatal screening	12.48%	Myalgia	12.59%	Other acute upper respiratory infections of multiple sites	12.30%
4	Acute pharyngitis	11.40%	Cephalgia	11.17%	Myalgia	9.42%
5	Myalgia	10.75%	Gastritis	10.36%	Cephalgia	8.08%
6	Other acute upper respiratory infections of multiple sites	9.91%	Others	7.70%	Diabetes Melitus	8.08%
7	Need for immunization against other combinations of infectious diseases	8.01%	Amenorhe	7.00%	Gastritis	6.52%
8	Necrosis of pulp	7.42%	Vulnus Laceratum	6.48%	Amenorhe	5.16%
9	Periodontal disease, unspecified	5.62%	Obs. Febris	6.41%	Dyspepsia	4.66%

No	2023		2022		2021	
	Disease	Number of Case	Disease	Number of Case	Disease	Number of Case
10	Gingivitis and periodontal diseases	5.25%	Diabetes Melitus	5.91%	Gangren Pulpa	4.46%

Source: Puskesmas Kranggan Profile 2021 – 2023

According to the data from the Central Statistics Agency (BPS) of Temanggung Regency for 2024, there was an increase in the number of doctors in 2023 compared to 2022, which numbered 53. In contrast, the number of doctors in Kranggan District decreased in 2023. The most common medical personnel in both Kranggan District and Temanggung Regency are midwives, with 25 midwives in Kranggan District and 501 midwives in Temanggung Regency in 2023. Based on the available data, the residents of Temanggung Regency in general, and Kranggan District in particular, still rely on traditional birth attendants for some of their childbirth needs. In Temanggung Regency, there are 171 traditional birth attendants, and there are 11 in Kranggan District. The following is a list of the number of medical personnel in Kranggan District and Temanggung Regency by category.

Table 0-116 Number of Medical Personnel in Kranggan Sub-District and Temanggung Regency by Category

No	Medical Personnel	Kranggan Sub-District			Temanggung Regency		
		2021	2022	2023	2021	2022	2023
1	Doctor	3	4	3	48	44	53
2	Dentist	4	3	3	32	33	32
3	Nurse	10	14	11	188	267	258
4	Midwife	25	25	25	430	522	501
5	Pharmaceutical Engineer	2	2	2	26	34	31
6	Public Health Worker	2	4	4	27	63	65
7	Environmental Health Worker	2	2	2	28	29	29
8	Nutritionist	2	2	2	26	33	32
9	Physical Therapist	N/A	2	2	N/A	25	25
10	Pharmacist	N/A	2	2	N/A	27	23
11	Health Analyst	N/A	N/A	2	N/A	N/A	28
12	Traditional Midwife	N/A	N/A	11	N/A	N/A	171

Source: Temanggung Regency in Figure 2024 – 2022

The healthcare facilities in Temanggung Regency are quite diverse, ranging from community health posts (*posyandu*) to hospitals. Temanggung District is equipped with various healthcare facilities such as public health centers without inpatient care, auxiliary public health centers, primary clinics, and *posyandu*. In 2022, there were 1,521 *posyandu* recorded in Temanggung Regency, while at the Kranggan District level, there were 67 *posyandu* in 2022. **Table 0-117** shows the number of healthcare facilities in Kranggan District and Temanggung Regency.

Table 0-117 Number of Healthcare Facilities in Kranggan Sub-District and Temanggung Regency

Health Facility	Kranggan Sub-District			Temanggung Regency		
	2020	2021	2022	2020	2021	2022
Hospital	0	0	0	4	4	4
Public Health Center with Inpatient Care	N/A	0	0	N/A	6	6

Health Facility	Kranggan Sub-District			Temanggung Regency		
	2020	2021	2022	2020	2021	2022
Public Health Center without Inpatient Care	N/A	2	2	N/A	20	20
Auxiliary Public Health Center	2	2	2	39	38	39
Primary Clinic	N/A	1	2	N/A	18	19
Integrated Health Post	N/A	67	67	N/A	1,520	1,521

Source: Temanggung Regency in Figure 2023 & 2022

Access Road

The road access to the Sanggrahan landfill site via the Sanggrahan – Kramat road, which is a district road, serves as a route for local residents traveling between Sanggrahan and Kramat. According to the Environmental Impact Assessment (Andalalin) report 2023 for the Sanggrahan landfill, the Sanggrahan - Kramat road section has a VC Ratio of 0.11 (level A). This VC Ratio value indicates that the traffic flow is uncongested with high speeds and low traffic volume. While the operation of the TPST Sanggrahan may potentially lead to an increase in saturation levels (VC Ratio), the Andalalin document states that the resulting impact would not be significant.

Figure 0-17 Access Road to TPA Sanggrahan



Source: Andalalin TPA Sanggrahan 2023

Appendix M Sample of Grievance Recording Form and Log

SAMPLE OF GRIEVANCE RECORDING FORM

This form is provided to convey your concerns regarding our work. You can fill out this form anonymously. However, the more information you provide, including contact details, the easier it will be for us to follow up. This process is free for you. Participation in this process does not affect your right to take action under Indonesian law.

A	Grievance Identification Number	
B	Contact Information of Complaint	
1	Anonymous (Y/N)	
2	Gender	
3	Age	
4	Phone	
5	Email	
6	Address	
C	Details of Complaint	
1	What is the issue	
2	When it occurred	
3	Where it occurred	
4	How it occurred and who was involved	
5	Complaint's story and expectation	
6	Date grievance was recorded	
7	Place/method grievance was received	
D	Complaint Accepted (Y/N)	
D.1	Complaint Not Accepted	
1	Action taken	- Clearly not related to the operations of the organization – rejected - Labor related grievance – transfer to human resources - Commercial disputes – transfer to commercial dispute resolution mechanisms or civil court - Related to governmental policy and institutions – transfer to authorities - Other

2	Complainant notified (Y/N)	
3	Method of notification	
4	Date of disclosure	
D.2	Complaint Accepted	
1	Category of complaint	• Particulate emission to air • Odor • Noise • Effluent • Company vehicles • Influx of migrant workers • Security personnel • Land acquisition • Resettlement • Economic displacement • Other
2	Photos and documentary evidence of legitimacy	
3	Resolution	• Internal – Responsible people/division: • Multi stakeholder oversight • Independent mediation
4	Resolution/corrective action taken	
5	Complainant notified (Y/N)	
6	Method of notification	
7	Complainant(s) satisfied or appealed	
8	Photos and documentary evidence of closure	
9	Resources spent	
10	Date of closure	
11	Number of days from complaint to closure	
E	Post Closure Monitoring Required (Y/N)	
1	Method and frequency of monitoring required	
F	Preventive Measures to Avoid Reoccurrence of Similar Grievances	

1	Suggested preventive actions	

Acknowledgement of Receipt	By checking this box, I acknowledge that my grievance has been received by JMI and that I am aware of the grievance resolution process

Signature (Claimant)

Date (dd/mm/yyyy)

Signature (GRM Team)

Date (dd/mm/yyyy)

For Official Use Only	
Grievance Involves	
☐ Human Rights	☐ Property Damage
☐ Injury	☐ Environmental Concern
☐ Impact to Livelihood / Income	☐ Other:

SAMPLE OF GRIEVANCE LOG

Reference Number	Date	Complainant (name, address and phone number)	Recipient (name & position)	Complaint Report: a. Face to face b. Phone call c. Message (WA/SMS) d. Letter e. others	Complaint code: a. Social b. Environment c. Economic d. Health e. Education f. Security g. Infrastructure h. others	Explanation of the specific nature of the complaint	Evidence a. Picture b. Video c. Recorder d. Document e. Letter f. Others	Complaint Status a. open b. ongoing c. Closed	Detailed explanation of the progress of the complaint	Person in Charge	Evidence of the progress of the complaint a. image b. letter of cooperation agreement c. others	Notes
001	19/08/2023	Sidqy Yusuf, Bandengan Village, 082211223344	Alfi, field officer	A	A	Waste spilled from a waste truck in front of the house	A	C	Scattered rubbish is cleaned up by TPA officers	Ali	A	-

Appendix N Contractor's Environmental and Social Management Plan (C-ESMP)

Contractor's Environmental and Social Management Plan (C-ESMP)

The Contractor will be required to prepare a Site-Specific Contractor's Environmental and Social Management Plan (C-ESMP) to mitigate issues pertinent to the construction and rehabilitation of waste management infrastructure under the Solid Waste Management for Sustainable Urban Development (SWMSUD) Project. The C-ESMP must be submitted to the Province Project Implementation Unit (PPIU) for approval prior to the commencement of works. Once approved, the C-ESMP must be implemented during the construction period and updated periodically as needed to ensure it contains appropriate measures for the activities being undertaken. The updated C-ESMP shall be subject to prior approval by the PPIU.

