ASIAN INFRASTRUCTURE INVESTMENT BANK

PD000575-THA
October 30, 2024

Sovereign-Backed Financing

Approval Project Document
P000575 Thailand: U-Tapao International Airport Expansion Project (The Construction of the U-Tapao International Airport Second Runway and Taxiway)

Currency Equivalents
As of September 25, 2024

Currency Unit – Thai Baht (THB)
THB1.00 = USD0.2976
USD1.00 = THB33.6072

Borrower's Fiscal year
October 1 – September 30

Abbreviations

AEROTHAI	Aeronautical Radio of Thailand	MAP	Million Annual Passengers
AIIB	Asian Infrastructure Investment Bank	MDB	Multilateral Development Bank
ANSP	Air Navigation Service Provider	MoF	Ministry of Finance
CAAT	Civil Aviation Authority of Thailand	MRO	Maintenance, Repair and Overhaul
CGD	Comptroller General's Department	MT	Million Metric Tons
CIA	Cumulative Impact Assessment	NAA	Narita International Airport Corporation
COD	Commercial Operations Date	NCMF	Noise Compensation and Management Framework
DBFOM	Design-Build-Finance-Operate-Maintain	NDC	Nationally Determined Contribution
E&S	Environmental and Social	NEB	National Environment Board
EEC	Eastern Economic Corridor	NEF	Noise Exposure Forecast
EECO	Eastern Economic Corridor Office	NFD	Naval Finance Department
EHIA	Environmental and Health Impact Assessment	NPV	Net Present Value
EIRR	Economic Internal Rate of Return	O&M	Operations & Maintenance
ESDD	Environmental and Social Due Diligence	PA	Paris Alignment
ESP	Environmental and Social Policy	PAP	Project-Affected People
ESMP	Environmental and Social Management Plan	PDMO	Public Debt Management Office
ESS	Environmental and Social Standards	PDS	Project Delivery Strategy
FIRR	Financial Internal Rate of Return	PIA	Project Implementation Agency
FM	Financial Management	PMU	Project Management Unit
FS	Feasibility Study	PP	Procurement Plan
GAP	Gender Action Plan	PPM	Project-affected Peoples Mechanism
GHG	Greenhouse Gas	PPP	Public-Private-Partnership
GoT	Government of Thailand	RTN	Royal Thai Navy
GVA	Gross Valued Added	SEP	Stakeholder Engagement Plan
ICAO	International Civil Aviation Organization	SPV	Special Purpose Vehicle
ICCT	The International Council on Clean Transportation	STEC	Sino-Thai Engineering & Construction
JUA	Joint Use Agreement	TOR	Terms of Reference
LEED	Leadership in Energy and Environmental Design	UTA	U-Tapao International Aviation Company
LTS	Long-term Strategy	UTIA	U-Tapao International Airport

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1. Summary Sheet

Project No.	P000575
Project Name	Thailand: U-Tapao International Airport Expansion Project
AIIB Member	Kingdom of Thailand
Borrower	Ministry of Finance
Project Implementing Agency	Eastern Economic Corridor Office (EECO)
Sector	Transport
Sub-sector	Air transport
Project Objective	To expand the U-Tapao International Airport (UTIA) into a state-of-the-art, commercial airport, to improve Thailand's international and regional connectivity and support the development of the Eastern Economic Corridor (EEC).
Project Description	The UTIA is the only air transport facility in the Eastern Economic Corridor (EEC) region, which neighbors Bangkok (140 km), and consists of the Chachoengsao, Chonburi, and Rayong provinces. The Project consists of the construction of the second runway and taxiway at the UTIA and forms a critical piece of the overall UTIA expansion. The Project is the government's contribution to the airport expansion and operation which will be carried out under a Public-Private-Partnership (PPP) scheme; it is part of the viability gap financing of a Concession Agreement which has been awarded in 2020 to a joint venture for a 50-year period. This Project is part of Thailand's EEC, which is the key industrial and logistics center of Thailand. The aim of EEC is to uplift the country's competitiveness with investments in future S-curve industries. The EEC includes a mixture of public and private sector investments framed in a long-term development plan. Amongst others, the EEC includes the capacity expansion of UTIA, the development of an airport city around UTIA, the construction of a high-speed rail connecting Suvarnabhumi International Airport, Bangkok (metropolitan area), Don Mueang International Airport and UTIA, and the expansion of Map Ta Phut Port and Laem Chabang Port.
Implementation Period	Start Date: December 1, 2023 End Date: April 30, 2029
Expected Loan Closing Date	August 31, 2029
Cost and Financing Plan	Project cost: USD 539.81 million (inclusive of contingencies and relevant taxes) <u>Financing Plan</u>:

	• GoT (Component 1 & 2): USD 116.76 million (21.63%) [inclusive of contingencies and relevant taxes] • AIIB loan (Component 2): USD 423.05 million (78.37%)
Size and Terms of AIIB Loan	USD 423.05 million AIIB's standard interest rate for sovereign-backed loans.
Environmental and Social Category	A
Risk (Low/Medium/High)	Medium
Conditions of Effectiveness	Legal opinion.
Key Covenants	Customary covenants for sovereign-backed financing of this nature.
Conditions for First Disbursement	Not applicable.
Retroactive Financing (Loan % and dates)	All expenditures up to an amount of USD 43 million (10% of the amount of the Loan) incurred 12 months before the expected signing date.
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that the Bank is in compliance with the policies applicable to the Project.
Economic Capital (Ecap) Consumption	ECap: USD 36.8 million ECap Ratio: 8.7%

President	Jin Liqun
Acting Vice President	Rajat Misra
Director General	Rajat Misra
Manager	Andres Pizarro
Team Leader	Andres Pizarro
Back-up Team Leader	Geoffrey Leonard, Investment Officer
Team Members	Anne Ong Lopez, Investment Officer Christopher Damandl, Senior Counsel Hayoung Kim, Legal Associate Pedro Ferraz, Environment Specialist Siva Rama Krishna Sastry Jyosyula, Senior Social Development Specialist Jurminla, Senior Procurement Specialist Jingrong He, Senior Procurement Specialist Rui Xiang, Financial Management Specialist Chang Tian, Project Assistant

2. Project Description

A. Project Overview

1. **Project Objective.** To expand the U-Tapao International Airport (UTIA) into a state-of-the-art, world-class commercial airport, to improve Thailand's international and regional connectivity and support the development of the Eastern Economic Corridor (EEC).

2. **Project Description.** The Project is the Government of Thailand's (GoT) contribution to the expansion and operation of UTIA[1], which will be carried out under a PPP scheme; it is part of the viability gap financing of the Concession Agreement (mentioned in para. 4 below and described more fully in Annex 2) which was awarded to a joint-venture for a 50-year concession period in June 2020.

3. The GoT's contribution to the airport Concession Agreement, AIIB's Project, consists of the construction of a second runway and a taxiway at the UTIA. The GoT is responsible for delivering other ancillary infrastructure including the air traffic control tower and airport utilities[2].

4. The Project Implementing Agency (PIA), the Eastern Economic Corridor Office (EECO), is the sovereign government entity, reporting directly to the Prime Minister, that has overall responsibility for implementing the Project on behalf of the GoT and is responsible for overseeing the implementation of a number of other large-scale infrastructure PPP projects in the EEC region. As signatory of the Concession Agreement, EECO is ultimately responsible for the timely and on-budget implementation of the GoT's contribution to the UTIA project.

5. **Country Context.** Thailand is an upper-middle-income country with a GDP per capita of around USD 7,000 and a population of 71.8 million in 2023. The recovery from the pandemic-induced recession has been relatively quick, with economic growth rebounding to 2.5 percent in 2022, though it moderated to 1.9 percent in 2023 due to weak external demand and slow domestic investment. Growth is projected at 2.9 percent in 2024, supported by improvements in external demand and robust private consumption. External risks include a global slowdown, volatile commodity prices, tighter global financial conditions, and geo-economic fragmentation. Domestic risks include issues around fiscal discipline and elevated private sector debt. Despite these challenges, Thailand's public debt remains sustainable, as it is largely denominated in local currency with sufficient domestic liquidity. The current account balance improved, registering a small surplus in 2023, aided by a recovery in tourism. Thailand is an investment grade country, rated BBB+/Baa1 with stable outlook.

6. The GoT is currently driving a macroeconomic transformation program in the country, known as Thailand 4.0 – an economic model aiming to improve the country's

[1] The UTIA is the only airport facility in Thailand's Eastern Economic Corridor, which neighbors Bangkok, and consists of the Chachoengsao, Chonburi, and Rayong provinces.
[2] Airport utilities includes water treatment and wastewater treatment plant, solar power plant, and aviation fuel system and depot.

medium-term growth to 5 to 6 percent by transforming Thailand into an innovation driven economy. The emphasis of Thailand 4.0 is on five key industries: (i) robotics, (ii) aviation and logistics, (iii) biofuel and biochemicals, (iv) digital technologies, and (v) medical technologies. Infrastructure investment remains key to achieving this goal. According to Global Infrastructure Outlook, Thailand requires USD494 billion infrastructure investment between 2016 and 2040, of which nearly USD180 billion is required in the transport sector (*Global Infrastructure Hub, 2016)*. At the heart of the Thailand 4.0 scheme is the high-priority pilot project of the EEC Development Plan, which targets THB1.7 trillion (USD 45 billion) public-and-private investments to upgrade infrastructure and industry in the eastern provinces of Chonburi, Rayong, and Chachoengsao. Amongst others, the EEC Development Plan includes the capacity expansion of UTIA, the construction of a High-Speed Rail connecting Suvarnabhumi International Airport, Bangkok (metropolitan area), Don Mueang International Airport, and UTIA, the expansion of Map Ta Phut Port and Laem Chabang Port and the development of an airport city around UTIA. Given Thailand's advantageous location in Southeast Asia and the extensive pre-existing transportation network, implementation of EEC's Development Plan is expected to significantly improve Thailand's competitiveness and provide connectivity in the region.

7. **Sector Context.** The Thai aviation industry is a critical and high-priority industry responsible for promoting the flow of goods, investment, and people in the country and 15.5% *(IATA, 2018)* of Thailand's pre-COVID-19 GDP was directly supported by air transport and foreign tourists arriving via air. The Thai passenger aviation industry experienced steady growth between 2010 and 2019, at an average of 11.4% per year (by passenger volume), with similar growth rates for international and domestic passengers. Pre-COVID-19, Thai airports accommodated a total of 141 million annual passengers (MAP) in 2019, nearly triple the number of 2010. The top two airports in the country, Suvarnabhumi, or BKK (with 65.5 MAP in 2019), and Don Mueang, or DMK (with 41 MAP in 2019), are both located in Bangkok. Both airports experienced record growth, more than doubling their passenger flows in the last decade. The record growth of the two Bangkok-area airports has led them to reach maximum operating capacity in 2015, resulting in major congestion issues that are impacting the flow of goods and people into the country. It is expected that, despite the expansion plans of both BKK and DMK, forecasted passenger demand will continue to face a capacity gap of approximately 61 MAP by 2030 *(GoT, 2022)*. Beyond the currently planned capacity expansion(s) of BKK and DMK, future capacity expansions are deemed financially and/or physically unfeasible. Therefore, the upgrade of UTIA is essential to fill the forecasted capacity gap.

8. In 2021, due to the COVID-19 outbreak the number of passengers to the Thai airports was at its lowest point with a reduction to 20 MAP (Suvarnabhumi (BKK) to 6 MAP and Don Mueang (DMK) to 7 MAP). The easing of the COVID-19 pandemic together with a visa exemption scheme resulted in a rapid recovery of air transportation volumes. By 2023, the volume of passengers across all Thai airports increased to 100 MAP (an increase of 128% from 2022) (*AOT, 2023)*, of which BKK had 48 MAP and DMK had 26 MAP. At the end of August 2024, the total number of passengers in Thai airports was 111 MAP; BKK increased to 55 MAP and DMK to 27 MAP.

9. **Project Rationale.** The capacity expansion of the UTIA will be a critical cornerstone of the GoT's EEC Development Plan and will form the first piece of major infrastructure development planned along the EEC including the high-speed rail and port development(s). Through selecting a PPP modality for implementation of the Project, the GoT will efficiently leverage private sector expertise in developing an internationally competitive airport that will withstand the future projected growth of the Bangkok-area aviation sector over the coming decades. Further, the UTIA forms a crucial component of Thailand's overall airport development plan which aims to (i) decongest the existing Bangkok-area airports, and (ii) further develop Thailand's aviation sector by targeting 240 MAP capacity across ten major airports over the next 50 years *(EECO, 2022)*. Finally, the capacity expansion of the Project is economically and financially cost efficient in comparison to a similar capacity expansion of the existing Bangkok-area airports given the physical and technical constraints prevalent around those airports.

10. **Expected Results.** The Results Framework and Monitoring Framework presented in Annex 1 will be used to monitor and evaluate the achievements of the Project Objective Indicators, which include:

(i) Annual number of passengers; and

(ii) Airport achieving year-over-year increase in global air connectivity as measured by the IATA Air Connectivity Index.

11. The Project intermediate output indicators will be measured periodically throughout implementation to ensure that the Project is progressing in accordance with the implementation plan. The intermediate output indicators include indicators that demonstrate the Project to be constructed efficiently and socially inclusive. These intermediate output indicators include the timely and cost-effective construction of the second runway and a number of women-only focus groups during the public consultation process of the Project. Detailed information on the intermediate output indicators is available in Annex 1.

12. **Expected Beneficiaries.** The primary beneficiary group(s) of the Project include:

(i) Air travelers, who may include residents of the EEC, tourists (domestic and international), business travelers, and public administration;

(ii) Freight owners and forwarders; and

(iii) Airlines.

13. All three primary beneficiaries will benefit from (i) greater airport capacity to accommodate more passenger and freight flights that will reduce congestion at the existing Bangkok-area airports and increase consumer choice; and (ii) better airport facilities that will enhance the consumer experience.

14. The secondary beneficiary group will include:

(i) the local labor force who will benefit from job creation in airport construction-related activities, directly through airport operations, and indirectly in businesses and services attracted to the area through increased demand of the UTIA; and

(ii) the Thailand tourism sector, a primary contributor to Thailand's GDP and particularly Pattaya City which is only 30 kilometers from UTIA.

B. Rationale

15. **Strategic fit for AIIB.** The Project closely aligns with AIIB's thematic priority of mobilizing private capital. Through facilitating the funding of the second runway and taxiway, the Project provides financing to fill part of the viability gap of the PPP scheme, enabling the awarded Concession Agreement to be successfully carried out through private investments. In addition, the Project will crowd in private capital into UTIA through the following additional planned developments, which are contained both within the Concession Agreement that frames the UTIA PPP and the broader EEC region infrastructure:

(i) The Maintenance Repair and Overhaul (MRO) facilities will be procured to a private sector party.

(ii) Development of a 95 MW combined cycle cogeneration hybrid power plant using natural gas and PV solar farm and 50 MWh energy storage system at an estimated investment value of USD 110 million (3.6 billion baht). The land lease for the development of the hybrid power plant has been signed between private sector power play B Grimm Power Public Co. Ltd. and EECO on June 26, 2020 *(B.Grimm Power Public Co., Ltd, 2020)*.

(iii) The UTA will develop the Eastern Airport City in parallel with the development of the UTIA. The Eastern Airport City will stimulate private sector investment in two mixed-use developments, a community hub, an exhibition & commercial center, civil center, and hotel & exclusive club.

(iv) Development of a water and wastewater treatment plant at an estimated investment value of USD 33 million (1.07 billion baht). EECO has signed a project and land lease agreement with East Water Plc on December 4, 2020 *(East Water Plc, 2020)*.

(v) Development of an airport depot and into-plane fueling service project to be constructed and operated by a private sector participant at an estimated investment value of USD 80 million (2.62 billion baht).

(vi) Development of the High-Speed Rail Link 3 Airport PPP, connecting the three Bangkok-area airports at an estimated private sector investment value of USD 3.5 billion (117.23 billion baht). A PPP Concession Agreement has been signed between the State Railway of Thailand and a private sector consortium led by CP Group on October 24, 2019 *(EECO, 2019)*.