The preparation of the C-ESMP will follow national regulations, relevant international standards, including AIIB's Environmental and Social Standards, and the SWMSUD Environmental and Social Management Planning Framework (ESMPF). Once approved, the C-ESMP will be appended to the Contract.

The following key components are expected to be addressed in the C-ESMP:

- **Contractor's Work Programme:** A brief overview of the Contractor's proposed Work Programme, including expected duration, number of workers, type and quantity of heavy equipment, and worker accommodation arrangements (onsite or offsite).
- **Management Structure:** Description of the Contractor's management structure, clearly outlining responsibilities for health, safety, environment, and social aspects.
- **Solid Waste Management:** Plans for managing construction waste, including the separation, collection, storage, and disposal of different types of waste. Waste must be properly handled and sent to approved facilities. Onsite waste accumulation must not exceed 30 days.
- **Liquid Waste/Wastewater Management:** Adequate toilet facilities must be provided for both workers and supervisory personnel. The C-ESMP should include details on the number and type of toilets, water supply, maintenance, and treatment of wastewater.
- **Hazardous Waste Management:** The management of hazardous waste, including oil, filters, and oily rags from heavy equipment maintenance, should follow AIIB and national standards. A register of hazardous waste generated must be maintained.
- **Hazardous Materials Management:** If hazardous materials (e.g., fuels, lubricants) are stored onsite, the C-ESMP should outline storage practices to prevent spills and contamination.
- **Erosion and Sedimentation Control:** Plans to prevent erosion and sedimentation during construction, including stockpile management and regular inspection of drainage systems.
- **Dust Control:** Measures to control dust emissions from construction activities, such as covering stockpiles and using dust masks.
- **Noise Prevention:** Measures to mitigate noise impacts during construction, including ensuring equipment is in good working order and adhering to noise level guidelines.
- **Workers' Health and Safety:** A detailed health and safety management system, including the provision of personal protective equipment (PPE), training, and Standard Operating Procedures (SOPs) for construction tasks.
- **Community Safety:** Measures to ensure the safety of nearby communities, including traffic management, site access control, and public safety signage.
- **Emergency Preparedness and Response Plan:** The C-ESMP should include an emergency plan addressing potential accidents, fires, fuel/chemical spills, and floods. The plan must include emergency contacts, training, and response procedures.

- **Chance Find Procedure:** Procedures to follow in the event of discovering archaeological artifacts during construction.
- **Training:** The C-ESMP must outline training programmes for workers, including induction training and regular toolbox sessions.
- **Site Closure and Restoration:** Measures for site decommissioning and restoration, including removal of temporary structures and waste.
- **Grievances:** The Contractor must follow the grievance mechanism outlined in the project's ESMP, including handling worker grievances.
- **Monitoring and Reporting:** The C-ESMP should outline monitoring and reporting mechanisms to track compliance with environmental, social, health, and safety standards.
- **Budget:** The C-ESMP must include a budget to cover the implementation of mitigation measures.

Once approved, the Contractor will be obligated to implement the C-ESMP to prevent, minimize, and manage any potential impacts of the project in alignment with AIIB's Environmental and Social Framework and national regulations.

Appendix O AIIB Pre Appraisal Finding

Environmental and Social Site Visit Report and Recommendations

Project Site: Tasikmalaya

Landfill site background: The Nangkaleah landfill sites were established in 2016, previously occupying natural habitat. Over time, the landfill has expanded. It is important to note that the landfill operates as an open dumping site without any lining. The geological characteristics of the area are loam and clay. Currently, there is no leachate collection or treatment pond in place. Leachate flows naturally through the topography and groundwater flow, eventually collecting at the bottom of the landfill in an open pond. Environmental testing is currently underway to assess the levels of air, water, and soil pollution at various sampling locations. These tests will provide valuable information regarding the environmental impact of the landfill.



Site image Jan 2015 reference google earth



Site image Dec 2021 reference google earth

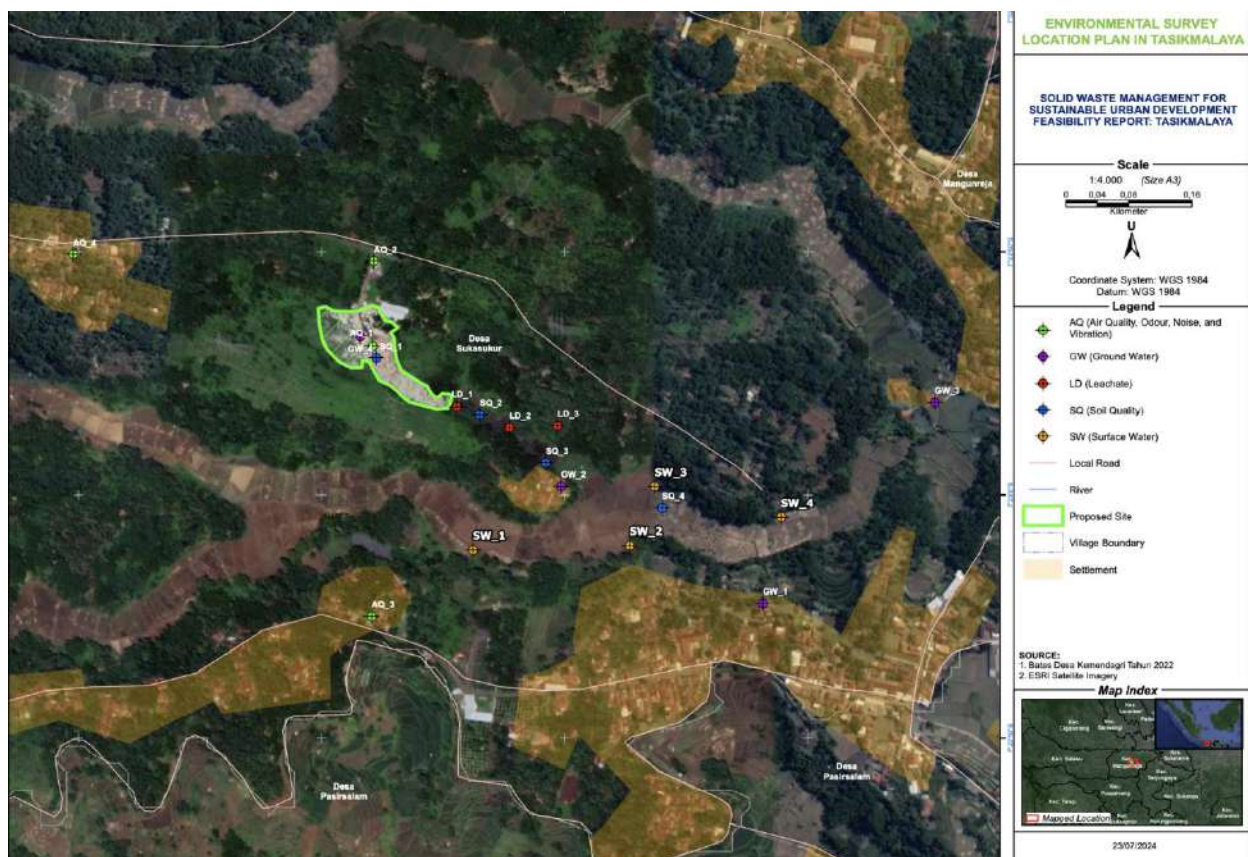
Project Components:

This project consists of four components: 1) TPST, 2) Sanitary landfill for residual waste, 3) Rehabilitation of the old open dumping site, and 4) Leachate treatment plant as per initial plan. DED is prepared for these components. Now waste collection and transfer stations are also included in the sub-project components. In addition to that the access road, disposal area for waste accumulated until the completion of project components, and operational road have not been identified and finalized in the DED. These aspects are still under consideration and require further planning and decision-making.