16. As noted above, the Project provides viability gap financing to the GoT to fulfill their obligations under the Concession Agreement. Providing this viability gap financing generates indirect private capital mobilization through the investment that will be made

by UTA into the other infrastructure under the Concession Agreement that will be critical to operating the UTIA. It is estimated that THB32,200 million (USD976 million) will be invested into the first phase of the UTIA, which includes the airport terminal, air cargo and logistics facilities, and airport city.

17. The Project is also closely aligned with the thematic priority of cross-border connectivity and transport integration under AIIB's corporate strategy and transport sector strategy. Through supporting the upgrade and development of the second runway and taxiway, the UTIA can become a regional and international transportation hub serving 60 MAP by 2052 *(GoT, 2022)*, promote the airport's role as an air cargo and logistics base for the ASEAN region, and decongest the existing BKK and DMK airports. The airport's expansion will enable Thailand to achieve greater connectivity to global destinations and solidify key trade links.

18. Finally, the Project will also support Thailand in achieving their objectives under the UN Sustainable Development Goals. Specifically, Sustainable Development Goal 9: Industry, Innovation and Infrastructure, Sustainable Development Goal 5: Gender Equality, and Sustainable Development Goal 13: Climate Action. The Project promotes the UN Sustainable Development Goals through the development of climate resilient infrastructure that includes a climate adaptative design and gender-specific actions applicable to the construction and operation stages of the Project.

19. **Value addition by AIIB.** AIIB's participation will add value in the following ways:

(i) Responding to the financing needs of the public sector in Thailand within the timeline required to allow the GoT to maintain its commitment under the Concession Agreement by securing up-front viability gap funding (without having to go through a yearly budget approval process);

(ii) An international loan from AIIB will bring assurance to UTA and other investors and financiers into UTIA by ensuring the Project is developed in accordance with the Bank's international financial institution standards. Additional assurance is provided to the GoT and UTA by ensuring the Project has secured up-front viability gap funding that does not require the GoT to go through a yearly budget approval process;

(iii) Assuring UTA, other investors, financiers and private sector participants that the Project would be developed in accordance with the Bank's international financial institution standards would help mobilize long-term private capital from domestic and international participants;

(iv) Enhancing the GoT's observance of the Bank's standards and safeguards, including assessing the airport in the context of the Paris Agreement (PA) alignment and gender equality and inclusiveness; and

(v) Strengthening the GoT's capabilities to meet best practices and standards in the development of large-scale transportation infrastructure within Thailand. AIIB will actively engage with the PIA to support the integration of measures for the management of environmental and social issues into the preparation and

implementation of the Project, which would contribute to the overall quality of the Project.

20. **Value addition to AIIB.** The Project will add value to AIIB in the following ways:

(i) Becoming AIIB's first sovereign-backed financing project in Thailand;

(ii) Bringing diversification to and enhancing the credit rating of AIIB's sovereign backed portfolio, due to Thailand's strong sovereign credit rating of BBB+; and

(iii) Enhancing the execution capacity and experience of AIIB in the air transport sector and potentially open future opportunities to finance other infrastructure projects in Thailand or the region.

21. **Lessons learnt.** GoT has substantial experience in the airport sector, particularly with BKK and DMK. EECO staff has substantial experiences in the aviation sector. Salient lessons which GoT and EECO has learned from those experiences include the following:

(i) Robust environmental and social impact assessments to ascertain the possible adverse effects of an airport project on communities in the surrounding area and to ensure public support for the project;

(ii) Adequate planning and interfacing of different project components, e.g., procurement, construction, air traffic control, to mitigate project delays and cost overruns;

(iii) Adequate coordination between the PIA and different project stakeholders, i.e., private sector (UTA), contractors, Ministry of Transportation, and Ministry of Finance; and

(iv) Strong organizational structure and clear delegation of responsibility within the PIA to ensure clear accountability and oversight of the project.

22. Other lessons from the implementation of projects in similar Southeast Asia jurisdictions along with broader transport project experience demonstrate that close collaboration with national, provincial, and local government authorities coupled with collaboration with the existing Bangkok-area airports will ensure policies are reflected in planning, design, and operational aspects of the airport. Further, a robust, complete, and relevant design adhering to high quality, climate resilience, and international best practice with strong construction supervision during construction will ensure the Project is delivered on schedule and cost control is maintained.

C. Components

23. **Component 1 (C1) – Earthworks and Site Preparation of Taxiway and MRO Apron (USD 39.26 million).** The component consists of the earthworks and site preparation for the bypass taxiway and Maintenance Repair and Overhaul (MRO) apron. Additionally, this component includes a project management consultancy service contract and construction supervision consultancy services contract of the earthworks.

This component was fully constructed as of October 2022. The component was funded by the GoT.

24. **Component 2 (C2.1) – Civil Works for the Construction of Second Runway and Taxiway (USD 464.04 million)**. The primary component under the Project will finance the civil works required for the construction of the second runway and taxiway. This will include the construction of a 3,505-meter length by 60-meter width runway developed to accommodate all aircraft models. The runway alignment will be constructed parallel to and be located approximately 1,140 meters from the existing runway. The additional items included in Component C2.1 include the relevant earthworks and site preparation, taxiway, drainage system and structure, visual aid system, airfield ground lighting system and pump station. This Component is exclusive of taxes and contingencies.

25. **Component 2 (C2.2)** – **Consultancy Services for the Second Runway and Taxiway (USD 12.18 million).** The second part of component 2 under the Project will finance consultancy services required for the construction of the second runway and taxiway. The envisaged consultancy services under this component will pertain to the construction supervision and project management services of the civil works contract. This Component is exclusive of taxes and contingencies.

D. Cost and Financing Plan

Table 1: Indicative Project Cost and Financing Plan

	Project Cost (USD m)	**Financing (USD m and %)**			
		AIIB		**GoT**	
Component 1 (C1)					
Project Management Consultancy Services	7.70	0.00	0.00%	7.70	100.00%
Construction Supervision Consultancy Services	0.86	0.00	0.00%	0.86	100.00%
Earthwork & Site Preparation	30.70	0.00	0.00%	30.70	100.00%
Total Component 1	**39.26**	**0.00**	**0.00%**	**39.26**	**100.00%**
Component 2 (C2)					
Civil Works (C2.1): Civil works for the construction of Second Runway and Taxiway	464.04	394.43	85.00%	69.61	15.00%
Consultancy Services (C2.2): Construction supervision for the Second Runway and Taxiway	12.18	10.36	85.00%	1.83	15.00%
Sub-Total Component 2	**476.22**	**404.79**	**85.00%**	**71.43**	**15.00%**
Contingencies[3]	18.26	18.26	100.00%	0.00	0.00%
Total Component 2	**494.48**	**423.05**	**85.55%**	**71.43**	**14.45%**
Taxes (7% VAT)[4]	5.00	0.00	0.00%	5.00	100.00%
Total Component 2 (incl. VAT)	**499.48**	**423.05**	**84.70%**	**76.43**	**15.30%**

[3] Contingencies include price escalations of 3.9% to account for the rising trends of the costs of construction materials, fuel prices, and variation orders.

[4] Taxes of 7% VAT are included on the Government of Thailand's portion of Component 2 counterpart funding. The Component 1 counterpart funding costs are inclusive of 7% VAT taxes and are fully financed by GoT.

Fees					
Front-End Fee	1.06	0.00	0.00%	1.06	100.00%
Grand Total	**539.81**	**423.05**	**78.37%**	**116.75**	**21.63%**

E. Implementation Arrangements

26. **Implementation period.** The project is being implemented over a 54-month period, from December 1, 2023 to April 30, 2029. The second runway will have a construction period of 36-months once the civil works and consultancy services are procured. As the second runway and taxiway is an integral component to the broader PPP, the Project construction timeline will be closely aligned to that of the timeline contained within the Concession Agreement.

27. **Implementation Management.** EECO has overall responsibility for implementing the Project and is the signatory of the Concession Agreement that has been executed with UTA. Under the Concession Agreement, the GoT is responsible for construction of the second runway, through which RTN was assigned to implement the construction on behalf of the GoT. To ensure efficient and thorough oversight of runway construction, a Steering Committee will be created which comprises of representatives from RTN and advisors from EECO, Civil Aviation Authority of Thailand (CAAT), Aeronautical Radio of Thailand (AEROTHAI), Comptroller General Department (CGD), Budget Bureau (BB), Public Debt Management Office (PDMO) and Office of the Attorney General (OAG) and the Office of the Defence Budget, Directorate of Logistics. The Steering Committee will ensure that the RTN has sufficient governance in place to timely implement runway construction.

28. EECO, under the Concession Agreement, is responsible for the supervision of all project activities, including coordination with relevant sector authorities, construction monitoring, monitoring compliance with Environmental and Social (E&S) instruments and report. The EECO has direct experience managing complex, large-scale infrastructure projects in Thailand and therefore brings a wealth of expertise to the Project. Further, the EECO is accountable for the timely and quality implementation of the Project in line with the terms and conditions of the Concession Agreement. To complement EECO's experience in Project implementation, a group of domestic and international consulting firms have been engaged as the project management consultant to provide advisory expertise on the end-to-end implementation of the Project. They have significant experience in advising on complex infrastructure engagements in Thailand and therefore provides an additional level of support to the PIA.

29. In accordance with PPP agreement, once the construction of the second runway and taxiway is completed, UTA, the concessionaire of the airport, will have the right to operate and maintain the assets. The assets will be used solely for commercial purposes.

30. **Procurement.** The Bank's Procurement Policy (June 2016, and November 2022 as revised through June 26, 2024) and Directive on Procurement Instructions for Recipients (June 2016 as revised through July 26, 2024) shall apply to procurement under the Project and the Bank's Standard Procurement Documents will be used for tendering with FIDIC Conditions of Contract.

31. The procurement of the second runway and taxiway is being managed by a dedicated Project Management Unit (PMU) and supported by an external Project Management Consultant to assist in preparing procurement documents, conducting the procurement process, and will be overseen by a Steering Committee.. The Steering Committee comprises of staff members from RTN, representatives from EECO, AEROTHAI and Airport Authority of Thailand. For the Procurement Committee, members comprise of staff members from RTN and representatives from EECO. The Procurement Committee is responsible for reviewing and finalizing tender documents. The Procurement Committee is responsible for carrying out tender evaluation, making contract award recommendations and will be accountable for all procurement decisions. Given that the contracts for the Project are of large value (exceeding 700 million THB), the procurement decision will be subject to higher levels of approval. A Construction Supervision Consultant will be hired to support RTN and the PMU in supervision and management of the construction works contract. As of September 2024, the procurement activities of the civil works contract and construction supervision consultant are substantially complete, with the Bank having issued no-objection to the selected bidder under each contract.

32. **Financial Management**. The loan disbursement will be provided under a Direct Payment method, whereby eligible invoices under the procured contracts will be paid directly. Both unaudited and audited financial reports will be required during project implementation. The unaudited interim financial reports will cover a six-month period, commencing after the first disbursement. The format and content of the reports will be agreed upon with AIIB. An annual project audit will be conducted by the State Audit Office of GoT and submitted to the Bank within six months after the end of each calendar year.

33. **Monitoring and Evaluation.** Project progress and performance will be monitored based on the project outcome indicators and intermediate results indicators, which are defined in the Results Monitoring Framework. The project-level monitoring and reporting will be conducted by the PIA. The PIA will prepare semi-annual progress reports that will include complete information on procurement contracts, disbursements, financial management, beneficiaries, and other outputs. Annual independent audit reports will be prepared to monitor the use of funds.

34. **AIIB's Implementation Support**. The Bank team will conduct regular supervision missions. The frequency of the missions will depend on the implementation progress and complexity and are tentatively scheduled on a semi-annual basis. A specialist will be engaged to oversee the civil works and project implementation to ensure the project is implemented in accordance with AIIB standards.

3. Project Assessment

A. Technical

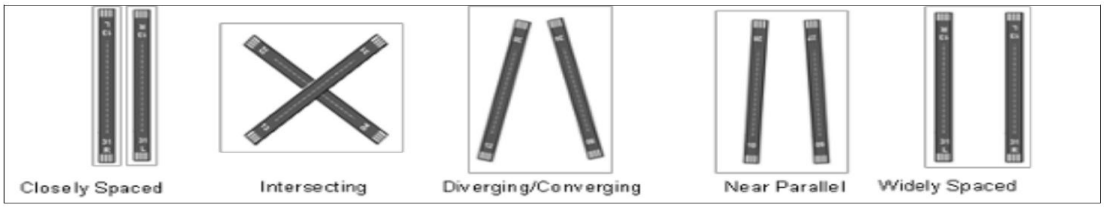
35. **Project Design.** The Project will involve the construction of a new runway and taxiway for the UTIA that will connect to a newly constructed passenger terminal building[5]. The runway design has been divided into two parts: (i) the runway geometry design; and (ii) the runway pavement design.

36. With respect to the runway geometry design, the runway is designed in accordance with the design standards of the International Civil Aviation Organization (ICAO) regulations. The length of the runway will be 3,505 meters and 60 meters in width, classified as Code F by the ICAO *(GoT, 2022)*. The second runway for UTIA will be developed in parallel to the existing runway at a distance of 1,140 meters, ensuring compliance with ICAO regulations. The runway has been constructed with design features that ensure it is able to accommodate all aircraft types.

37. In terms of the runway pavement design, RTN and PIA will utilize the United States Federal Aviation Administration design method as per the Advisory Circular 150/5320 – 6F: Airport Pavement Design and Evaluation and utilize Federal Aviation Authority Rigid and Flexible Iterative Elastic Layer Design.

38. In deliberating the possible configurations of the second runway, the GoT undertook a detailed technical Feasibility Study (FS) in December 2018 of various dual runway configuration alternatives. The FS considered various factors impacting runway operations, including (but not limited to) project traffic forecast, elevation, altitude, surface type, longitudinal slope, terrain, and climate considerations. Additionally, an analysis of the largest airports in Asia with current passenger throughputs exceeding 40 MAP was undertaken to assess potential runway configuration modalities. Based on the analysis and recommendation of the FS it was determined that a widely spaced parallel runway is the most appropriate and practical configuration to meet the requirements and operational needs of the airport. Further, utilizing a parallel runway modality ensures potential E&S impacts are not exacerbated by the expansion. Parallel runways are also considered to be safer compared to other options such as intersecting runways, which would require extra monitoring during simultaneous use of converging runways. Figure 1 below highlights the various alternatives that were considered by the Project:

Figure 1: Dual Runway Configuration Options *(KPMG, 2018)*



39. **Airport Layout.** The Project forms part of the broader UTIA PPP and the Concession Agreement outlines the scope of work allocation responsible to the GoT and

[5] The passenger terminal building will be financed by UTA as defined in the Concession Agreement.

to UTA. The primary infrastructure included under the scope of the Concession Agreement (and as per Figure 2 below) includes:

(i) Runway No. 2 and taxiway;

(ii) MRO and other facilities;

(iii) Air traffic control & related systems;

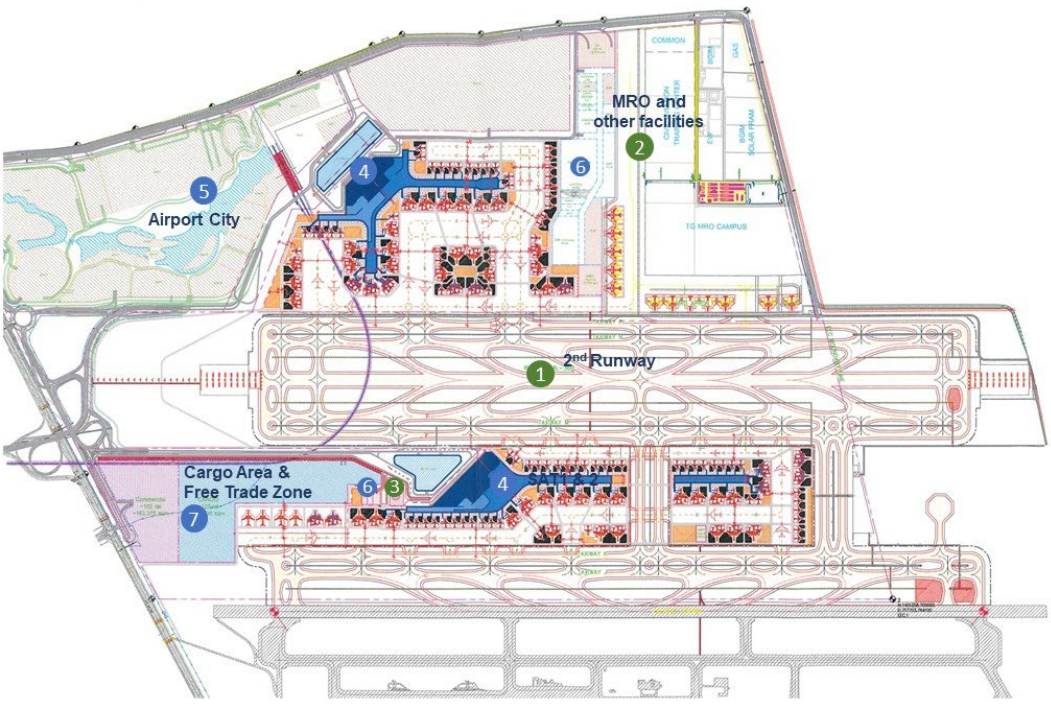
(iv) Passenger Terminal Building 3 (Terminal 3) and satellite concourse(s);

(v) Airport City;

(vi) Airport ancillary infrastructure & support areas; and

(vii) Cargo area & free trade zone;

Figure 2: Project Layout *(GoT, 2022)*



40. **Operational sustainability.** Under the terms of the Concession Agreement, UTA is responsible for operating and maintaining the expanded areas of the UTIA. Such airport operations will generate aeronautical and non-aeronautical revenues and will incur various Operations & Maintenance (O&M) expenditures over the life of the concession period. A financial FS has been undertaken on the Project that indicates the Project is financially and economically viable on a standalone basis (i.e. without additional GoT support or subsidies).

41. To ensure UTIA is operating at a standard consistent with comparable large-scale international airports, UTA plans to enter into an O&M contract with Narita International Airport Corporation (NAA) that covers airport operations, repairs &

maintenance, facilities management, retail & commercial, and soft services (e.g. cleaning, catering, etc.). NAA brings considerable experience and expertise in operating complex international airport facilities which will facilitate the long-term operational sustainability of the Project. Finally, the UTIA expansion under the Concession Agreement is being implemented in six distinct phases, which expand the airport when a specific target capacity milestone is reached. By undertaking a phased expansion approach, UTA, PIA, and O&M contractor may leverage on experience and lessons learned in developing earlier phases to increase future expansion efficiencies and sustainability. The phased approach undertaken in the Concession Agreement is consistent with the expansion of other international airports, whereby the expansion is triggered once the airport achieves an established passenger throughput.

42. **Joint Use Agreement.** A Joint Use Agreement (JUA) will govern the usage of the existing and new runway. Under the terms of the JUA, the GoT shall maintain ownership of all infrastructure developed under the Concession Agreement (including Runway No. 2 and taxiway) over the life of the concession period. Runway No. 2 shall be used only for commercial aviation purposes over the concession period. The RTN may utilize Runway No. 2 in exceptional events or circumstances, including, but not limited to, acts of war and civil unrest. The JUA clearly segregates the existing facilities (Runway No. 1 and Passenger Terminal Building(s) 1 & 2) that will remain under RTN management, which is consistent with the framework of other major international airports operating under a dual-use framework. Once Runway No. 2 reaches 90% of its assessed Aircraft Movement Capacity (as defined by the Air Navigation Service Provider (ANSP)), UTA may also utilize Runway No. 1 for commercial purposes. Refer to Annex 2 for a detailed breakdown of the key terms of the JUA.

43. **Economic Analysis.** An economic impact analysis using an input-output model was conducted that describes the impact of the airport expansion on the Thai economy, measured using output and employment. Airport expansion in this case refers not only to the Project but also to the forecasted expansion phases. The economic impacts are disaggregated amongst direct, indirect, induced, and catalytic impacts.

44. Three types of direct contributions are measured: (i) direct impacts associated directly with airport operations; (ii) other airport user operations, i.e., those coming from government users (customs, immigration) and other private sub-concessionaire(s) operating at the airport through UTA; and (iii) capital programs, including impacts associated with current and proposed capital, replacement and maintenance expenditures. These direct contributions are expected to further spur indirect economic activities through three channels: indirect (output and employment supported through the airport's Thai-based supply chain); induced (output and employment supported by the spending of those employed by the airport); and catalytic contributions (spillover benefits associated with the aviation sector).

45. The FS completed in December 2018 provides a snapshot of the expected total economic contribution for the year 2038 in Table 2 below. Note that indirect and induced impacts are combined into one multiplier.

Table 2: Expected UTIA contribution to the EEC in 2038 (*KPMG, 2018)*

	Output		Employment	Wages	
	USD millions	*THB millions*		*USD millions*	*THB millions*
Direct Airport Operator (PPP Co)					
Direct Impact	210	6,700	11,000	90	3,000
Multiplier Impact	460	14,800	23,800	200	6,500
Direct + Multiplier	670	21,500	34,800	290	9,400
Catalytic Impact	450	14,600	22,600	190	6,100
Total PPP Co. Impact	1,120	36,100	57,400	480	15,600
Other Airport Users (Government + Private Concessionaires)					
Direct Impact	260	8,300	25,700	130	4,200
Multiplier Impact	570	18,200	55,700	280	9,000
Direct + Multiplier	820	26,500	81,500	410	13,200
Catalytic Impact	560	18,000	52,800	270	8,600
Total Concessionaire Impact	1,380	44,500	134,300	670	21,800
Capital Programs					
Direct Impact	10	400	600	5	200
Multiplier Impact	20	600	1,200	10	300
Total Capital Impact	30	1,000	1,800	15	500

**Numbers may not sum due to rounding.*

46. Expected net present value and economic internal rate of return (EIRR) were calculated to account for all direct, indirect, induced and catalytic operating benefits considering all operating, capital, replacement and maintenance expenditures. Using a discount rate of 12%, the net present value is calculated at USD 5.9 billion over a 50-year period (2018-2068). EIRR is calculated to be 30.1%. Sensitivity analysis was conducted assuming up to 20% reduction in benefits and up to 20% increase in costs. Across all scenarios, the analysis shows that the Project is economically feasible. Refer to Annex 6 for a detailed discussion on the economic analysis for the Project.

47. **Financial Analysis.** The Project loan supports part of the viability gap financing under the Concession Agreement. Based on the current cost estimation performed by the PIA and the FS, it is estimated that USD 423 million is needed from an external provider to complete the construction of the second runway and taxiway. The Bank financing provided to the Project aims to fill this funding requirement.

48. Under the FS, the Project generated a project FIRR of 11.76% and an equity FIRR of 12.39%. Projections in the FS demonstrate that when the Project reaches completion and the new passenger terminal building is operational, the Project will generate enough cash to fund operations and service debt. The Project FIRR assumes that UTIA can achieve its targeted capacity (which based on current traffic projections and subject to change based on the construction schedule and expected COD). While the FS concluded that the Project will be viable under normal circumstance, any significantly adverse event, such as force majeure or economic crisis could reduce available financial resources. Refer to Annex 6 for a detailed discussion on the financial analysis for the Project.

B. Fiduciary and Governance

49. **Procurement.** As previously explained, the Procurement Committee will be supported by an external Project Management Consultant and guided by the Steering

Committee. A full time Procurement Manager will be appointed to manage procurement and contracts under the Project. The Project Team has conducted awareness sessions and trainings for the Procurement Committee and relevant procurement staff on requirements under the Bank's Procurement Policy requirements and the Procurement Instructions for Recipients. Both contracts to be financed by the Loan: (C2.1 – Civil Works for the Construction of Second Runway and Taxiway (USD 464.04 million) and Component C2.2 – Consultancy Services for the Second Runway and Taxiway (USD 12.18 million) will be subject to prior review by the Bank as agreed in the Procurement Plan (PP). The Project Team notes that as of September 2024, the procurement activities for Component C2.1 and C2.2 are substantially complete, with the Bank having issued a no-objection of the tender evaluation report for Civil Works (C2.1) and selection process of Construction Supervision Consultant (C2.2) is at the finalization stage. Further, the Bank highlights that the procurement activities performed by RTN and supported by the Procurement Committee have been thorough, transparent, and performed in accordance with the Bank's requirements.

50. The Project Team reviewed the Project Delivery Strategy (PDS) and the PP which were prepared based on the supply market analysis, and was satisfied with the procurement and contract management strategies proposed. The PDS and PP agreed between the Bank and the PMU could be updated as an when necessary, during implementation. The Thai construction market has a large number of contractors with the requisite experience, however, given the large value of the Project contract(s), both contract(s) were procured through International Open Competitive tendering and selection. The PDS notes that various internal approval processes had the potential to cause delays in the procurement process. To mitigate this risk, the Project Operational Manual provides clarity in terms of responsibilities and timeline requirements for the procurement activities under the Project and the procurement process will be initiated in advance. Furthermore, a Construction Supervision Consultant will be hired under the Project to support contract supervision and implementation. Both contracts will also be monitored through the electronic Government Fiscal Management Information System.

51. Due to the limited understanding and experience with the Bank's procurement requirements and no direct experience in handling contracts of such high value and duration, procurement risk is assessed as "High". However, this has been managed with sufficient and adequate internal control measures and the following mitigations in place:

(i) All tender documents were subject to prior review and approval by the Bank, and given the contract value size, were subject to additional review by the Bank's Procurement Committee;

(ii) Anti-Corruption Organization of Thailand will be independent observer in the process and CoST – the Infrastructure Transparency Initiative (CoST) will be adopted by the PIA and RTN;

(iii) The procurement was conducted through international open competitive bidding; and

(iv) A contract management system is in place and will be supported by an external, internationally, competitively-hired Construction Supervision Consultant.

(v) Direct payment as disbursement method.

52. **Financial Management.** Based on the financial management assessment conducted, overall Project financial management arrangement and system are considered adequate and financial management risk is assessed as “Medium”.

53. The financial management function of the Project is adequately staffed with experienced staff, which the Bank has determined is capable of performing the requisite financial management responsibilities.

54. The Project will use GoT’s information system called New GFMIS Thai (i.e. the Government Fiscal Management Information System) for both contract management and accounting. Comptroller General’s Department (CGD) of MoF are responsible for the maintenance of the system. The Project expenditures are maintained as per sources of funds and disbursement according to CGD’s standard chart of accounts in GFMIS. The Project’s transactions will be recorded and reported on an accrual basis and in accordance with the International Public Sector Accounting Standards (IPSAS) which are satisfactory to the Bank. All ledgers will be reconciled monthly and any foreign exchange gains and losses will be absorbed by the borrower.

55. During the construction of the second runway and taxiway, the Project shall be subject to a regular internal audits. The internal audit shall assess whether funds have been disbursed on a timely basis, transactional controls are well performed and used effectively and efficiently for the intended purposes. During implementation, if there are any findings in respect to the Project, these will be shared with the Bank through Project progress reports or otherwise as requested by the Bank.

56. The financial reports can be systematically produced by the system. Semi-annual interim financial reports will be submitted to the Bank within 60 days of the reporting period end. The format and content of reporting will be agreed upon with the Bank and included in the Project Operations Manual. The Project financial statements shall be prepared and be audited annually by an independent external auditor and submitted to AIIB within six months after the end of each fiscal year.

57. **Disbursements.** Disbursements will be provided under the Direct Payment method; whereby eligible invoices will be paid directly. A disbursement letter, to be issued by AIIB, will include the list of authorized signatories, process of submitting claims and other terms and conditions of disbursements related to the project.

58. **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in the projects it finances. AIIB places the highest priority on ensuring that the projects that AIIB finances are implemented in compliance with AIIB’s Policy on Prohibited Practices (2016). Implementation will be monitored regularly by AIIB staff. The Bank reserves the right to investigate, directly or indirectly through its agents, any alleged corrupt, fraudulent, collusive, coercive, or obstructive practices, and misuse of resources and theft or coercive practices relating to the Project will require the borrower to take necessary measures to mitigate the risk of such practices and address any issues in a timely manner, as appropriate. AIIB will monitor the work related to tender document preparation and tender/proposal evaluation under the Bank financing.

C. Environmental and Social

59. **Environmental and Social Policy, Standards and Categorization.** AIIB's Environmental and Social Framework applies to the Project. The Project has been prepared consistent with the Environmental and Social Policy (ESP), including the Environment and Social Standards (ESSs) and the Environmental and Social Exclusion List. ESS 1 (Environmental and Social Assessment and Management) is applicable for the Project. ESS 2 (Land Acquisition and Involuntary Resettlement) and ESS 3 (Indigenous Peoples) are not triggered, as project activities will not cause involuntary resettlement and no Indigenous Peoples are present in, or have collective attachment to, the Project area. The Project is assigned Category A, in accordance with the ESP due to large-scale construction activities and expected significant adverse noise-related environmental and social impacts.

60. **Instruments.** Based on national regulations, the PIA prepared an Environmental and Health Impact Assessment (EHIA) for the overall airport development activities which includes the Project activities. The EHIA includes Environmental and Social Management Plans (ESMPs) for the potential E&S risks and impacts during the construction and operational phases in the areas of noise pollution, air emissions, wastewater, traffic, labor and occupational health and safety risks. The EHIA contains elaborate documentation of the multiple rounds of consultations held with the Project-Affected People (PAP). A detailed overview of the EHIA is highlighted in Annex 3. While the EHIA is assessed[6] to be largely aligned with ESF requirements, a standalone Stakeholder Engagement Plan (SEP), Noise Compensation and Management Framework (NCMF) have been developed and disclosed on July 1, 2022. The NCMF will guide the preparation of detailed compensation plans for those affected by the increased noise exposure during the airport operations. The NCMF includes the noise-mitigation process outlined in the EHIA and provides measures to support PAP, mainly - vulnerable owners. NCMF provides details on enumeration of assets, valuation process, negotiation process together with timelines and institutional arrangements.

61. **Environmental Aspects.** The Environmental and Social Due Diligence (ESDD) encompassed the Project Site and key sensitive receptors within five (5) km of the Project. At the time of the site visit, the construction of the second runway and taxiway had not yet commenced. Earthworks were ongoing as part of Component 1 of the Project. E&S assessment and management of these activities is regulated by the Contractor's contract and supervised by a supervision construction consultant. Overall E&S management and E&S mitigation during operation will be responsible by PIA. It is noted that no E&S or health and safety issues are reported so far.

62. Integrated Biodiversity Assessment Tool screening indicates that three Protected Areas are present within a 50 km radius of the project. The area is not considered an Important Bird Area for migratory species. Based on the EHIA biodiversity assessment, there are 38 types of migratory birds, but the impacts on avifauna are low. The EHIA includes environmental noise level measurements with two instances of noise level monitoring (measured 24 hours a day continuously over 7 days) during the dry and

[6] Locally based ES Consultant supported the ESDD of Thai EHIA including a field visit in late November 2021.

rainy seasons in 2019, comprising operational area and sensitive receptors. The 24-hour average noise level and the maximum noise level are within the national standards. For the construction phase, the Project will have conventional construction-related risks and impacts manifested through dust emissions, water contamination, noise, removal of construction debris, etc. The PIA will manage these impacts through management plans as outlined in the EHIA.