The TPST will be built on the right side of the main entrance, as shown in the map, while the sanitary landfill for residual waste will be on the left side, as shown below. The current landfill and its associated leachate will be closed. Proper measures will be taken to compress and contain the waste. It is crucial to collect and dispose of the existing leachate correctly, as it is concentrated and contains contaminants such as metals. Locations for transfer stations are yet to be identified. The current access road (4m) to the site needs to be expanded to 6m, however, LG only agreed to expand it to 5m.

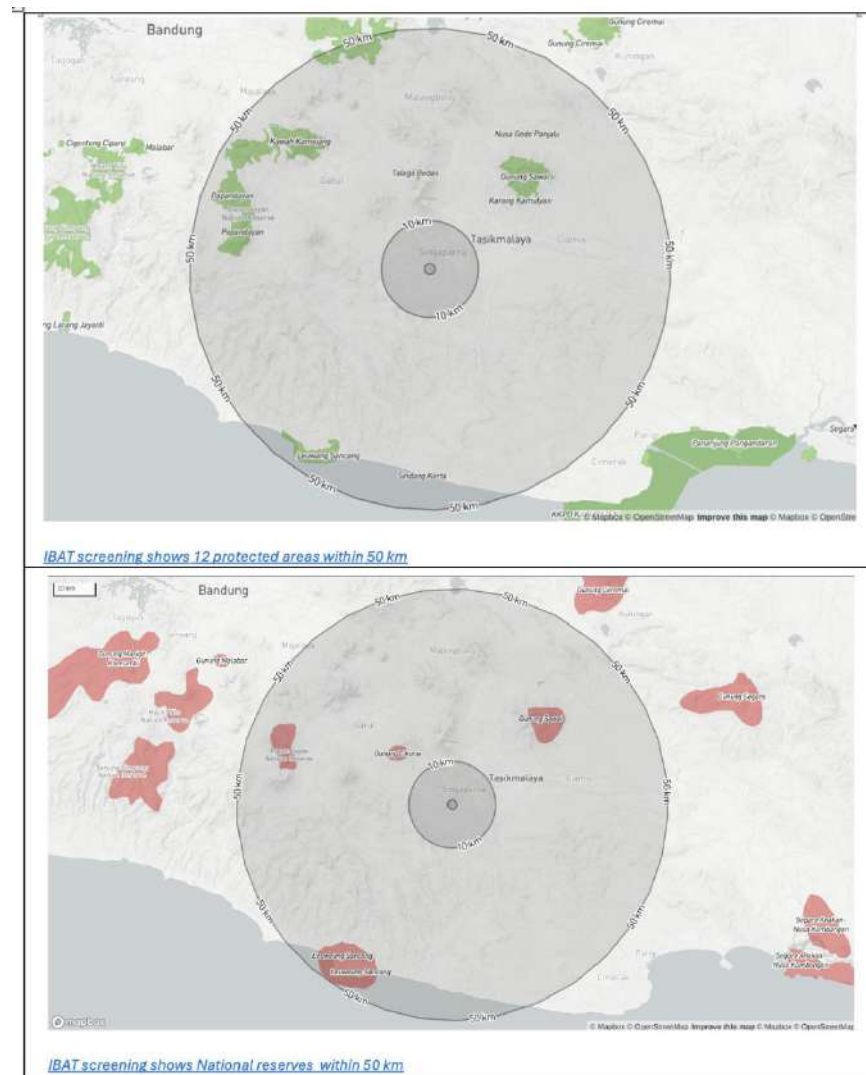
During the rehabilitation process, the overflowing waste at the cliff that has spread downstream should be collected and contained. OHS measures are critical, as workers will be exposed to waste contaminants, face the risk of methane inhalation, potential methane explosions, fire hazards, as well as other risks such as cuts, injuries, and diseases. It is essential to implement appropriate safety protocols and provide necessary protective equipment to ensure the well-being of the workers.

Environmental aspects: The environmental baseline is of utmost importance as the current landfill lacks lining and operates as an open dumping site. Leachate is collected in a natural pond, which may raise environmental concerns. The groundwater table in this area is below 20 meters, and leachate is already contaminating it. It is crucial to conduct environmental testing of groundwater, surface water, air quality, and noise levels to assess the extent of contamination and potential impacts. Sampling points have been strategically placed by ESC to cover all areas surrounding the landfill site, taking into consideration the flow of groundwater and the availability of groundwater wells. As there was no groundwater well on the current landfill, no groundwater sample was taken from there. Soil, air, and noise quality have been assessed both on the landfill and in the surrounding area. The ESC team has collected sampling points as shown in the map to ensure comprehensive data collection and analysis.



Biodiversity:

The IBAT screening of the Tasikmalaya landfill indicates that there are no protected areas, Key Biodiversity Areas (KBIs), national reserves, biodiversity hotspots within a 10km radius. However, there are four areas of biodiversity concern located within a 50km radius of the landfill. These findings emphasize the importance of considering and addressing potential impacts on biodiversity in the surrounding areas, especially during the planning and implementation of the landfill project, particularly concerning the waste collection and transfer station. It is crucial to take proactive measures to avoid and minimize any negative effects on the local biodiversity and ensure the sustainable management of the project.



Pictures of Tasikmalaya Project Site

Open dumping at Tasikmalaya, unstable slope that leads to overflow and the subsequent spread of waste downstream	Waste pickers resting area at the entrance of open dump site Tasikmalaya

	
Waste pickers working at the edge of cliff without proper PPEs	Location of LTP, old waste is covered by vegetation that needs to push back to landfill during rehabilitation

Project Site: Magelang (Greenfield)

The landfill site in Magelang is part of stage 3 of this Project, which will serve the City of Magelang and Regency of Magelang. Out of 12 ha land acquired for the project, around 2.9 ha will be used for the construction of the Project and it is expected to treat 200 tons of waste per day. The land was acquired by the government and ready for any future Project expansion. The Project Team recommends conducting due diligence for land areas already acquired by the government prior to the Project. A consultant has been hired by the Regional Settlement Infrastructure Centre to conduct the DED of the landfill site. An initial layout of the sanitary landfill site was presented and discussed with the entire team. The team visited the site together with other government ministries, such as the Ministry of Public Works and Housing, Ministry of Home Affairs (MOHA), Ministry of Health (MOH), and Provincial Government of Magelang. Also, the local government has already signed a Memorandum of Understanding (MOU) with the cement offtaker, and will explore another offtaker later.

Landfill Site Background: The project site seems like a natural habitat with vegetation and forest cover, with no communities residing within a 500-meter radius of the project site. The groundwater level in the area ranges from 70 to 130 meters. The ground geology consists of loam, clay, and rock at the bottom. Further assessment of the specific land use, environmental and social receptors, water streams, critical habitats, natural reserves, and protected areas surrounding the project will be conducted once the KMZ file is received from the Local Government (LG).

Land Acquisition and Tree Cutting: The LG has purchased the land from local individuals and obtained permission from the Ministry of Forestry (MOF) to carry out tree cutting activities. The timber obtained from the trees will be managed by the forest department. However, it is important for this project to include a reforestation plan in accordance with national laws, which specify the number of trees that need to be planted for each tree cut.

Project components: The project will include the construction of a TPST, a residual landfill, one main landfill cell, a leachate treatment plant, a vehicles storage area, buffer zones around the zones/cells

and TPST, and operational roads within landfill area, among other facilities. The site topography is characterized by slopes and requires extensive cut and fill operations. It is essential to assess the stability of the soil for construction purposes as well as the appropriate technologies to be applied for the landfill. The DED has yet to determine the specific areas for vehicle/truck wash system, vehicle drying, and the discharge point for leachate waste, among others. A final layout will be prepared later on to include specific details of the sanitary landfill.

Electricity and Water Supply: Electricity will be sourced from the nearest community, which is located approximately 501 meters away from the site. Water supply to the site will be established after the construction of a groundwater well.

Access Road: The provincial government is currently improving a 3-km road from Magelang City highway to the point of access road to sanitary landfill. An additional 1.6 km access road with 8m width is currently being constructed, together with retaining walls in areas with swelling soil, affecting mostly agricultural areas. The access road will be completed by December 2024. The local government has carried out consultation with the communities and affected individuals as well.

Environmental aspects: Since this project is part of Phase 2, the development of the Draft ESIA will take place between November and December and will be finalized in March 2025 together with DED and FS. The ESIA will be updated based on the final design and finalization of project components. Although local environmental approval has been obtained, there are gaps in the local documents that need to be addressed and integrated into the updated ESIA. Given that this project is being implemented in a greenfield area with a natural habitat, it is crucial to involve a Biodiversity expert to assess the impacts on biodiversity.

Key findings and recommendations:

The 1.6 km road currently under construction serves as the access road to the site. It is important to note that AIIB's ESF also applies to the associated facility. Therefore, an environmental and social assessment needs to be conducted to address any risks and impacts in accordance with AIIB ESF. No legacy issue is confirmed during the site visit.

- Considering the potential for changes in the natural habitat, a critical habitat assessment and Biodiversity Management Plan should be prepared. This needs to be confirmed after receiving KMZ files of LG and running IBAT assessment
- It was observed during the construction of access road some workers were not wearing proper PPEs and were working in risky conditions. As this road is an associated facility OHS needs to be strictly followed including method statement for work undertaken by contractor. This will be assessed during ESIA. The status of the local EIA report and approval status for the road needs to be confirmed, as it is an associated facility, and an ES assessment will be conducted to identify any gaps and address them before project approval.
- Given that the project site is located in a natural habitat, it is important to consider the noise generated by the shredders in the TPST. The design of TPST walls and the selection of machinery should take this factor into account, and measures such as installing buffers and choice of technology should be implemented to reduce noise impacts on the natural habitats.
- The community and local government perceived the Project positively. There has been no complaint since the construction of the access road and announcement of the Project as it is still under an initial stage. A grievance redress mechanism (GRM) is needed to be established for this

project, including channels for contractors, as early as possible to ensure that environmental and social concerns, complaints, and issues will be addressed by the Project.

- There are no commercial establishments, residences, or industries within the 500-m radius of the Project. The nearest village is about 501 meters away. Land acquisition and compensation was already done and completed.
- The local government is committed to promoting gender equality and addressing risks related to gender-based violence/sexual harassment/abuse for this Project.
- We would like to highlight that additional consultations should be carried out before the construction, during construction, and after the construction of the sanitary landfill and associated facilities (e.g., access roads, transfer stations) – during the entire project cycle. An ESIA and SEP will be prepared for this one as part of Stage 3, while LRP is not applicable since no livelihood will be affected.

Pictures of Tasikmalaya Project Site

	
Green field project site, more than 100 of trees will be cut, biodiversity assessment will be conducted during ESIA	Access road under construction for Magelang site
	
Workers working out proper PPE during construction of access road which is associated facility of Magelang site	Mission members during field visit

Project site: Gunungkidul

- **Background of landfill:** The existing landfill/open dumpsite in Gunung Kidul has a total area of 9 ha, while the total land area for the planned TPST is 4.1 ha. During the site visit, several observations were made regarding the conditions of the current landfill and interview with the waste pickers was also conducted. The landfill was constructed in 2011 using HPDE geomembrane (1-2mm thickness), methane collection pipes, and a fully functional leachate collection and treatment plant.
- **Environmental aspects:** Three groundwater wells have been installed for groundwater monitoring on current landfill site. Environmental tests conducted by the Environmental department have indicated that the effluent and air quality meet the required standards and have not exceeded them thus far, this needs to be checked in environmental testing reports (LG to submit environmental testing documents for ESIA). The effluent from the leachate treatment plant is of good quality and is used for irrigation of crops, for cattle, and excess is discharged into the stormwater collection drain. It is important to note that there is a seasonal stream connected to the stormwater drain of the old landfill, which recharges the groundwater located downstream. This is critical as leaked leachate from the landfill site may contaminate this stream and the groundwater (leakage of leachate was seen in the storm drain as shown in the pictures below). Health screenings are conducted every six months for workers and waste pickers, and no health issues have been reported thus far. The community resides within a 2-3 km radius of the site and no complaints have been received so far. Waste pickers are present on-site and are involved in sorting and collecting recyclable materials. Additionally, agricultural waste is handled on-site, and compost is produced and distributed within the community.

Overall findings and recommendations (Environmental aspects).

The area designated for the new landfill site is currently undergoing clearance by the community with the permission of the local government. Burned scrubs and their ashes were found on-site, indicating that the community has been allowed to cut down trees for their use (pictures presented in the below table).

The geomembrane, although present, was not visible on the ground as it is buried under 1.5 meters deep from the top. The waste (1.5 m top layers) has covered the entire geomembrane, leaving no traces visible.

The leachate treatment plant was found to be functioning properly and meeting the required environmental standards. Quarterly testing of the effluent is conducted by the environmental department, and it meets the requirements. The effluent from the leachate treatment plant is used for cattle and irrigation purposes in the area. It is important to note that the waste in the landfill contains 3% hazardous waste, and the leachate may still contain heavy metals. Therefore, further testing should be conducted on the leachate from the old landfill's treatment plant as part of the ESIA. Hazardous waste should not be mixed with municipal waste. However, to avoid contamination of new leachate treatment plant should also consider incorporating technology to handle accidental hazardous waste leachate. The old leachate treatment plant utilizes both anaerobic and aerobic processes, while the new one will incorporate anaerobic, aerobic, and chemical processes. Traces of leachate were found in the stormwater drain/waste stream, which was likely generated from the top layers of waste (1.5-meter layers above the geomembrane) due to rainfall seepage. The top waste should be contained and avoid leakage of leachate to storm water drain.

Overall findings and recommendations (Social aspects).