63. The major impacts during the Operational Phase are assessed to be related to noise and traffic. The EHIA used a noise exposure forecasting model for the period until 2048 to assess the noise impacts and prepared the corresponding noise management plan to mitigate these noise impacts. The increased flight traffic will gradually exacerbate existing noise exposure levels (including the pitch, vibration, variation in intensity and the length of exposure time) in the area around UTIA and under the flight paths. The air traffic-related noise exposure impact is expected to peak by 2048. The EHIA includes an assessment of the noise pollution during the operation phase. It relies on a Noise Exposure Forecast (NEF) - a mathematical model to forecast exposure to aircraft noise, which considers the maximum flyover noise level, the duration and tonal characteristics of the flyover and the number of aircraft movements in both the daytime and nighttime period. Buildings, including sensitive receptors within the area experiencing NEF ≥ 40 are assessed to be significantly impacted. A desktop assessment, using publicly available data was undertaken for the preparation of the EHIA, which revealed the following forecasted impact on structures in Table 3.

Table 3: NEF Impacts[7] *(GoT, 2022)*

Level of Impact	NEF 30-40	NEF ≥ 40	Total
No. of Buildings	2,466	93	2,559
No. of Sensitive Receptors	17	5	22

64. The ESDD confirmed that the process of noise modeling is consistent with international best practices and that the outcomes regarding project-affected areas are in line with the site conditions, based on site visits. As part of the ongoing noise management plan implementation, the noise modeling forecasts will be updated annually based on actual flight data and resulting measurements from the permanent noise monitoring station system (fixed and mobile stations) and grievances received from project-affected people. Any newly affected areas identified through this process will be surveyed and compensated according to the noise mitigation measures, on an ongoing basis.

65. **Cumulative Impact.** The EHIA presents an assessment of cumulative impacts related to the Project *(GoT, 2022)*. These impacts arise from increased air and road traffic and can materialize in the form of increased noise impact and traffic congestion. With respect to traffic congestion, the UTIA includes structures that tend to minimize the congestion effects such as underground high-speed rail stations, separated entrances and exits for passengers, additional road lanes, and an elevated 4-lane road to access the airport and mitigate traffic congestion impacts related to the airport. The EHIA also proposed mitigation measures for noise impact resulting from air traffic and will cover all

[7] The information is subject to change based on detailed survey

cumulative impacts emanating from other sources. Effectively, the noise levels experienced around the UTIA, irrespective of their origin, will be monitored in real-time by a noise monitoring system. The noise management plan includes a periodical review of the noise level measurements by the Environmental Monitoring Committee. It will use data from the noise monitoring system to update the noise modeling baseline and thus will include the incremental noise levels coming from all sources. In this manner, the cumulative effects will be captured as forecasts and will be based on a new baseline that includes all cumulative sources of noise. Moreover, as an additional mitigation measure, the PIA and relevant agencies and authorities will review land use and construction management measures to limit noise impact on the area and will issue guidelines on appropriate methods and materials for noise protection, amongst other support measures.

66. **Associated Facilities.** While the Project is limited to developing a second runway and taxiway, there are ancillary assets under the Concession Agreement (as outlined in the Airport Layout section of this Project Document) that are being constructed concurrently (or subsequently) to the Project. The Project Team has performed a review of these ancillary assets and confirmed that they are not deemed to be associated facilities based on the Bank's Environmental and Social Framework (ESF) definition.

67. **Social Aspects.** The construction and operation of the Project will be confined within the territory of the existing airport and no additional land is required. Thus, no land acquisition, physical or economic displacement and restrictions on land use are envisaged**.**

68. The EHIA assessed that the major socioeconomic impacts generated by UTIA pertained to the possible relocation of residents and businesses (should they opt for a negotiated purchase) and the loss of traditional employment, given possible changes in orientation of activities and land-use over the medium and long term. Although, alleviation may arise from the resulting employment opportunities UTIA and surrounding developments are estimated to provide, the Project will establish compensatory mitigation measures to help communities and PAP transition.

69. As defined in the EHIA and NCMF, owners whose properties fall within the NEF ≥40 and NEF 30-40 contours will be eligible for compensation to implement mitigation measures. In NEF ≥40 areas which are assessed to be 14.30 sq km, the PIA shall negotiate to buy land and properties constructed before the date the EHIA Report was approved by the National Environment Board (NEB). If the landowner does not wish to sell, the PIA supports the renovation cost to reduce noise impact, however, the landowner receiving the compensation is responsible for all the renovation activities. Further, the PIA supports the renovation cost for places that need to be quiet in particular, such as schools, hospitals, and religious places. Owners of properties and sensitive receptors located in the area exposed to NEF 30–40 (spread in 48.25 sq km area) will be provided with compensation to undertake mitigation measures to reduce the noise impact. The compensation will be available to owners of buildings constructed before the date of EHIA approval by the NEB (February 17, 2022). While the NEF identified areas and receptors are based on peak noise impact for 2048, the compensation is expected to be available from 2024. The Project will undertake surveying and create a

database and compensation plan for those affected by noise caused by the Project development. The survey team will complete the survey and the compensation value will be determined and disbursed before operation of the second runway begins. The PIA has engaged a consultant to undertake this scope of work, the terms of reference have been reviewed and cleared by the Bank.

70. As defined in the EHIA, four mobile noise monitoring stations will measure noise levels twice a year for seven days, and seven permanent stations will operate continuously throughout the Project's life. The permanent stations' data will be published in real-time online. The mobile stations will also measure noise in response to noise-related grievances. In addition, the measurements will be used for annual re-evaluation of the noise impact. Those properties experiencing higher actual noise impact, compared to the NEF, will be entitled to compensations per the disclosed compensation framework.

71. Further to the NCMF, the EHIA commits the PIA to establishing a Foundation to provide additional financial support for PAP's and affected Communities. The Contractor will allocate funds during the construction period and the airport management will continue providing funding to the Foundation once the airport is operational. The Foundation will provide quick relief in the form of compensation for damages in case of emergency. Further, the Foundation will provide funds to develop the quality of life of the surrounding communities, to conserve nature and the environment, and to operate or collaborate with charitable and public interest organizations to enhance sustainable community development opportunities. Together with the compensation plan, establishment of ongoing monitoring and mitigation plan for noise and other impacts, establishment of Foundation to address PAP and communities' impacts, additional channels for grievance mechanisms, the noise management measures for the Project are assessed to be adequate. The NCMF has been disclosed in July 2022.

72. **Stakeholder Engagement, Consultation, and Information Disclosure.** The draft EHIA was subject to three rounds of public consultations, as required by the Thai regulations. The extensive process included public hearings, focus group discussions, interviews, surveys, media outreach (via online, traditional and social media channels), and communication materials in soft and hard copies. Project details were initially presented to communities in June 2019.[8] The stakeholder engagement conducted, and consultations and participants' feedback are documented in the EHIA.

73. During the stakeholder consultation process (between the second and third consultation), the noise modeling forecast was modified. The initial noise modeling utilized preliminary aircraft take-off and landing scenarios, which were the default scenarios of the modeling exercise. However, subsequently a more realistic scenario was utilized which took into account topography and up to date flight data (amongst others). As a result, the noise contours were modified, producing revisions in the

[8] The first public consultation to inform PAPs of EHIA's scope and guidelines took place in July 2019 and included 333 participants. The second public consultation was undertaken during the EHIA preparation between November 2019 and July 2020 and included ongoing disclosure of project details, surveys (covering 86 households out of the 93 in NEF $\geqslant$ 40), 76 interviews (with 144 interviewees) and FGDs (including 1,536 participants). The third round of public consultations was intended to present the finding of the draft EHIA, which was disclosed on 3rd July 2020. Two public hearings were organized in August 2020 with a total of 791 participants.

predicted number of properties located within the NEF ≥40 zone and resulting in some members of affected communities to raise concerns on the assessment process. At the request of one interested party, the PIA organized an additional clarification consultation in person and online to discuss the forecasting process and robustness of the assessment. The result of the clarification consultation showed that the participants were satisfied by the information provided and the mitigation measures proposed by the Project. Refer to Annex 3 for a detailed summary of the consultation process.

74. The ESDD assessed that additional measures are required in the areas of outreach, engagement and information disclosure which will be addressed through a SEP disclosed on July 1, 2022. It will detail the outreach on an ongoing basis that covers the entire life of the Project and includes information about the project level Grievance Redress Mechanism (GRM) and AIIB's Project-affected People's Mechanism (PPM).

75. The full EHIA with summaries in English and Thai were disclosed[9] on the dedicated Project's website and are available on site. The EHIA, NCMF, SEP (in English and summaries in Thai) will be available on AIIB's Project website.

76. **Community, and Occupational Health and Safety (OHS), Labor and Employment Conditions.** Project activities will involve construction risks such as earthworks, excavations, work in height, noise, underground activities and electrical hazards during the construction phase. The Contractors will develop management plans in accordance with the mitigation plan framework defined in the EHIA. The Contractors will implement an occupational health and safety plan, including work-related accident prevention, and the emergency response plan. The PIA is responsible for monitoring the implementation of the mitigation measures. Contractors will be required to adopt and implement Human Resource policies aligned with AIIB's requirements, especially for labor and working conditions across their operations and those of the contractors and subcontractors. For the Operational Phase, the major risks are related to noise exposure, traffic management, and emergencies (fire, accidents etc.) which will be managed through ESMPs, including emergency response and preparedness plan.

77. Labor influx may exacerbate risks related to gender-based violence (GBV), sexual exploitation and abuse (SEA) and sexual harassment (SH) (GBV/SEA/SH). The PIA will adopt an appropriate Code of Conduct, including relevant procedures to identify and prevent GBV.

78. **Project Grievance Redress Mechanism.** The PIA has organized complaints-handling mechanisms covering the EHIA preparation, construction, and operational phases. The first one allowed for complaints and grievances to be shared directly with the PIA or through the stakeholder engagement process. Following EHIA approval, the PIA will establish a EIA Monitoring Committee for the construction and operation phase, which includes representatives from the affected communities, relevant governmental agencies and the PIA. The EIA Monitoring Committee will accept complaints from PAP and construction workers. During the operation phase, a dedicated Environmental Impact Mitigation Coordination Center will be established to address complaints related to the functioning of airport with respect to environmental and social issues. AIIB

[9] The EHIA was disclosed on 30 May 2022.

environmental and social team will periodically assess and assist the PIA in strengthening the GRM to ensure its compliance with ESF requirements.

79. **AIIB's Accountability Mechanism.** The Bank has established the PPM to provide an opportunity for the independent and impartial review of submissions from PAP who believe they have been or are likely to be adversely affected by the AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or the AIIB's management processes. More information about the PPM can be found through visiting: Policy on the Project-affected People's Mechanism.

80. **Monitoring and Supervision Arrangements.** The PIA will be responsible for overall coordination, supervision, and monitoring of the Project's environmental and social aspects and to ensure compliance with Bank ESF requirements. The PIA has established an environmental and social specialist team to oversee project implementation and monitor environmental and social aspects. The PIA will provide to AIIB semi-annual and annual E&S monitoring reports during the Project period. AIIB will conduct E&S supervision missions in line with the Bank's Implementation Support missions (tentatively scheduled at least twice a year) and strengthen the PIA's E&S management efforts.

D. Gender Equality

81. The Project Team conducted a gender assessment which demonstrated that Thailand has robust labor and gender equality legislation in place, as well as adequate social protection legislation that afford reasonable assurances to women. In practice, this framework has resulted in relatively high participation of women in the labor market, particularly in the private sector and urban areas, the results being more mitigated in rural areas and in the public sector. Notwithstanding, certain measures were agreed with the PIA to be incorporated into the Project. With respect to the Project design, however, no intervention was needed or possible as the (i) the nature of the AIIB financed investment could not accommodate gender-sensitive designs; and (ii) the remaining UTIA components covered under the Concession Agreement is being envisaged with universal access and state-of-the-art designs that already incorporate gender-sensitive elements throughout.

82. With respect to the construction, operation and maintenance of the Project (excluding the construction of the AIIB financed component), the responsibility is under the purview of UTA as outlined in the Concession Agreement. The prescriptive language contained in the Concession Agreement will ensure that the private sector abides by the relevant Thai legislation so that the UTIA is implemented and operated in a manner that promotes gender equality, inclusiveness, and fair labor practices. With respect to the AIIB financed investment, it was agreed with the PIA, to include a provision in the tender documents of the contract to preclude any employment or wage gender discrimination. Finally, in the stakeholder engagement activities, it was agreed with the PIA to conduct women only focus groups in parallel to the established public consultations when these are carried out. The gender equality assessment and strategy are presented in detail in Annex 5 and an intermediate objective indicator is included in the Results Monitoring Framework.

E. Paris Alignment

83. In In line with AIIB methodology for assessing the alignment with the mitigation and adaptation goals of the Paris Climate Agreement, the Project is assessed as aligned.

84. **Climate Mitigation.** The Project will contribute Greenhouse Gas (GHG) emissions over the construction phase, and the operations of the broader UTIA infrastructure will contribute GHG emissions over the operational life of the concession. The PIA has undertaken steps to minimize GHG emissions during the construction phase of the Project. Further, the development of the broader UTIA infrastructure has implemented various GHG reduction measures over the life of the concession. In particular, the airport will use renewable energy from the solar farm which will help to mitigate climate impacts. Notwithstanding, the PA alignment methodology has shown that the Project can be considered to be aligned with the PA in terms of climate mitigation.

85. The Project is considered in the country's Nationally Determined Contribution (NDC) and Long-Term Strategy (LTS) within a context of overall reduction of GHG emissions in the transport sector. The NDC and LTS acknowledge a need for additional transport infrastructure and services that are designed with improved efficiencies. The Project is also consistent with the Low-Carbon pathway for the air transport industry as aircraft operation efficiency is being sought in the industry through improved fuel efficiency and cleaner fuels. The UTIA will primarily cater for international travel and therefore will not compete with any existing more efficient alternative modes. Further, the planned infrastructure can cater for any type of aircraft, ensuring that it will not prevent a future transition to more efficient operational practices or aircraft. Additionally, the facilities of the broader UTIA infrastructure already incorporate low-carbon designs, including LEED standard passenger terminal building and a solar energy power plant. Finally, the investment is economically viable even when including the incremental GHG emissions, valued at a shadow carbon price in the economic evaluation. Please refer to Annex 4 for a detailed discussion of the analysis undertaken. Based on meeting the above criteria, the Project can be considered PA aligned with respect to climate mitigation.

86. **Climate Adaptation.** The Project has incorporated various climate adaptation elements into its design. These climate adaptation elements are based on an extensive risk assessment of the Project and the future impact of various climate elements to ensure the Project is resilient over the life of the concession. These assessments comprised of (but were not limited to): precipitation, geology & earthquakes, flooding, and sea level rises. The assessments undertaken highlighted that the most prevalent climate risk requiring adaptation measure pertains to increased precipitation over the life of the concession period. To limit the impact of a potential precipitation increase, the PIA has integrated into the Project design a comprehensive drainage system, drainage structure, pumping station, and retention pond to ensure the Project is better adapted to potential climate changes. The adaptation measures to address climate risks ensure that the Project is PA aligned on climate adaptation.

87. The drainage system, drainage structure, pumping station, and retention pond are estimated to cost USD 63.01 million, representing approximately 13% of the

estimated project cost for Component C2.1. These climate adaptation assets can be considered the Project's contribution to Climate Finance.

88. The Paris Agreement assessment performed demonstrates that the Project is aligned with PA, both in terms of climate mitigation and adaptation and thus can be considered fully PA aligned. Please refer to Annex 4 for a detailed discussion.

F. Risks and Mitigation Measures

89. The project team has assessed the overall project risk as "Medium".

Table 4: Summary of Risks and Mitigating Measures

Risk Description	Assessment (H/M/L)	Risk Mitigation Measures
Construction Phase		
Technical Design Poor technical runway and taxiway design with inadequate performance quality of materials (e.g. runway pavement).	Low	The Project is the 3,505 meter Runway No. 2 that is parallel to the existing Runway No. 1 at UTIA, with a simple engineering design that broadly follows the specifications of the existing runway and no topographical challenges have been identified in the technical feasibility study. Detailed designs are under preparation and the Bank will review that they are acceptable to the Bank. A detailed technical FS has been performed ahead of hiring a runway designer that recommends the runway modality and optimal technical specifications. Finally, the Project is comprised of two conventional infrastructure contracts (civil works and construction supervision), with the existing earthworks and siteworks fully constructed as of October 2022.
Construction Delays in ancillary airport infrastructure construction may lead to construction delays and increased costs of the airport.	Low	The runway will be constructed by an internationally-selected firm that has deep experience in constructing airport infrastructure of international standard and quality. Further, an internationally-selected construction supervision consultant will provide additional mitigation to ensure the Project is constructed in a high-quality manner that adheres to targeted timelines.
Environmental & Social The limited capacity of the PIA regarding environmental and social aspects may lead to possible non-compliance with the Bank's environmental and social policies during the preparation and implementation stages of the Project.	Low	The Bank engaged with the PIA early on during the preparation process of the Project which resulted in the preparation of a comprehensive set of E&S instruments that are compliant with the Bank's ESF requirements. The Project preparation is informed by the outcomes of the E&S instruments, which included measures such as additional and ongoing consultations, strengthening the compensation framework, and providing additional entry points for grievance mechanisms. The ESDD on the Project was carried out by an internationally experienced firm based locally in Thailand. Throughout the ESDD, no major E&S issues were identified.

		There is no land acquisition required. Further, the Project will not involve complex structural works triggering significant risks or impacts. There are conventional construction-related risks, including dust, water contamination, noise, and removal of construction debris, all of which are managed through management plans outlined in the EHIA and as the Project is being constructed within the existing airport perimeter and far away from nearby communities and residents the impacts will not affect residents. The contractors and design consultants are expected to be internationally-selected firms that follow good environmental & social, worker safety, and health practices in line with the Bank's requirements.
Implementation Capacity This is a high priority, high impact project for the GoT with the added complexity of being the viability gap financing of the concession.	Low	The Bank will provide the necessary implementation support, including bringing in relevant expertise as required. The PIA has deep experience in advising and managing the implementation of complex infrastructure projects in Thailand. Further, the PIA is supported throughout implementation by the Project Management Consultant who has international infrastructure implementation experience.
Financial Management The PIA's lack of experience in multilateral development funded projects may lead to unfamiliarity with the Bank's reporting and internal control requirements for financial management.	Medium	To ensure financial management related risks are minimized, the Project will disburse the loan proceeds under the direct disbursement method, ensuring proceeds are disbursed directly to contractors that have been internationally and competitively-selected for the Project. The Project will be subject to regular internal and external audits, with all financial information subject to public scrutiny and publicly available. The Project will furnish financial statements to the Bank within the agreed timeframe. The counterpart budget that is utilized for Component 1 (C1) was approved on a pluriannual basis by the Cabinet and Parliament of the GoT. Finally, all transactions with respect to the Project must be tracked and entered in the New GFMIS Thai System. The GoT (and internal auditors) have full access to the system for monitoring and tracking purposes which provide sufficient internal controls.
Procurement RTN unfamiliarity with the Bank's procurement policies may lead to internal procurement-related delays and multiple	High	To ensure the high procurement risk is mitigated, there are a number of mitigatory measures in place to ensure the risk is brought to an acceptable level to the Bank. Project Management Consultants have been hired to support the full procurement process, ensure the procurement process is initiated early to avoid delays and accelerate the process. The consultants are supported by

iterations. In addition, the RTN has minimal experience in dealing with contracts of high value and duration which may lead to cost overrun. Finally, lengthy internal procurement review and approval processes may lead to delays.		a full-time procurement manager that is appointed to manage procurement and contracts under the Project. All tender documents on the Project have been subject to prior review and approval by the Bank and have been subject to the Bank's Procurement Committee given the contract value. The procurement process will be independently observed by Anti-Corruption Organization of Thailand and subject to higher levels of approval. The procurement has been conducted through international open competitive bidding, ensuring a transparent and competitive process. The Procurement Committee comprise of members of relevant government agencies who possess the necessary expertise to review procurement documents of this nature. To ensure sufficient contract management support, an external, internationally, competitively-hired construction supervision consultant will be onboarded. Finally, the Project Team has conducted awareness sessions and training on Bank' Procurement Policy requirements. As of September 2024, the procurement-related activities on the Project are substantially completed.
Operations Phase		
Environmental & Social The risk of E&S impacts during the operational phase of the airport leading to possible non-compliance with the Bank's environmental and social policies.	Medium	As noted, the ESDD performed by an internationally reputable firm locally based in Thailand identified no major E&S issues, with the exception of noise during the operations phase of UTIA. The noise impacts from UTIA impact a limited number of households. A compensation plan is in place and the PIA has a thorough response plan to address complaints and perform additional monitoring, as disclosed in the NCMF. Further, the parallel design of the second runway will reduce potential noise exacerbation. All relevant E&S disclosures have been made on the AIIB and Project-level website(s). All E&S instruments comply with the revised ESF, and the PIA has agreed to abide by all AIIB's E&S requirements.
Operational Risk The limited capacity and experience of the UTA in owning and operating large-scale airport infrastructure projects may lead to project delays and operational inefficiencies.	Low	All operations of the expanded airport sections will be the responsibility of EECO and UTA as governed by the Concession Agreement executed between the two respective parties. To compliment UTA's experience in airport operations, UTA will enter into O&M contract with NAA, an international airport operator with experience operating similar scale airports in the region and globally. Further, each member of UTA has experience in investing and operating large-scale infrastructure projects.
Demand A reduced demand in air traffic may result in compressed	Low	Under the terms of the Concession Agreement, the GoT is not required to issue a commercial guarantee to UTA with respect to traffic demand and UTA bears the full traffic risk on the Project. Irrespective of air traffic volume,

revenues and lead to debt servicing constraints.		the Concession Agreement provides a revenue stream to GoT (through an annual land lease payment and minimum revenue sharing).

Annex 1: Results Monitoring Framework

Project Objective:	The objective of the Project is to increase Thailand's international and regional connectivity by upgrading the UTIA.									
Indicator Name	**Unit of measure**	**Base-line Data Year**	**Cumulative Target Values[10]**					**End Target (2029)**	**Frequency**	**Responsibility**
			2025	**2026**	**2027**	**2028**	**2029**			
Project Objective Indicators:										
1. Million annual passengers (MAP)	Number	N/A (2024)	N/A	N/A	N/A	N/A	5.60[11]	5.60	Annually	PIA
2. Airport achieving year-over-year increase in global air connectivity as measured by the IATA Air Connectivity Index	Yes/No	N/A (2024)	N/A	N/A	N/A	N/A	Yes	Yes	Annually	PIA
Intermediate Results Indicators:										
1. Timely, cost-effective construction completion of runway	Percentage	0 (2024)	10	20	50	100	100	100	Annually	PIA
2. Women only focus groups during the public consultation process	Number	N/A (2024)	0	1	1	N/A	N/A	N/A	Annually	PIA

[10] Denotes cumulative target values at the end of year.
[11] The MAP is based on UTA's air traffic 's proposal and subject to change based on any future forecast adjustments.

Annex 2: Detailed Project Description

A. Overview of the Project

1. **Project Description.** The Project is the Government of Thailand's (GoT) contribution to the airport expansion and operation of UTIA, which will be carried out under a PPP scheme; it is part of the viability gap financing of the Concession Agreement which was awarded to a joint-venture for a 50-year concession period in June 2020.

2. The GoT's contribution to the airport Concession Agreement, AIIB's Project, consists of the construction of Runway No. 2 and a taxiway at the UTIA. In addition to the Runway No. 2 and taxiway, the GoT is responsible for delivering other ancillary infrastructure including the air traffic control tower. The UTIA is the only airport facility in Thailand's Eastern Economic Corridor, which neighbors Bangkok, and consists of the Chachoengsao, Chonburi, and Rayong provinces.

3. **Project History.** The implementation history of the Project may be summarized through the following key events *(GoT, 2022)*:

- **29 July 2014** – The GoT cabinet announces plans to develop the UTIA to become the third main international commercial airport for the Bangkok-area.

- **10 May 2018** - The GoT establishes the Eastern Special Development Zone Act B.E. 2561 (2018) to establish a Special Economic Promotion Zone and EEC Policy Committee to oversee and govern development *(GoT, 2018)*. The provinces of Rayong, Chachoengsao, and Chonburi located in the Eastern Region of Thailand have been decreed as a Special Economic Promotion Zone. The EEC Policy Committee formed under this Act is chaired by the Prime Minister of Thailand and is comprised of other senior Ministers and Government officials. The secretariat office of the EEC Policy Committee is the Eastern Economic Corridor Office which is responsible for overseeing implementation of key projects within the Special Economic Promotion Zone.

- **4 October 2018** – The GoT confirms the expansion of UTIA will be implemented under a PPP scheme alongside a private sector investor.

- **13 April 2020** – UTA, the private sector entity comprising Bangkok Airways, BTS Group Holdings Public Company Limited and Sino-Thai Engineering and Construction Public Company, is awarded the concession for UTIA.

- **19 June 2020** – The Concession Agreement is signed between EECO (on behalf of GoT) and UTA.

4. **Overview of the Project.** The Project contributes to the GoT's 2018 – 2037 National Strategy (National Strategy), which is the country's first long-term strategy developed to support its objective of achieving high-income country status through sustainable national development. The GoT has defined the National Strategy as "Thailand 4.0" which aims to transform Thailand into an innovative, value-based economy through six broad-based strategies: (i) national

competitiveness enhancement, (ii) ecologically friendly development, (iii) public sector development, (iv) development of human capital, (v) social equality and equity, and (vi) national security. The Project will contribute specifically to Thailand 4.0's national competitiveness enhancement which aims to develop high quality infrastructure to connect Thailand with the world, build new growth hubs and establish key centers for trade & investment, and create regional transportation networks.

5. The Eastern Economic Corridor Development Plan is the first major set of developments integrated into the National Strategy, which envisages a physical and social transformation in the provinces of Rayong, Chonburi, and Chachoengsao, with a total area exceeding 13,000 square kilometers. The EEC Development Plan is comprised of four major infrastructure projects being developed with targeted commercial operation dates between 2025 and 2031:

(i) UTIA – Awarded to UTA in 2019 at an awarded value of ~USD 9.2 billion. The Concession Agreement was signed on 19 June 2020.

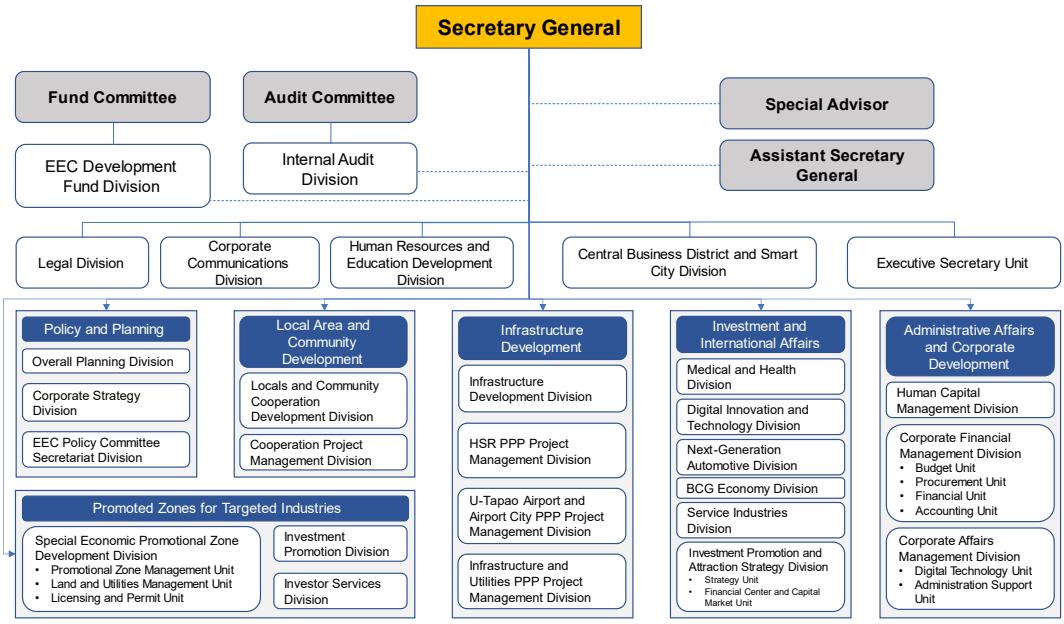
(ii) High-Speed Railway (Suvarnabhumi – Don Mueang – UTIA) – Awarded to a consortium led by C.P. Group in 2019 with an estimated private sector investment value of USD 3.5 billion (117.23 billion baht).

(iii) Laem Chabang Port Phase III – Awarded to a consortium led by Gulf Energy Development with an estimated value of USD 927 million.

(iv) Map Ta Phut Industrial Port Phase III - Awarded to a consortium led by Gulf Energy Development with an estimated value of USD 1.7 billion.

6. Overall responsibility for Project implementation is vested in EECO. The EECO is the secretariat office of the EEC Policy Committee formed to promote sustainable area-based development, comprehensive infrastructure and connectivity, and advanced technology and innovation in the EEC region. A breakdown of the organizational structure of the EECO is depicted in Figure 3 below.

Figure 3: EECO Organizational Structure *(EECO, 2019)*



7. **Project Location.** The UTIA is in the Phala subdistrict, Ban Chang district of Rayong province, approximately 30 km away from Pattaya, Chonburi, and Map Ta Phut Industrial Estate and approximately 140 km from Bangkok. The current and proposed development of the airport will span 1,040 hectares in the Special Economic Promotion Zone. The location of the Project is denoted in Figure 4 below:

Figure 4: Project Location *(EECO, 2022)*

8. **Project Timeline.** The Project is scheduled for COD in 2028 under the following indicative timeline:

Table 5: Indicative Project Timeline

Key Indicative Project Milestones	
Principle Approval by the Government of Thailand	Q3 2018
PPP Concession Agreement Signing	Q2 2020
Submission of Airport Master Plan	Q2 2021
EHIA GoT Approval	Q2 2022
Tender & Procurement	Q4 2024
NTP Construction Start	Q1 2025
Commercial Operation & O&M Start Date	2028
End of PPP Contract	2075

B. Public Private Partnership Agreement

9. The UTIA is being developed through a PPP, with an overall aim of mobilizing private sector capital into the EEC region and enhancing the operational efficiencies and capabilities of the airport. The Concession Agreement was executed on 19 June 2020 between EECO and the awarded consortium, consisting of Bangkok Airways, BTS Group Holdings, and Sino-Thai Engineering & Construction. The awarded consortium has formed a special purpose vehicle, UTA. Background information on the relevant party members of the consortium are as follows:

(i) Bangkok Airways (45%): Bangkok Airways is a regionally based Thai-airline that has been operating in the aviation industry for over 50-years. Bangkok Airways operates domestic and international flights and currently has more than 100 partnerships globally. Further, Bangkok Airways has significant experience in operating large-scale airports and is the owner and manager of Samui Airport, Sukhothai Airport, and Trat Airport. Additionally, Bangkok Airways operates non-aeronautical businesses including catering, ground and warehouse services, and duty-free stores. Bangkok Airways is a publicly traded entity on the Stock Exchange of Thailand under the ticker “BA”.

(ii) BTS Group Holdings (35%): BTS Group is a multi-industry conglomerate and amongst the largest entities in Thailand operating in the infrastructure, transportation, and media network industries. BTS Group has deep experience in the transport sector as the concessionaire for four MRT lines in Bangkok (Green, Gold, Yellow, and Pink line(s)), Bus Rapid Transit, Smart Bus, Chao Praya Express Boat terminal, and Intercity Motorway developer and concessionaire. BTS Group is a constituent member on the Stock Exchange of Thailand under the ticker “BTS”.