- During the site visit, the Project team was able to interview the members of the organized waste pickers in Gunung Kidul, who were all men during that time. There are around 40 waste pickers deriving livelihood income from the landfill, both men and women supporting each other. Some of them are working for 20 years as scavengers/waste pickers from 7AM to 4PM/5PM every day. The youngest waste picker is 22-year-old while the oldest is 50 years old earning around IDR 70,000 (USD 4). Due to the exposure to the landfill, the waste pickers suffer from health issues, including asthma, stomach aches/pains, minor/major cuts, and wounds, among others. The institution has been providing them with regular health check-ups (e.g., monthly, quarterly, and semi-annually) and receiving gifts during major religious celebrations in Indonesia. They also have access to drinking water and receive compost/biogas from the landfill once in a while.
- The nearest community is located 2 km away from the site and there is no need for construction of new access roads from the highway to the landfill site. However, internal access roads will be constructed but there is no need for land acquisition as the land is already ready.
- Several individual interviews and focused-group discussions has been done with the communities and the waste pickers but series of consultation with the community, waste pickers, waste truck drivers, and other key stakeholders are expected to take place for the preparation of ESIA's, LRPs, and other ES instruments.
- One major issue identified during the site visit was the negative perception of the neighborhood about the landfill, most especially because of the odor/smell (although it was highlighted that the landfill was constructed first before the community settle in the area). This strong smell intensifies during rainy season which negatively affects the community.
- Gender roles: Both husband and wife work and support each other for the landfill work. They are both collecting the same type of materials, sorting, and selling it to the junk shop owners.
- As an organized community, the waste pickers do not need to transport all the collected waste from the landfill to the junk shops. The junk shops owners go to landfill to pick up the collected waste from the waste pickers.

Pictures of Gunung Kidul Project Site

	
Location for TPST and residual landfill, trees needs to be cut	Old LTP functional, however environmental testing reports needs to be checked

	
Current sanitary landfill which has been constructed in 2011 which geomembrane lining, landfill is full and traces of geomembrance cant be seen as it is covered by waste	Leachate leaking in drain from runoff

Project site: Landfill Sanggrahan Temanggung

E&S Specialists visited TPA Sanggrahan on 12 August 2024 followed by a discussion at Pendopo (Regent's House of Temanggung) with Director of Multilateral Funding Bappenas (National Planning Agency), Ibu Agustine Ayirana, Sanitation Directorate of Ministry of Public Works, Directorate of Loan and Grant Ministry of Finance, Directorate of Synchronization Local Government Affairs, Ministry of Home Affairs. Regency's Secretary representing Bupati Temanggung (Sekda), Head of Regional Planning Agency, Head of Public Works, Environmental agency and other official of Temanggung Regency, staff from Regional Public Works office, Design Consultant, ESC consultant and potential off takers. The presence of high rank officials from Central Government, PMU and Regency officers have resulted in several key strategic decisions related to the E&S mitigation measures at sub-project level such as off-taker MOU, budget allocation from local government for O&M of the landfill, commitment to waste picker's livelihood and a proper temporary disposal area during construction. E&S specialist presented photos of key E&S findings during site visits and recommended several suggestions and improvements (including positive ones).

During site visits, important information was obtained regarding the pictures of the construction of the geo-membrane for Cell#1 in 2009 and Cell#3 in 2012 and its leachate treatment plant (see pictures). This confirmed that this facility is not an open dump and positive efforts to prevent non-point source pollution from the landfill as compared to the direct dumping of garbage on the ground are found. This also shows that there are locally available resources for constructing landfills with geo-membrane liners. The same experience, readily available resources and financing can be used when construction the temporary storage for garbage during construction that will need to get approval from AIB and PUPR. Institutional and technical capacity are locally available. It was also found that at the bottom of cell#3 the local government had allocated budget to install gabion to strengthen the foundation of the cell.

	
	
	Geo -membrane installation in 2012 for cell #3 and observation during site visit on 12 August 2024 – still in good condition. This is a good information that it is not an open dumping facility. The gabion installed at the bottom of cell#3 to prevent landslide showing local government effort using their own resources to keep the asset operating safely.
Geo -membrane installation in 2009 for cell #1 and Leachate Treatment Plant	

Improvements needed

Inlet pipe to the leachate treatment plant is corroded and broken so that the current leachate effluent does not flow to the LTP (see picture). Based on the discussion with the design engineer and public works, this will be fixed as part of the landfill rehabilitation project including the reactivation of the ground water monitoring system. Lack of Operation and Maintenance budget for landfill operations such as for daily covers, spare parts, training, LTP process control and monitoring were identified during the site visit and these shall be included in the MoU (Nota Kesepakatan) between Local Government and Ministry of Public Works, also this will be ensured by the draft guidelines from the Ministry of Home Affairs (MOHA) to Local Government in preparing an adequate budget for a proper landfill Operations and Maintenance. MOHA is also the PIU for this project.

	
Corroded “knee” pipe connection of LTP influent before entering the treatment process at LTP- to be fixed under the rehabilitation component of the project.	A Water well for ground water monitoring is available to be reactivated for the regular monitoring program as part of the MOU between PUPR and local government.

Social Aspects

- 1) Access roads will be built to reach the TPST (around zone 3 and zone 1) as the existing access roads are currently covered with waste. The team was informed that this will be the responsibility of the district government to provide the access roads, and the project team will discuss with them after compacting the waste in zone 1, which will take approximately 7 months. An access road will also be built for the construction activities around zone 5. They will also clear and widen the current access road. The village council will support by providing land to widen this road. We need to ensure that this will be a voluntary land donation and check all the land certificates and land usage when this happens. Good inter-department coordination was observed as PWD (who was also present at the meeting) was requested to widen this road and they agreed in principle.
- 2) Concerns were raised over landslides during the rainy season as this is an open dumpsite which has exceeded its capacity. Landslides have happened in other landfills in Indonesia causing community damage and deaths. Mitigation measures be put in place for this. In this landfill there are no hamlets that are likely to be affected if there are landslides.
- 3) All the current 67 waste pickers have been registered with a waste pickers association (CSO) which the project team is working closely with. The team showed the video of the waste pickers close to the excavation machines and discussed our concerns regarding economic displacement. We got a commitment for: a) **ensuring livelihood restoration for the existing waste pickers** b) **better working conditions and the project addressing health and safety issues.** Agreed actions include support to provide health insurance to the workers through the national universal health coverage programme (JKN) that also covers informal workers.
- 4) Consultations were undertaken with 4 waste pickers, 2 men and 2 women. They were aware of the rehabilitating of the landfills and were of the view that this would benefit them as it would improve the working environment (cleaner, less smelly) and they are likely to get more valuable waste. Most of them have been working at this landfill since the beginning (10-14 years) but none of them live in the landfill. It takes them about an hour to reach the landfill daily. They are registered and have been given assurances that they will not be displaced economically. For most of them, this is the only source of

livelihood. Children (3 number as reported by the consultants- we did not see any children at the landfill). They need to be provided support to go to school and the disabled child in a special school which are there in most districts. Admission and transport can be facilitated and financed by the project.

- 5) Community support: There is a regulatory framework in the form of village and district decrees for community involvement in waste management which they will adhere to. They will continue to seek the support of the neighborhood groups at the village level through community engagement efforts.

Project site: TPA Bandengan in Jepara

E&S Specialists visited TPA Jepara on 8 August 2024 started by a meeting with The Secretary of the Regent (SEKDA) representing Bupati Jepara followed by a site visit and a discussion at Pendopo Kartini in Regency's House attended by Sub-Director of Sanitation Directorate of Ministry of Public Works, Directorate of Loan and Grant Ministry of Finance, staff from National Planning Agency, Directorate of Synchronization Local Government Affairs, Ministry of Home Affairs, Head of Regional Planning Agency, Head of Public Works and Environmental Agency and other official of Jepara Regency, staff from Regional Public Works office, Design Consultant and ESC consultant. The technical discussion between PMU and Head of the Environmental Agency discussed several key issues related to the final storage of residue from the passive landfill, commitment to E&S aspects such as cultural heritage protection, waste picker's livelihood etc. E&S specialist presented positive findings during site visits and recommended several suggestions and improvements (see below pictures).