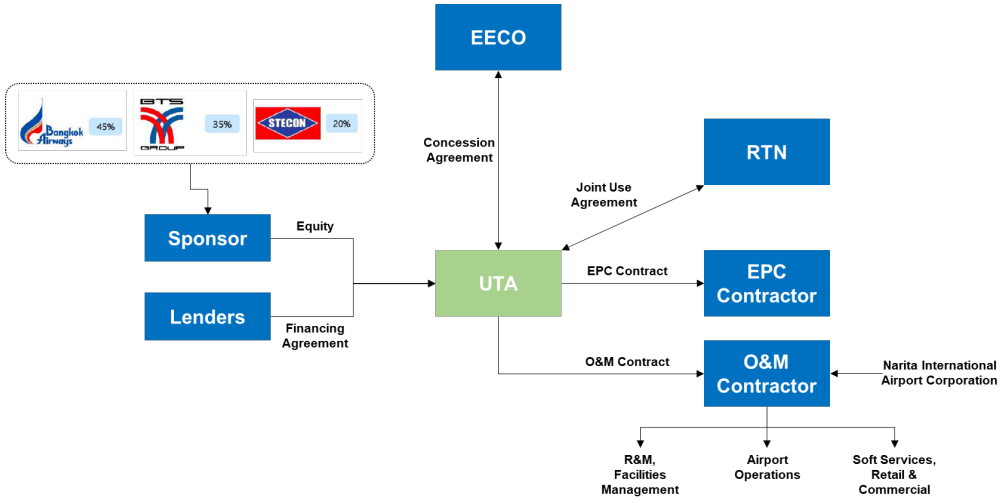
(iii) Sino-Thai Engineering & Construction (20%): Sino-Thai Engineering & Construction (STEC) is one of Thailand’s leading engineer and construction firms, operating in both public and private sector projects across infrastructure, buildings, energy, industrial works, and environmental works. STEC has a strong track record of developing transportation projects in Thailand, including MRT, Airport Rail Links, Roads, Bridge, and the development of airport terminals including Phuket International Airport and Chiang Mai

International Airport. STEC is a publicly traded entity on the Stock Exchange of Thailand under the ticker “STEC”.

10. Based on the complex operational nature of large-scale airport operations, UTA has engaged NAA as the O&M contractor over the concession period. Under the scope of the agreement, NAA will be responsible for airport operations, repairs and maintenance, facilities management, soft services, and retail & concession operations. NAA will bring its considerable international airport operational experience to the UTIA and will aid the airport in achieving operational efficiencies.

11. Given the numerous parties involved under the PPP, an overview of the PPP structure is depicted in Figure 5 below.

Figure 5: PPP Structure



12. The Concession Agreement provides for a 50-year concession period and outlines the key terms and responsibilities of each party. Under the DBFOM scheme, UTA will be responsible for operating and maintaining the airport and ancillary infrastructure (including Runway No. 2), however, the ownership of this infrastructure remains with the GoT over the life of the concession. The key terms under the Concession Agreement are denoted in Table 6.

Table 6: Concession Agreement Key Terms

Item	Key Term
Date of Project Agreement (signing)	19 June 2020
Concession Agreement Signing Authority	EECO
Concession Period	50 years
PPP Scheme	DBFOM

Item	Key Term
Payment Mechanism	Minimum Annual Revenue Sharing based on fixed land lease fee plus variable revenue sharing based on 5% of total revenue. This is estimated to be USD 9.2 billion[12] over the life of the concession.
Projected Private Sector Capital Investment for Phase 1	USD 976 million[13]
Joint Use Agreement (JUA)	Signed between RTN and UTA and stipulates use of Runway No. 2 to be used by UTA only for commercial purposes over the concession period[14].
Government Guarantees	No guarantees to be provided by the GoT and all demand risk (i.e. air traffic risk) to be borne by UTA.

13. The Concession Agreement also stipulates the roles and responsibility of each respective party in building, operating, and maintaining the UTIA infrastructure. An overview of the respective scope of work allocation is denoted in Table 7.

Table 7: PPP Scope of Work Allocation

Item	Build	Operate and Maintain
Runway No. 2 & Taxiway	GoT	UTA
Air Traffic Control Tower	GoT	
Passenger Terminal Building 3	UTA	
Cargo Village & Free Trade Zone		
Airport City		

14. A JUA has been executed to govern the usage of the existing and new runway. Further, it is important to note that all infrastructure developed under the Concession Agreement (inclusive of Runway No. 2) will be owned by the GoT for the duration of the concession period. The key terms of the JUA as relevant to the Project are as follows:

(i) Runway No. 1: The RTN shall manage Runway No. 1 (existing runway) over the life of the Concession Agreement. Once Runway No. 2 reaches 90% of its assessed Air Traffic

[12] Based on an estimated present value of THB 305,555 million over the 50-year concessionary period.
[13] Based on an estimated total UTA capital expenditure of THB 32,200 million. It is expected that total UTA capital expenditure could be up to USD3.8 billion over the life of the Concession (inclusive of all phases).
[14] The RTN may utilize Runway No. 2 in exceptional events or circumstances, including, but not limited to, acts of war and civil unrest.

Movement Capacity (as defined by the Air Navigation Service Provider (ANSP)), UTA may utilize Runway No. 1 for commercial purposes.

(ii) Runway No. 2: The EECO (on behalf of the GoT) shall manage Runway No. 2 and UTA shall operate and maintain the Runway for commercial aviation purposes over the life of the concession period. The RTN may utilize the Runway No. 2 in exceptional events or circumstances, including, but not limited to, acts of war and civil unrest.

15. The terms of the Concession Agreement coupled with the JUA dictate that the airport will continue to operate under a dual-use modality over the life of the concession. However, the GoT has chosen to procure the airport expansion under a PPP scheme to ensure that the primary function of the airport is commercial operations. Under a dual-use framework, the military area is distinctly separated and restricted from the commercial operations of the airport which allows the private sector operator to ring-fence operations. Globally, many large international airports operate under a dual-use framework, including (but not limited to):

(i) Singapore Changi Airport, Singapore (SIN)

(ii) São Paulo/Guarulhos – Governor André Franco Montoro International Airport, Brazil (GRU)

(iii) Naples International Airport, Italy (NAP)

C. Detailed Description of Project Components

16. The Project involves two components:

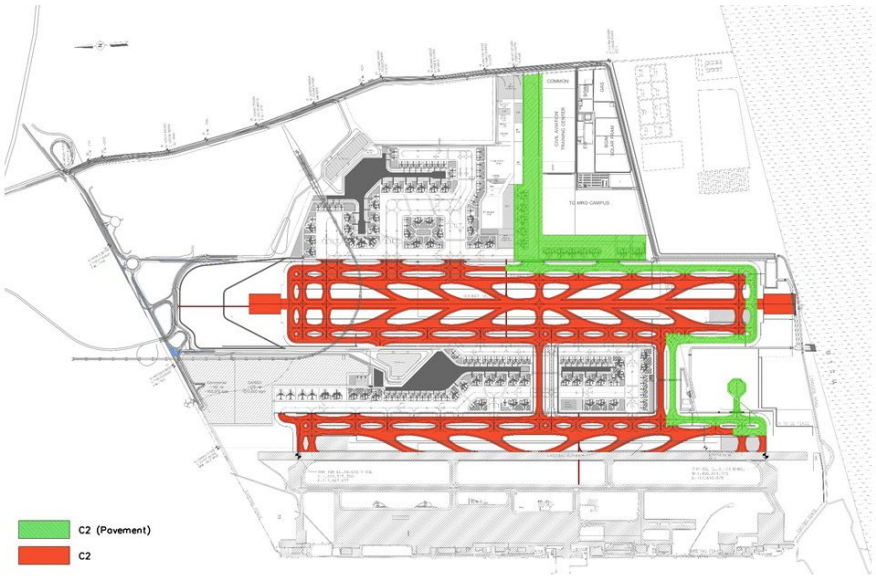
17. **Component 1 (C1)** – The component consists of the earthworks and site preparation for the bypass taxiway and Maintenance Repair and Overhaul (MRO) apron. Additionally, this component includes a project management consultancy service contract and construction supervision consultancy services contract. This component was fully constructed as of October 2022. The component was funded by the GoT.

18. **Component 2 (C2.1)** – The primary component under the Project will finance the civil works required for the construction of the second runway and taxiway. This will include the construction of a 3,505-meter length by 60-meter width runway developed to accommodate all aircraft models. The runway alignment will be constructed parallel to and be located approximately 1,140 meters from the existing runway. The additional items included in Component C2.1 include the relevant earthworks and site preparation, taxiway, drainage system and structure, visual aid system, airfield ground lighting system and pump station.

19. **Component 2 (C2.2)** – The second part of component 2 under the Project will finance consultancy services required for the construction of the second runway and taxiway. The envisaged consultancy services under this component will pertain to the construction supervision and project management services of the civil works contract.

20. The alignment and layout of the AIIB financed components is denoted in Figure 6.

Figure 6: Second Runway Alignment & Layout *(EECO, 2022)*

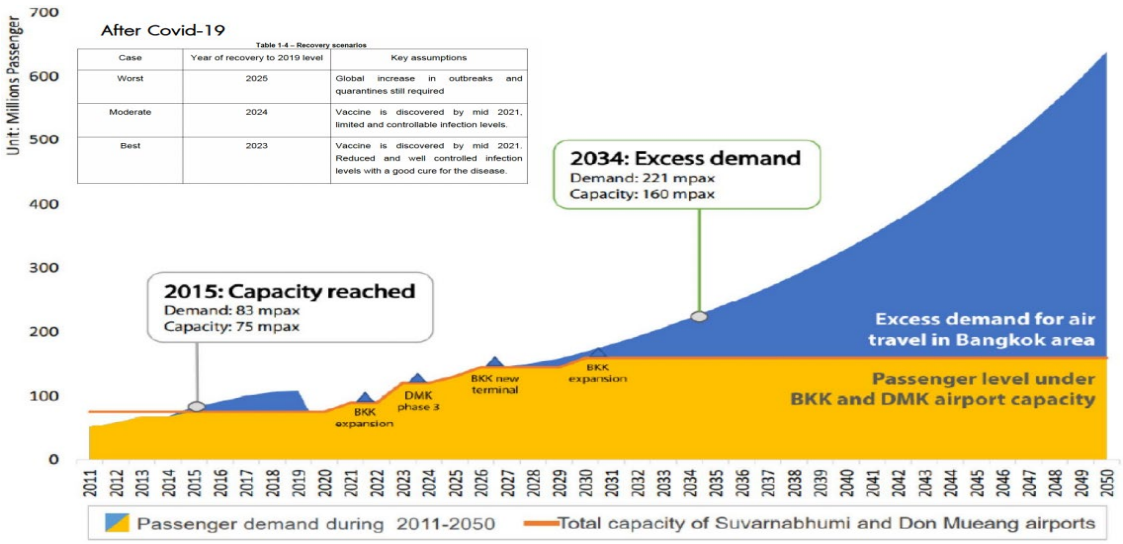


D. Projected Traffic Demand

21. **Traffic Forecast.** Existing traffic at the UTIA is approximately 2 MAP, split evenly between domestic and international passengers. Once the second runway and taxiway are constructed and operational, traffic is expected to increase to be 5.6 MAP in 2029.

22. Projected traffic is expected to primarily come from: (i) travel demand from Pattaya-bound passengers; and (ii) passengers who are diverted from the Bangkok-area airports. Both Suvarnabhumi and Don Mueang international airports reached maximum operating capacity in 2015. With a 45 MAP capacity, Suvarnabhumi served 65.5 MAP in 2019. With a 30 MAP capacity, Don Mueang served 41.3 MAP in 2019. While there are plans to expand the capacities of Suvarnabhumi and Don Mueang, it is expected that the passenger demand gap would increase to 61 MAP by 2034, without the UTIA expansion project. The capacity constraints on the existing Bangkok-area airports and the future forecast for capacity for air travel demand in the Bangkok-area is reflected in Figure 7 below:

Figure 7: Demand Constraints & Forecasted Capacity of Bangkok-Area Airports
(CAAT, 2021)



23. Further expansion of the UTIA will depend on the evolution of expected traffic demand. Table 8 highlights the MAP capacity to be achieved by the UTIA by phase, along with expansion activities planned when certain MAP milestones have been triggered. For example, when 12 MAP has been reached, this will trigger the development of the eastern terminal that would then increase the capacity to 20 MAP. The expected passenger capacity in the final phase of the UTIA development is 60 MAP.

Table 8: Capacity Expansion by Planned Phase (GoT, 2022)

Phase	MAP Capacity	Expansion activities and MAP trigger
Phase 1	12	Eastern terminal (12 MAP)
Phase 2	20	Eastern terminal expansion (24 MAP)
Phase 3	45	Eastern terminal and mid-field satellite terminal 1 (36 MAP)
Phase 4	42	Eastern terminal and mid-field satellite terminal 1 (36 MAP)
Phase 5	51	Final phase development (Eastern terminal and mid-field satellite terminal 1 and 2)
Phase 6	60	N/A

24. The expansion of the UTIA is part of Thailand's overall airport development plan of 10 major airports in the country to achieve a target capacity of 240 million passengers over the next 50 years. These activities are conducted to keep up with the forecasted traffic growth in passengers and to ensure expansion efforts are coordinated across Thailand's major airports.

Annex 3: Environmental & Health Impact Assessment

A. Introduction

1. To ensure the project preparation of the UTIA was performed in accordance with international best practice and standards, and to comply with the laws, regulations, legislation, and requirements of Thailand, the PIA prepared a comprehensive EHIA for the Project.

2. The EHIA was performed by a consultant contracted on behalf of the PIA: United Analyst & Engineering Consultants Co. Ltd. (UAE). UAE is a Thai-based company with over 30 years of experience in preparing EHIA for large-scale Thai infrastructure projects.

3. In assessing the scope and procedures of the EHIA, the following overall objectives were considered (*GoT, 2022)*:

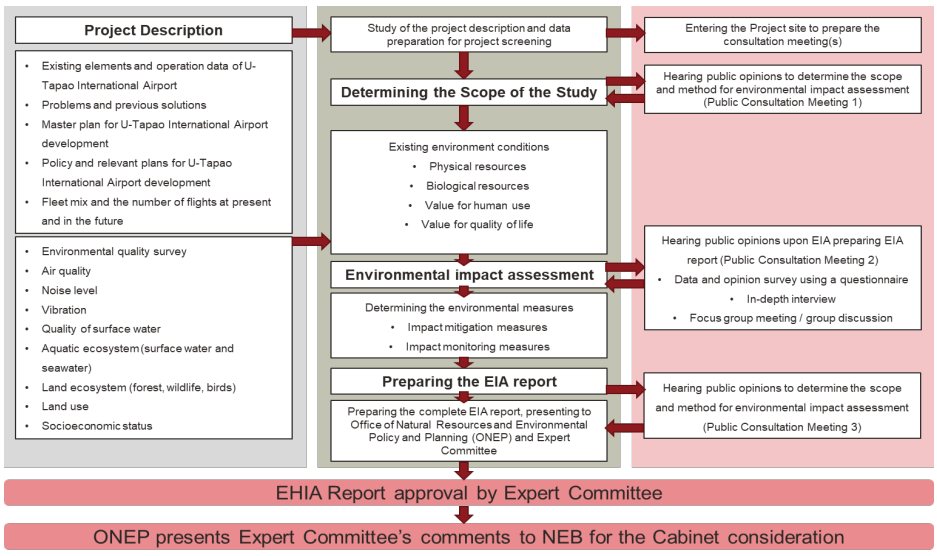
(i) To distinguish and predict positive and negative environmental impacts caused by the Project compared to the scenario without development;

(ii) To mitigate negative environmental impact from the Project planning in order to determine appropriate mitigation measures, the budget, and practicality rather than solving the problems when they subsequently occur; and

(iii) To use the data of environmental factors to plan and implement the Project according to the development plan of U-Tapao International Airport in an environmentally friendly and sustainable manner to the community.