	
TPA Bandengan Jepara was constructed with geo-membrane liner in 2013— picture obtained during site visit on 8 Aug 2024. It is a good indication that the landfill is not an open dump facility, and the project will rehabilitate existing condition along with a TPST construction.	Daily cover was found during site visit to prevent vectors, open burnings although the volume and the budget is still limited to meet the Sanitary Landfill requirement. This issue will be covered by the Project as the TPST construction will reduce the volume of waste to the landfill.

	
Perimetric drainage and daily cover of the active and inactive cell	Leachate Treatment Plant -- the landfill has an existing facility to prevent non-point source pollution with a centralized leachate treatment, but the plant operation and effluent quality do not satisfactorily meet the standards. MoU between PUPR and Pemda will address this aspect as part of the Project's Capacity building support.

	
2nd LTP That could be used to increase treatment capacity of the project at Bandengan Landfill.	Proposed location for final disposal of decomposed material from the passive cell#15 to be mined for the construction of TPST's hangar foundation base.

	
Ventilation pipes at the passive cell#15. The landfill had been properly capped to ensure that the cell is free from vector, scavenger and is ready to be reclaimed and the ventilation pipes are installed to exhaust the gas before landfill reclamation/mining.	LTP effluent discharge to water body –ESIA surface water quality sampling is being undertaken- to ensure the baseline information is collected before and after the project.

Final Storage for Decomposed landfill materials of Passive Cell#15

Due to limited land available at the landfill facility and to prevent land acquisition outside the boundaries of the facility, a plan to reclaim the landfill “decomposed” material at passive cell #15 is proposed (see the picture below). This activity is called landfill mining and is widely applied in developed countries with some economic benefits from the use of landfill residue to become an alternative material for daily covers, construction fill or to be disposed at final storage/disposal site. A site belonging to the Local Government is proposed as the final storage area equipped with a proper permeable based layer from a combination of Fly Ash Bottom Ash, geotextile and a top cover. TCLP (Toxicity Characteristic Leaching Procedure) is suggested to be conducted for the decomposed material at passive cell #15 before the mining activities. If the TCLP test is below the threshold limit, the design of the final storage area could be modified to be more efficient and proportional to the risks and impacts. The Local Government allocated USD 300,000 for this effort, and PUPR and AIIB will provide no objection to the proposal. Another option suggested is to use trommel screen to separate ‘soil’ and the inert material (steel, aluminum, glass, cable etc.) that could reduce the volume of the storage area. During wrap up meeting with Director Sanitation PUPR, there is also another option to include this facility in the Project Capital Expenditures or to put the decomposed material in the Landfill Residue that will be constructed under the project.



Picture of passive cell #15 (blue line) that will be mined to remove the decomposed material and to become the foundation of the TPST hangar building etc. And the red line is the proposed location of the final storage for decomposed material from cell#15. Picture to the right is the new TPST design, on top of cell#15 that will be mined.



Picture of Fecal Sludge Truck at IPLT (Fecal Sludge Treatment Facility) -inside the landfill area. It is highly recommended to improve the operation of the IPLT as it will affect the stream quality at the outfall of the IPLT which also the effluent's stream for the Leachate Treatment Plant (LTP) of the landfill. Picture to the right, the ground water monitoring well that needs to be reactivated before the project starts.

Project site: TPA Landoh in Rembang

E&S Specialists visited TPA Rembang on 9 August 2024 followed by a meeting with The Bupati of Rembang attended with the Head of District Planning Agency, Sub-Directorate of Sanitation of Ministry of Public Works, staff from National Planning Agency, Directorate of Synchronization Local Government Affairs, Ministry of Home Affairs, Head of Public Works and Environmental Agency, Head of UPTD as the Landfill Operation, **Community Representatives (Village leader and Religious leader)**, Head of District's Health Agency, Head of Water Supply Utility, representatives from PT SEMEN GRESIK as potential off-taker and other official of Rembang Regency, staff from Regional Public Works office and ESC consultant. The technical discussion between PMU and Head of the Environmental Agency discussed several key issues related to the proper temporary garbage disposal area during construction, cultural heritage protection, waste picker's livelihood etc. E&S specialist presented photos of key E&S findings during site visits and recommended several suggestions and improvements (see attached).



Leachate from the active cell are not well captured by the leachate collection system and is not directed to the LTP downstream. The project will rehabilitate this issue under the landfill rehabilitation component.



During rainy season the leachate from the landfill flows to the surrounding creeks and the community expressed the concern to speed up the rehabilitation project to improve the environment situation there.



Spiritual Site at the Landfill – “Pesujudan” or “Petilasan” that have been committed to be protected and supported by better fencing and access road.



Another spiritual site, a graveyard located 500 meters from the Rembang landfill. This site will be connected to the Petilasan or Pesujudan at the left picture. During the wrap up meeting with Bupati, this had been raised to get attention from project proponent to do a proper consultation with the stakeholders before the construction.



Proposed area for temporary disposal site for waste during construction- it is 10 minutes by car from the landfill and the land belongs to PEMDA- but the allocated budget of USD 40,000 might not be sufficient for a proper temporary storage area and leachate collection system. Bappeda needs financial support for this. Also, the environmental baseline information for this area is needed before the garbage is temporarily stored here and proper monitoring effort is needed. Lastly, they considered 1,000 m2 area of temporary storage as compared to the suggested 5,000 m2 area by the designer from Balai PUPR. Highly recommend to including this facility under the Project’s Capital Expenditure, but to encourage Local Government



A proper and meaningful Stakeholder consultation is needed to socialize the potential impact of the temporary facilities to the surrounding stakeholders. The picture above is the university located 300 m from the entrance of the access road to the temporary landfill.

participation, they can support the environmental baseline data collection from the surrounding UKL UPL reports, and to cooperate with Pati Regency sanitary landfill for temporary leachate disposal from the temporary facility.	
	
Land belongs to PEMDA REMBANG for the temporary waste storage area during construction.	

Appendix P High Level Management Procedure

I. High Level Environmental and Social Management Procedure for Temporary Storage Area (During Landfill Rehabilitation)

Objective:

To manage the temporary storage area for waste and materials during the construction phase of landfill rehabilitation. This procedure aims to minimize environmental and social impacts, ensuring compliance with regulations and safeguarding the community and workers.

1. Site Selection and Preparation (Temporary Facility)

- **Short-term Location Criteria:**
 - Select a temporary location close to the construction site but away from sensitive ecosystems (e.g., water bodies, wetlands) and residential areas to minimize transport and environmental risks.
 - Ensure the area is easily accessible from the rehabilitation site to reduce transportation impact.
 - Prioritize previously disturbed or degraded land to avoid unnecessary environmental damage.
- **Permitting:**
 - Obtain temporary permits from local authorities for waste storage during the rehabilitation period.
 - Conduct environmental baseline study at selected location, the baseline data can be obtained from nearest monitoring location (implementation report of UKL/UPL or AMDAL), or from IKLH (Environmental Index) monitoring location.
 - Confirm that the selected location complies with local zoning and environmental regulations for temporary use.
- **Use of Local Materials:**
 - Whenever possible, use locally available materials like Fly Ash and Bottom Ash (FABA) for landfill base construction. FABA can provide a stable foundation for the temporary landfill while reducing costs and environmental footprint.

2. Social Considerations

- **Pre-construction Communication:**
 - Conduct brief consultations with nearby communities, informing them of the temporary nature of the facility and expected impacts (e.g., noise, dust, transport activities).
 - Reassure residents about mitigation measures for potential nuisances and explain the short-term duration of storage use.
- **Avoiding Social Disruption:**
 - Ensure the temporary storage area does not interfere with local livelihoods, especially informal activities like waste picking, and farming,.
 - Mitigate any potential displacement or disruption to informal workers by providing alternative access points or temporary employment during the rehabilitation.

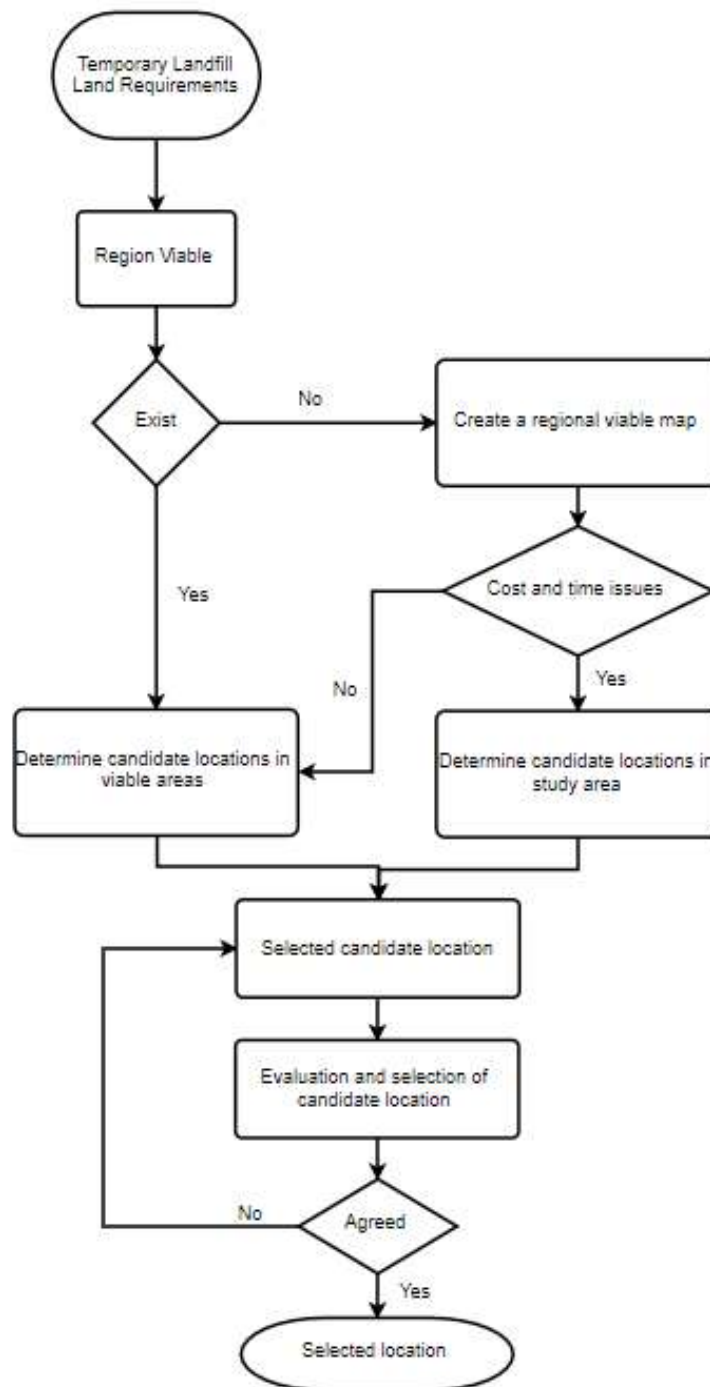
3. Environmental Considerations

- **Containment, Spill Prevention, and leachate management:**
 - Use impermeable liners and containment barriers to avoid soil and groundwater contamination
 - Contain the leachate and spray it to the nearest sanitary landfill

- Dust, Odor and Air Quality Control:
 - Keep all waste and material piles covered to prevent dust generation.
 - Routine cover the landfill cell to prevent the odor
 - Noise Control:
 - Limit activities at the temporary storage area to standard working hours to avoid noise disturbances in the early morning or late evening.
 - Transportation Impact Mitigation:
 - Coordinate with transportation agency and get approval for the new waste transport route to the temporary landfill
 - Coordinate transportation schedules to avoid peak traffic times, reducing the impact on local roads and minimizing traffic congestion.
4. Monitoring and Reporting (Short-term)
- Daily Monitoring:
 - Inspect the storage area daily to check for leaks, spills, and overall containment integrity.
 - Social Monitoring:
 - Maintain regular communication with the local community to address any concerns that may arise due to noise, odor, or traffic.
 - Ensure the availability of a grievance mechanism to allow communities to report any issues or concerns during the construction period.
 - Recordkeeping:
 - Keep records of all materials and waste stored at the temporary facility, as well as the schedule of removal.
 - Document any issues related to environmental or social impacts and actions taken to resolve them.
5. Waste Removal and Final Site Cleanup
- Waste Removal:
 - Once the landfill rehabilitation is complete, conduct final waste/material removal and decommission the temporary storage facility.
 - Site Restoration:
 - After the temporary storage facility is no longer needed, restore the site to its original condition, ensuring that any environmental impacts are mitigated.
 - Remove all temporary structures and conduct soil or water testing to confirm there are no residual contaminants.

Flow Chart for Temporary Storage Area Management

Site Selection: based on SNI 03-3241-1994: Procedures for Selecting Locations for Final Waste Disposal Sites



Site Preparation

Install containment and stormwater systems → Implement dust, odor, and noise control measures.

Monitoring

Conduct daily environmental and social inspections → Maintain records of impacts and corrective actions.

II. High level Biodiversity Management Guideline

Objective

This guideline outlines high level procedures for managing biodiversity during landfill rehabilitation and related infrastructure projects. It aims to minimize impacts on local flora and fauna, protect ecosystems, and ensure compliance with national regulations and international best practices. This guideline ensures that biodiversity considerations are integrated into all stages of project development.

1. Pre-Construction Biodiversity Assessment

- Biodiversity Screening:
 - Conduct an initial Environmental and Social Impact Assessment (ESIA) to identify key biodiversity areas and species in the project area.
 - Key Resources: Use biodiversity databases such as the Geoportal MenLHK (<https://geoportal.menlhk.go.id/>), Key Biodiversity Areas (KBA), World Database on Protected Areas (WDPA), and Integrated Biodiversity Assessment Tool (IBAT) to identify critical habitats and species.
 - Ensure compliance with PermenLH 20/2018, which regulates the protection of endangered species in Indonesia.
 - Map ecologically sensitive zones (e.g., wetlands, forests, habitats of endangered species) and establish no-go zones or buffer zones where necessary.
- Consultation with Experts:
 - Engage with local biodiversity experts, environmental authorities, and relevant stakeholders to gather information on species and ecosystems at risk.
 - Use national biodiversity databases to identify critical habitats and species protected under national and international law.

2. Habitat Protection During Construction

- Limit Habitat Disturbance:
 - Only clear vegetation where necessary. Avoid clearing during wildlife breeding seasons.
- Protect Wildlife:
 - Set up wildlife crossings or safe relocation areas for displaced animals.
 - Monitor the site daily for any wildlife that may need protection or relocation.

3. Control of Invasive Species

- Prevent Introduction:
 - Ensure vehicles, equipment, and materials entering the site are free of invasive species.
 - If invasive species are identified, develop a plan to remove or control them.

4. Monitoring and Reporting

- Biodiversity Monitoring:
 - Regularly monitor the condition of key species and habitats during and after construction.
 - Compare current conditions with pre-construction assessments to track any changes.
- Report Findings:
 - Share regular biodiversity reports with environmental authorities and communities.

III. High Level Environmental and Social Management Procedure for Access Roads and Water Supply (Upgrading or New Construction for Landfill Access)

Objective:

To manage the design, construction, and long-term operation of access roads and water supply for landfill sites in a way that minimizes environmental impacts and social disruption, ensuring safe and sustainable access for landfill operations while protecting surrounding communities and ecosystems.