4. The EHIA process encapsulated a detailed set of procedures and scopes as highlighted in Figure 8 below.

Figure 8: Procedures and Scope of the EHIA *(GoT, 2022)*



B. E&S Assessments

5. The EHIA included a wide range of environmental and social assessments, which could then forecast the potential impact on the change to natural resources, health and factors determining the health of people in communities, identify potential impacts to forecast the likelihood of both positive and negative impacts on natural resource, environment and values and determinants of health status of people in communities surrounding the Project. *(GoT, 2022)*

6. Based on the procedures and scope of work, a total of 23 environmental and social factor assessments and studies were undertaken. These E&S factors were categorized into four broad classifications, namely:

(i) **Physical environment resources** including noise, vibration, air quality, topography, geology and earthquakes, soil resources, surface water hydrology, quality of surface, ground, and seawater;

(ii) **Biological environmental resources** including land and aquatic ecosystem (i.e., marine ecosystem);

(iii) **Value for human use** including waste and wastewater management, land use, transportation, public utilities and facilities, and water drainage and flood prevention; and

(iv) **Value for quality of life** including socioeconomic status, relocation and compensation for properties, personal and public health, occupational health and safety, tourism and scenery, and archaeological and historic sites.

7. Following this, the environmental and social factors were classified into four categories, based on their forecasted degree of impact (assessing the impact during the construction and operation stages separately): (i) high degree impact; (ii) moderate degree impact; (iii) low degree impact; and (iv) no impact or insignificant impact.

8. The outcome of the classifications highlighted the following E&S factors as high impact: (i) noise (operations phase); (ii) land use (operations phase); socioeconomic status (construction and operations phase); (iv) compensation for properties (operations phase); and (v) transportation (construction phase).

9. The noise impacts pertain to increased air traffic and cumulative road traffic. The land use impact will be a result of medium and long-term land use changes provoked by the activities attracted by UTIA, ancillary facilities and generated businesses. The socioeconomic status impact refers to change(s) in employment and activities due to the possible relocation of businesses and residents (should they opt for a negotiated purchase) due to, in the short-term the noise impact compensation program or changes in the orientation of land-use in the medium term. The compensation for properties refers to the noise impact compensation program on residents and businesses on a voluntary basis. The transportation impact refers to increased traffic and traffic congestion due to the construction activities. The full classification is highlighted in Table 9 below.

Table 9: Environmental & Social Factor Impact Assessment *(GoT, 2022)*

E&S Factor	Degree of Impact	
	Construction Phase	**Operations Phase**
Physical Environment Resources		
Noise	Low	High
Vibration	Low	Moderate
Air Quality	Low – Moderate	Moderate
Topography	Low	No Impact
Geology and Earthquakes	Low	No Impact
Soil Resources	Low	
Surface Water Hydrology	Low	
Quality of Surface Water	Low	
Quality of Ground Water	No Impact	
Quality of Seawater	Low	
Biological Environmental Resources		
Land ecosystem	Low	
Aquatic Ecosystem	Low	
Value for Human Use		
Waste and Wastewater Management	Low-Moderate	
Land Use	Low	High
Transportation	High	Moderate
Public Utilities and Facilities	Moderate	No Impact
Water Drainage and Flood Prevention	Low	
Value for Quality of Life		
Socioeconomic Status	Moderate-High	High
Compensation for Properties	Low	High
Personal and Public Health	Moderate	
Occupational Health and Safety	Moderate	
Tourism and Scenery	Low	
Archaeological and Historic Sites	Low	

C. Mitigation and Monitoring Measures

10. Based on the results of the environmental and social factor impact classification, a series of mitigation measures were designed for the Project for both the construction and operation phases. The quantum of mitigations proposed in the EHIA are aligned with the level of forecasted impact of each E&S factor. Further, the mitigation measures assign the responsibility of the measure to the relevant entity best suited to implement it.

11. In addition to the mitigation measures, the EHIA proposes a set of monitoring mechanisms (covering both the construction and operation phases) for all E&S factors. Importantly, the monitoring measures cover the whole lifecycle of the Project and denote the party responsible for the monitoring activities. The level of monitoring required for each E&S factor is commensurate with the forecasted level of impact of the factor. Some critical monitoring measures to be implemented by the PIA, as proposed in the EHIA, include (but are not limited to):

(i) Noise monitoring, including general background sound, source noise, noise from the community area, and noise from actual flight scenarios;

(ii) Vibration monitoring;

(iii) Air quality monitoring, including ambient air quality;

(iv) Quality of surface, ground, and seawater monitoring, monitored through targeted sampling stations;

(v) Land ecosystem monitoring measured by surveys of the biodiversity of plants and animals in and around UTIA; and

(vi) Marine water quality and marine ecology monitoring;

12. Please refer to Table 5.1-1 in the EHIA (website) for a comprehensive summary of environmental impact mitigation and monitoring measures for the Project *(GoT, 2022)*.

D. Stakeholder and Public Consultation Process

13. The EHIA stakeholder and public consultation process followed the Guidelines for Public Participation in the Procedure of Providing an Environmental Impact Assessment Report from the Office of Natural Resources and Environmental Policy and Planning (ONEP) 2019 and the Guidelines for Public Consultations under Section 58 of the Constitution of the Kingdom of Thailand *(GoT, 2022)*. The Stakeholder and Public Consultation process is described in detail in Chapter 4 of the EHIA, and a brief summary of the aforementioned process is described below.

14. The consultations and stakeholder engagement covered a widespread number of stakeholders[15] based on an extensive stakeholder analysis exercise. Preparatory meetings, workshops and seminars were carried out in advance to further pinpoint the more adequate stakeholder groups, and to define the scheduling and format suggestions for conducting the full-fledged consultations. Four consultations were then carried out: three mandatory ones and an additional one to provide further clarifications of the Project. A fourth mandatory public consultation (fifth overall) will be carried out on August 3rd and 4th 2022, by the Civil Aviation Authority of Thailand (CAAT) to culminate the process. The objective of the final public consultation is to put the draft EHIA approved by NEB on February 17, 2022 to public and stakeholder scrutiny. The final EHIA was approved by NEB on March 29, 2022 and by a Cabinet resolution on June 14, 2022.

15. The area covered by the consultations included the UTIA and its vicinity (6km east and west, and 10 km north); which administratively comprised of two provinces (Rayong and Chonburi) consisting of parts of the following districts: Ban Chang, Mueang Rayong (Rayong), and Bang Lamung and Sattahip (Chonburi).

16. The first consultation was held on July 4th 2019, during which 333 people attended. The majority of those who attended were from the impacted party stakeholder group(s)[16]. The attendance records of the first consultation highlighted that 47% of attendees were either residents, community leaders, or from organizations within the impacted area. Additionally, 39% were from government agencies, state enterprises, local administration, or organizations. The results of the survey demonstrated that 49.6% declared a high degree of satisfaction with the first public consultation, 49.6% moderate satisfaction, and 1.3% low satisfaction. Finally, 58.1% of the attendees declared they had enough project information prior to the public consultation. The key themes and comments that arose from the first consultation processes are summarized in Table 11 at the end of Annex 3.

17. The second consultation, which was held in two periods - one between December 2019 and January 2020 and the other between June 6**th** to 13**th**, 2020. The participants in the second consultation included representation from varying noise contour zones, including NEF > 40, NEF 30 – 40, and NEF ≤ 30 zone(s). Further, the participants included those from Rayong and Chonburi Province and included residents, community leaders, and organizations within the impacted area. The second consultation consisted of the following key activities:

(i) In-depth interviews with government agencies, local government organizations, and private entities involved in or affected by the Project;

[15] The stakeholders included: (i) community leaders; (ii) residents of the vicinity of UTIA; (iii) small boat fishing groups; (iv) schools in the project area; (v) religious sites in the project area; (vi) medical institutions in the project area; (vii) domestic and international airline companies; (viii) tourism establishments; (ix) private establishments; (x) environmental study agencies; (xi) central government agencies; (xii) regional government agencies; (xiii) local government agencies; (xiv) state enterprises; (xv) environmental NGOs and NGOs; (xvi) educational institutions; (xvii) mass media; and (xviii) general public showing interest in the Project.

[16] Other stakeholder groups included: (i) parties responsible for the EHIA preparation; (ii) parties responsible for reviewing the EHIA; (iii) government agencies at various levels: (iv) environmental NGOs, developmental NGOs, educational institutions, and independent scholars; (v) mass media; and (vi) general public.

(ii) Group meetings and discussions with community leaders and people, village public health volunteer groups, civil defense volunteer groups, fishing groups, tourism groups and other groups (26 groups in total);

(iii) Group meetings with community leaders in the NEF 30-40 and NEF>40 zones; and

(iv) An opinion survey was administered among 5 groups totaling a sample size of 809 participants.

18. Based on the survey results of the second public consultation, 83.1% and 96.8% of the participants from Rayong and Chonburi province respectively declared the draft EHIA prevention and resolution measures were appropriate, with 12.2% and 2% noting the measures were not appropriate (from the same provinces respectively). With respect to the consultation process: (i) 51.7% - 59.9% declared a high degree of satisfaction with the second public consultation; (ii) 35.9% - 43.4% declared a moderate degree of satisfaction; and (iii) 1.6% - 1.7% noted low satisfaction. Finally, between 74.5% and 83.5% of participants acknowledged receiving information pertaining to the Project prior to the second public consultation. The key themes and comments that arose from the second consultation processes are summarized in Table 11 at the end of Annex 3:

19. The third public consultation was held at two venues on August 5th and 6th 2020, and targeted separate stakeholder groups during each day of the consultation:

(i) All people and community leaders residing in the affected area(s) of NEF > 40 and NEF 30-40 zone.

a. During this consultation, 429 participants attended, where 87.4% were residents, community leaders, or organizations within the impacted zones. At this consultation, 70.7% of the participants declared the draft EHIA prevention and resolutions measured to be appropriate. Further, 15.3% declared a high degree of satisfaction with the consultation, 52.9% declared moderate satisfaction, and 25.5% low satisfaction. Finally, 86.6% of the participants acknowledged receiving information about the Project and consultation ahead of the scheduled consultation date.

(ii) All other individuals.

a. During this consultation, 362 participants attended, where 67.4% were residents, community leaders, representatives of sensitive areas, or from organizations within the impacted zones. At this consultation, 90.7% of the participants declared the draft EHIA prevention and resolutions measured to be appropriate. Further, 47.3% declared a high degree of satisfaction with the consultation, 45.3% declared moderate satisfaction, and 3.1% low satisfaction. Finally, 85.7% of the participants acknowledged receiving information about the Project and consultation ahead of the scheduled consultation date.

20. The third public consultation adhered to the same process and methodology as the first public consultation as it was carried out in a seminar format. The key themes and comments that arose from the third consultation processes are summarized in Table 11 at the end of Annex 3.

21. During the period between the second and third public consultation(s), the noise impact forecast was modified which resulted in a change in the NEF noise contour. The number of households that are affected due to the change in noise contour is captured in Table 10 below.

Table 10: Number of Households in Areas with Changed Noise Contours[17] *(GoT, 2022)*

Area	Original number of households in noise contour (Aug. 2020)	Changed number		New number of households in noise contour (Jul. 2021)
		Additional number	Reduced number	
NEF ≥ 40	80	13	0	93
NEF 30 – 40	2,459	32	12*	2,466
Total number of households in areas with changed noise contours		45+12 = 57 households		

Note: *12 households were originally in the NEF30-40 area, but were changed to the NEF<30 area up to to the study area perimeter.

22. As a result of this change, a clarification of information consultation was conducted at the request of one interested party. The PIA indicated that the change was caused by an updated modeling scenario that reflected more realistic data being adopted and presented mid-way through the second public consultation. The updated scenario included realistic flight scheduling, topography, and safety considerations while the original scenario used default flight scheduling and conditions. There were 44 participants in the clarification consultation, of which 22.7% will be severely impacted by the Project, 31.9% moderately affected, 22.7% slightly affected, and 22.7% not affected. All participants in the clarification consultation declared that the explanation on changes in the noise contour data was credible and appropriate to forecast the Project's noise impact and suitable mitigation and resolution matters.

[17] The information is subject to change based on detailed survey

Table 11: Summary of Comments from Project Public Consultations (GoT, 2022)

Key Theme	1st Public Consultation Summary of Comments	2nd Public Consultation Summary of Comments	3rd Public Consultation Summary of Comments
Project Development Details	• Overall acceptance of the Project. • Suggestion to study the development cases of the existing Bangkok area airports: Suvarnabhumi and Don Mueang.	• Overall acceptance – development viewed as leading the community to prosperity and increased opportunity. • Development should preserve current way of life. • Noise contour to be truthfully presented and areas eligible for compensation clearly marked.	• No additional comments.
Environmental Impact Studies, Prevention, and Resolution Matters	• The studies and assessments must be comprehensive and include additional research and references. • Additional research focused on the impact of people whose residence and workplaces are relocated. • Impact of the influx of workers into the community due to the Project.	• Comprehensive and specifically include areas focused on noise, traffic, safety, and waste management.	• The noise contour is too narrow and the noise impact reassessed. • NEF contour should be based on actual noise levels and a monitoring station to be installed in Sam Nak Thon Subdistrict. • Based on the narrow noise contour, the compensation measures should be reviewed and people should be well informed about the process and measures. • Employment of local people is a priority. • Flight paths should be away from populated areas (where possible). • Need emphasis on traffic management and control, and measures related to worker construction camps. • Strict care of water usage, and water should be treated before discharge.

			• Development fund to support the community.
Resettlement and Replacement of Assets	• No additional comments.	• Offers should be presented to purchase and compensate land for affected people who wish to move, and support given to help people transition.	• No additional comments.
Socioeconomic Aspects	• No additional comments	• Occupational training should be provided and there should be measures for traditional fishermen. • Ensure continued peace and public safety and promote a good relationship between the community and UTIA. • Funds should be available to remedy for direct and indirect losses of people affected.	• No additional comments.
Public Participation	• Additional people from the affected area(s) should be invited to participate and negative impacts clearly explained.	• Project information to be publicized through traditional media. • Community leaders and local people to be updated on the progress of the Project through community meetings. • Additional channels of communication established so people may voice their complaints or grievances.	• People with greater technical knowledge should be invited to participate. • Public consultations should be held regularly to update people in the affected area(s). • Information on the Project should be profuse and local people should be notified directly of major changes.
Other	• The Project should provide welfare care to prevent health risks from Project construction.	• No additional comments.	• No additional comments.

Annex 4: Paris Agreement Alignment and GHG Emissions Assessment

1. In line with AIIB methodology for assessing the alignment with the mitigation and adaptation goals of the Paris Climate Agreement, the Project is assessed as aligned.

2. To date, there has been agreement amongst Multilateral Development Banks (MDBs) on a consensus methodology that aids in determining whether a project is aligned with the commitments of the Paris Agreement. This Joint MDB methodology, considers mitigation dimension of projects (labeled BB1, in the Joint MDB methodology) and adaptation dimension of projects (labeled BB2, in the Joint MDB methodology). While the adaptation methodology is straightforward for all infrastructure investments, the mitigation dimension leaves a number of investments without a clear-cut definition regarding their impact on the Paris Agreement. For these investments, defined as not automatically aligned with the Paris Agreement, MDBs are in the process of developing specific methodologies. These investments include airports and air navigation activities.

3. The analysis presented is based on the Joint MDB methodology for climate adaptation and the preliminary framework under consideration at AIIB for the mitigation dimension, which itself follows the Joint MDB framework.

4. The PA analysis, thus, has been divided into climate mitigation and climate adaptation.

A. PA Alignment in Climate Mitigation (BB1)

5. The methodology for climate mitigation used for this assessment is based on: (i) the Joint MDB framework and AIIB research; and (ii) ongoing discussions for the consideration of airport and air navigation investments. The approach consists of testing the following five criteria (specific assessment criteria, SC) against the investment as follows:

(i) **SC1: Nationally Determined Contribution and Long-term Strategy Alignment**. The operation should not be ruled out in the NDCs, LTSs and other national / regional and transport low-carbon policies/strategies compatible with the PA mitigation goals.

(ii) **SC2: Low Carbon Pathway Consistency.** The operation should not be inconsistent with the air transport sector decarbonization pathway. In this sector, this means: (i) evolution of energy efficiency improvements and alternative propulsion systems; (ii) low-carbon fuel use; and (iii) operational enhancements at airspace management and airports.

(iii) **SC3: More Efficient Alternative for a Comparative Service**. An existing more efficient transport infrastructure cannot serve the current and forecasted passenger and freight demand with a similar level of service.