1. Site Selection

- **Consideration:**
 - Use the existing roads or existing distribution lines to avoid land acquisition
 - Select routes that avoid environmentally sensitive areas (e.g., wetlands, water bodies, protected habitats, steep slopes)
 - Prioritize previously disturbed or degraded land to avoid unnecessary environmental damage.
 - Use the shortest and least invasive route to the landfill, minimizing the need for land clearance.
- **Permitting:**
 - Secure all necessary permits from environmental and local authorities, ensuring that the design adheres to local regulations and standards

2. Social Consideration

- Engage with local communities early in the planning stage to identify concerns about the road route, potential impacts, and planned mitigation measures
- Ensure the road does not divide communities, block access to critical services (e.g., schools, markets), or disrupt local businesses and farming activities
- Ensure willing seller willing buyer if there is any land acquisition, follow national regulations and AIIB ESS 2.

3. Environmental Considerations

- Use water spraying or dust suppressants on unpaved sections of the road during construction to reduce airborne dust.
- Limit construction vehicle speeds to reduce dust generation in residential or agricultural areas.
- Schedule construction activities during daylight hours to minimize noise impact on nearby communities.
- Use noise barriers where construction is near sensitive areas like schools, hospitals, or residential zones.

IV. High Level Hazardous Waste Management Guideline

Objective

This guideline provides simple steps for managing hazardous waste during landfill rehabilitation projects. It ensures compliance with key national regulations and helps protect the environment and public health.

1. Key Regulations

This guideline follows these important laws:

- Act No. 11 Year 2020 (Omnibus Law)
- Government Regulation No. 22 Year 2021 (Environmental Protection and Management)
- Minister of Environment and Forestry Regulation No. 6 Year 2021 (Hazardous Waste Management)
- Minister of Environment Regulation No. 14/2013 (Hazardous Waste Labels and Symbols)

2. Identifying Hazardous Waste

- Classify the Waste:
 - Identify and classify all hazardous waste (e.g., chemicals, batteries, asbestos) according to Regulation No. 6 Year 2021.
- Proper Labeling:
 - Label all hazardous waste containers with appropriate symbols and descriptions based on Regulation No. 14/2013.

3. Safe Storage

- Store Safely:
 - Use secure containers for hazardous waste and store them in safe, isolated areas.
 - Set up containment systems to capture any leaks or spills.

4. Handling and Transportation

- Worker Training:
 - Train workers to handle hazardous waste safely, including using proper protective equipment (PPE).
- Transporting Waste:
 - Use licensed transporters to move hazardous waste to approved disposal facilities, following Government Regulation No. 22 Year 2021.

5. Disposal

- Proper Disposal:
 - Hazardous waste must be taken to licensed facilities for proper treatment or disposal, following Regulation No. 6 Year 2021.

V. High Level Physical Cultural Resource Management Guideline

Objective

This guideline outlines procedures for managing Physical Cultural Resources (PCR) during MRF development and operation, landfill rehabilitation and associated infrastructure projects, based on AIIB's Environmental and Social Framework (ESF). It aims to ensure that PCRs are protected from project impacts, with clear processes for identifying, managing, and mitigating any risks, including the implementation of a chance find procedure.

1. Screening

During project preparation, conduct a **Rapid Environmental Assessment (REA)** to screen for potential PCRs (e.g., archaeological sites, built heritage, natural features with cultural significance) in or near the project footprint.

- Engage national and provincial cultural heritage experts.
- Use databases (like <https://brwa.or.id/> , <https://referensi.data.kemdikbud.go.id/kebudayaan/cagarbudaya>, <https://budaya-data.kemdikbud.go.id/>) , site visits, and stakeholder consultations to identify both tangible and intangible cultural heritage.
- If PCRs are identified, include them in the project's risk assessment and plan mitigation strategies.

2. Identification of Risks and Impacts

Once PCRs are identified, assess the **potential risks and impacts** that the project might have on them.

- Consult local communities, particularly those with cultural or traditional ties to the PCRs, to understand their value and concerns.
- If avoidance is not possible, develop mitigation measures, such as buffer zones or altering the project design to minimize impact.

3. Mitigation Measures

Develop and implement a **Physical Cultural Resources Management Plan (PCRMP)** when impacts to PCRs are identified.

- Include a description of the PCRs, mitigation strategies, monitoring roles, and responsibilities.
- If no PCRMP is required, ensure at least a **Chance Find Procedure (CFP)** is in place for unexpected discoveries during construction.

4. Chance Find Procedure

All projects must include a **Chance Find Procedure** to manage any unanticipated discoveries of PCRs during construction.

- **Stop Work Immediately** if potential PCRs are found.
- **Secure the Area** and notify relevant authorities and experts for evaluation.
- **Work can resume** only after clearance from the cultural heritage authorities and after any necessary protective measures have been implemented.

5. Monitoring and Review

Both the PCRMP and CFP must include **monitoring requirements** to ensure that cultural heritage protection measures are followed.

- Define clear indicators and responsibilities for monitoring compliance.
- Regularly review the implementation of the mitigation measures to ensure the protection of PCRs.

6. Reporting and Disclosure

Sensitive information related to the location or nature of PCRs may need to be protected from public disclosure to prevent harm.

- Where necessary, consult with cultural heritage authorities and project-affected communities to determine if withholding information is required for the safety and protection of the PCR.

Appendix Q Impact Assessment

This annex provides the table that can be used for the Environmental and Social Impact Assessment in the ESIA Study

	Impact to E&S aspect				
	Environmental: air quality, noise, vibration, surface water and marine water, soil contamination, biodiversity, visual impact				
	Social: economic, social and cultural				
Criteria	Evaluation and Description				
Impact Nature	Negative	Neutral	Positive		
Impact Type	Indirect	Secondary	Direct	Cumulative	Residual
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Spatial Extent	Local	Regional	Global		
Receptor Sensitivity	Negligible	Low	Medium	High	
Impact Magnitude	Negligible	Low	Medium	High	
Receptor Sensitivity	Negligible		Low	Medium	High
Impact Significance	Negligible	Minor	Moderate	Major	Critical
Impact Likelihood	Extremely Unlikely	Unlikely Medium	Low	Medium	High / Inevitable

Appendix R Safeguarding Master Plan

Approach to Safeguarding Master Plan

Objective

To make sure that the SWM-SUD Master Plan development addresses potential direct and indirect environmental and social (ES) impacts from downstream investments or projects in compliance with national regulations, AIIB Environmental and Social Standards (ESS), the Environmental and Social Management Planning Framework (ESMPF), and Environmental and Social Impact Assessment (ESIA) requirements.

Safeguarding Approach

- Start: Master Plan Drafting
 - Initiate the safeguarding process for the proposed Master Plan.
- Evaluate Safeguarding Options
 - Option 1: Conduct a Sectoral Environmental and Social Assessment (SESA).
 - Option 2: Engage a qualified safeguard specialist to review the Master Plan.
 - Other options.
- Identify Potential Environmental and Social (ES) Risks
 - Assess direct and indirect ES risks from downstream investments or projects.
 - Assess from each sub-component of Solid Waste Management (source of waste, collection, transportation, processing, and landfilling)
 - Assess from each aspect of Solid Waste Management (technical, institutional, financial, community empowerment, regulation, etc.)
- Ensure Compliance
 - Align all safeguarding measures with:
 - National regulations.
 - AIIB Environmental and Social Standards (ESS).
 - Environmental and Social Management Planning Framework (ESMPF).
 - Environmental and Social Impact Assessment (ESIA).
- Finalize Safeguarding Measures
 - Proposes mitigation strategies and input it to the masterplan draft.
- Safeguarded Master Plan Ready
 - Proceed with the Master Plan finalization, ensuring all environmental and social standards are met.