(iv) **SC4: Low-carbon Transition Enabler**. The operation should not prevent the future deployment of a more efficient (in GHG terms) aircraft fleet, as well as other Paris-aligned activities.

(v) **SC5: Economic Viability**. The operation should be economically viable, when considering the GHG emissions during construction and operation (valued at a shadow carbon price)

6. All of the above-mentioned specific criteria were deployed in the construction of this assessment. As previously mentioned, the specific criteria are suggested in the Joint MDB methodology and have been interpreted by AIIB for airports.

7. **SC1: NDC and LTS Alignment.** The Office of Natural Resources and Environmental Policy and Planning under the Ministry of Natural Resources and Environment has developed a climate change master plan covering the period of 2015 – 2050, which is revised on a rolling 5-year basis as climate mitigation and adaptation strategies shift and evolve. Under the updated NDC, Thailand aims to reduce its GHG emissions by twenty percent by 2030. Under the current climate change master plan, the GoT has outlined its strategy for reducing carbon and GHG emissions across various sectors in Thailand, including the transport sector which is particularly relevant to the Project. The climate change master plan highlights that the GoT is cognizant that patterns of transportation infrastructure development significantly determine the future volume of GHG emissions, and therefore the GoT should "focus on increasing the efficiency of transport and logistics…and applying sustainable principles to the management of transport demand." *(GoT, 2016)* The Project Team further notes that the construction of the UTIA (and overall high priority EEC Development Plan) is part of Thailand's 4.0 scheme, approved by the GoT to grow the aviation and logistics sector. Finally, the Thailand airport development plan acknowledges that the existing Bangkok-area airports (Suvarnabhumi and Don Mueang) have reached capacity since 2015 and therefore face congestion and inefficiencies that may potentially exacerbate GHG emissions. While both aforementioned airports have planned capacity expansions over the next decade, there is still a significant demand gap of up to 61 MAP *(GoT, 2022)* between 2030 and 2034 and the Project is expected to address the current congestion and increase air transport efficiencies in the region. As such, the development of the Project is aligned with the country's NDC and LTS for the purposes of PA.

8. **SC2: Low-Carbon Pathway Consistency.** With respect to PA, the low-carbon pathway consistency notes that the operations of the airport should not be inconsistent with the air transport sector decarbonization pathway of the country, including (but not limited to) the current and future: (i) aircraft energy efficiency improvements and alternative propulsion systems, (ii) low-carbon fuels, and (iii) operational enhancements at airspace management and airports. The Project Team notes that with respect to the Project, the aforementioned items, such as aircraft energy efficiency improvements and low-carbon fuels are determined outside of the control of the airport operator(s) and governed by international aviation standards and agreements. That being said, key players in the aviation sector expect that the aviation industry will achieve its target of net-zero by 2050 through the following key innovations:

(i) Improvements to aircraft efficiency and technology – In the short-to-medium term there is a heavy expectation that next generation aircrafts will be retrofitted with highly efficient engines that will allow up to 20% fuel improvement. Further, in the long-term the

expectation is that aircrafts will gradually shift to be operated by electric or hydrogen powered propulsion.

(ii) Deploying Sustainable Aviation Fuel (SAF) – The biggest factor of achieving net-zero in the aviation sector is the transition to SAF, which will include a wide-range of feedstock. There are various feedstocks available, from non-food crops to waste sources, and in the long-term a shift to power-to-liquid fuels made from recycled or directly captured CO2 electricity. Equally important to the type of SAF available is the aviation sector's commitment to sourcing this transition to ensure rigorous sustainability criteria and no impact on global food and water use. The IATA notes that as of 2021 there have been 360,000 flights operated with (or partially with) SAF and 36 countries globally with SAF policies in place *(IATA, 2022)*.

9. **SC3: More Efficient Alternative for a Comparative Service.** In assessing the Project's assessment framework with respect to PA, an analysis must be undertaken on whether an existing more efficient transport infrastructure cannot serve the current and forecasted passenger and freight demand, with a similar level of service as the Project. As previously discussed, the Project forms a critical part of Thailand's overall airport development plan that aims to add aviation capacity to the country in line with forecasted growth of passengers. Secondly, the Project will complement the capacity expansion of the existing Bangkok-area airports to ensure the airspace is decongested and efficiently operating. Thirdly, the UTIA forecasts that 77% of traffic into the airport will be international. Based on the heavy percentage of international traffic, there would be few (if any) viable transportation alternatives that may be used as a substitute. Further, given the topography of Thailand a portion of the 23% domestic flights is anticipated to destinations that could not be served by road or rail infrastructure (such as island destinations). As such, the Project Team notes that there is no existing transportation infrastructure that could more efficiently serve the current and forecasted passenger and freight demand.

10. **SC4: Low-carbon Transition Enabler.** The low-carbon transition enabler with respect to PA denotes that the Project should not prevent the future deployment of a more efficient aircraft fleet or airport operations, as well as other Paris-aligned activities. Further, it is critical that all new airport developments be retrofitted (or existing airports upgraded) to ensure that airline, airport, and air traffic management operations can reduce carbon emissions through day-to-day operations. The Project Team firstly notes that the deployment of aircraft fleet is a commercial decision outside the control of the airport operator(s), however, the designed runway of the Project is capable of handling all aircraft modalities and therefore will not hinder the transition to a more efficient fleet in the future. Secondly, UTA is designing the airport passenger terminal building to achieve a LEED gold standard and will integrate electrification into various aspects of the terminal building operations. Finally, the airport is being designed in line with international standards and best practices to ensure high operational efficiencies and reductions in airspace congestion. These measures ensure that the airport is being designed, built, operated, and maintained within the highest degree of energy efficiency. As such, the Project Team notes that the airport operations adhere to the low-carbon transition enabler criteria.

11. **SC5: Economic Viability.** An economic analysis consistent with the joint methodology on PA was conducted. It included GHG emission costs pertaining to the forecasted air traffic of the Project, valued using the shadow carbon price *(World Bank, 2017)*. The analysis highlights that the Project remains economically viable despite the increase from GHG emission costs. The GHG emission costs included in the economic analysis consider a range of potential air traffic scenarios, including: (i) those resulting from all forecasted flights flying into and out of UTIA, (ii) those resulting from all forecasted flights exceeding 20 MAP, and (iii) those resulting from the induced traffic.[18]

12. Based on the analysis performed over the five specific criteria, the Project can be considered to be aligned with PA with respect to climate mitigation.

B. PA Alignment in Climate Adaptation (BB2)

13. The Joint MDB methodology for assessing the investment's climate adaptation alignment with the Paris Agreement consists of three steps:

(i) **Step 1- Climate risk and vulnerability assessment:** identify and assess physical climate risk to determine whether the airport infrastructure, its ancillary facilities and its users are vulnerable to climate hazards;

(ii) **Step 2: Climate adaptation and resilience measure definitions:** Propose measures to address the identified physical climate risks and support the delivery of climate-resilient airport and other ancillary infrastructure, and contribute to build climate resilience beyond the airport operation, when possible; and

(iii) **Step 3: Consistency with broader and national context for climate resilience:** Ensure that the airport operation is consistent with the policies/strategies/plans for climate adaptation and resilience at the national, regional, local, city, level as considered relevant and/or with private sector or community-driven priorities.

14. **Step 1: Climate risk and vulnerability assessment.** In preparing the design of the Project, the PIA undertook various climate risk and vulnerability assessments in the FS and EHIA that analyzed various potential risks, including climate related risks. These comprised of (but were not limited to): precipitation, geology & earthquakes, flooding, and sea level rises. *(GoT, 2022)* The assessment(s) undertaken highlighted that the most prevalent climate risk requiring adaptation measure pertains to increased precipitation over the life of the concession period. With

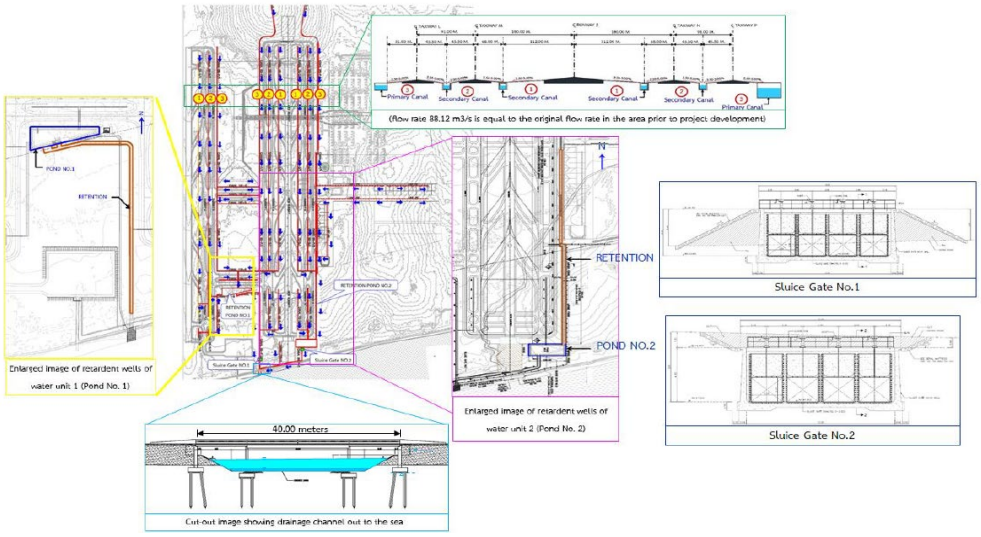
[18] The three GHG emissions scenarios represent various perspectives on what externalities to attribute to the Project. The GHG emissions resulting from all forecasted flights flying into and out of UTIA represent the maximum emissions associated with UTIA. The GHG emissions which consider all traffic subsequent to the airport achieving 20 MAP represent incremental emissions (given that the existing runway in UTIA is capable of handling up to 20 MAP). However both methodologies overestimate what can be attributable solely to the Project: the emissions from all forecasted flights still include emissions coming from the operations of the existing runway, while the incremental emissions still include the diverted traffic whose emissions will happen regardless of whether the Project is implemented or not. Hence, GHG emissions resulting from induced traffic would most accurately capture the externalities attributable to the Project. Detailed elaboration can be found in the GHG calculations assessment section.

respect to geology and earthquakes, the assessment highlighted that Rayong province and the Project's site had no active faults and was categorized as earthquake-prone area level 1, equivalent to 3-4 on the Mercalli intensity scale (translating to minimal risk). With respect to the risk(s) of flooding and rising sea levels, the assessment(s) showed that the Project is not in a high-risk flood zone. Further, the impact(s) of potential flooding and sea rises were accounted for in the adaptation and resilience measures discussed in Step 2 (climate adaptation and resilience measures).

15. **Step 2: Climate adaptation and resilience measures**. To limit the impact of a potential precipitation increase, the PIA has integrated into the Project design a comprehensive drainage system, drainage structure, pumping station, and retention pond to ensure the Project is better adapted to potential climate changes. In designing the drainage system and related infrastructure, the PIA utilized historical rain data over the last 50-years to forecast, with appropriate modelling techniques, future precipitation increases. Further, the PIA designed the drainage structure and system based on an assessment of potential sea level rise, noting the design may withstand sea level rises to at least a hundred-year period (based on current forecasts of potential sea level rise).

16. Based on the analysis performed, the drainage system and structure were designed to ensure water is drained from the runway and taxiway area(s) as a means to prevent external water from entering the UTIA and to control the water volume. As a further adaptive measure, the PIA also integrated a pumping station and retention pond to account for future precipitation increases. The drainage system and structure are estimated to cost USD 63.01 million, representing approximately 13% of the estimated project cost for Component C2.1. The overall design and layout of the Project's drainage system may be found in Figure 9 below. Based on the climate adaptation measures incorporated into the Project, Step 2 is met and aligned.

Figure 9: Project Drainage System *(GoT, 2022)*



17. **Step 3: Consistency with Broader and National Context for Climate Resilience.** The final step in the joint methodology is ensuring that the airport operations are consistent with the

national policies and strategies for climate adaptation and resilience. It is important to highlight that the operations of the UTIA will be under the purview of UTA, who will be responsible for integrating adaptation and mitigation measures that abide by the laws and legislation of Thailand. Notwithstanding, the PIA has ensured that adaptation measures integrated into the design of the Project are aligned with the national policies of the GoT.

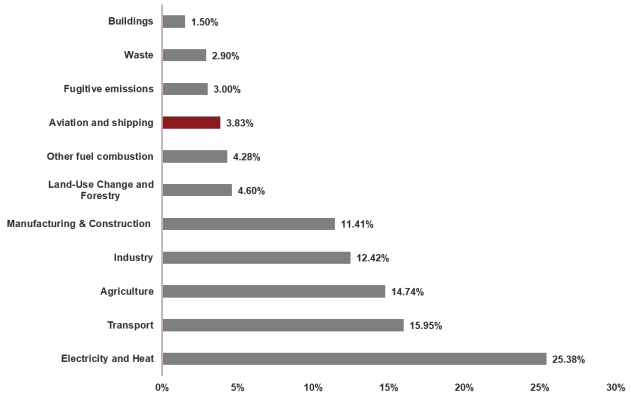
18. Thailand's Climate Change Master Plan (2015-2050) contains a comprehensive climate change adaptation strategy that seeks to guide actions and measures across six key sectors (GoT 2016). One such strategy is the adaptation of water resources, flood, and drought management ensuring forecasting factors such as increased precipitation levels are taken into account when designing adaptation measures. Secondly, is a strategy pertaining to designing adaptation measures that account for natural disaster risk management. The adaptation measures integrated into the Project, including the drainage system and structure, are aligned with the climate change master plan issued by the GoT. As the PIA has incorporated adequate climate adaptation measures into the Project and ensured that the Project design and airport operations are aligned and consistent with national strategies on climate adaptation, the Project does meet all three steps under the joint methodology. As such, together with the mitigation measures previously discussed, ensures the Project is fully aligned under PA.

C. GHG Emission Assessment

19. The Project Team notes that it is important to assess the GHG emissions pertaining to the aviation sector in Thailand and to the air traffic of the Project.

20. Firstly, with respect to the aviation sector in Thailand, the Energy Policy and Planning Office under the Ministry of Energy has published a breakdown of the GHG Emissions by Sector across Thailand, which is highlighted in Figure 10. The breakdown of GHG emissions shows that the aviation and shipping sector(s) [combined] contribute approximately 4% to the net GHG emissions of Thailand. The Project Team has assessed that the contribution of GHG emissions by the Project will occur through (i) the construction of the runway and related infrastructure, (ii) the passenger terminal building operations, and (iii) the air traffic of the airport. All three contributions to GHG emissions are discussed in the corresponding section.

Figure 10: Thailand Greenhouse Gas Emissions by Sector (*GoT, 2022)*



21. GHG emissions related to air traffic generally fall into Scope 3 categorization by the ICAO, noting it is "Other Airport-Related Activities and Sources" and includes those emissions which may not be directly controllable or influenced by the airport operator or public sector counterpart. In performing this assessment, the Project Team has utilized the "IFI Joint Approach to GHG Assessment in the Transport Sector", "ICAO's Carbon Emissions Calculator Methodology", and "ICCT CO2 from Commercial Aviation". The IFI Joint Approach has been adopted by MDB organizations like AIIB (including ADB and the World Bank) and critically notes that the calculation of GHG emissions for transport projects must make "the distinction between induced and diverted traffic". In the context of the Project, induced and diverted traffic is discussed as follows:

(i) Induced traffic – has the meaning that traffic materializes due to the existence of the Project (i.e. the second runway and taxiway under funding consideration). However, travel is generally regarded as an intermediary activity that does not take place for its own sake, but because of the activities to be carried out at the final destination. For example, a tourist will not travel to UTIA because of the Project, but to take part in the activities and sights of Thailand. Therefore, a twofold question may be posed: (i) does travel materialize simply because of the existence of an airport and its infrastructure (i.e. runway); or (ii) does travel materialize because of the activities that surround the airport?

- If the answer is the former, in the case of the Project one may distinguish that connecting flights are travel that have materialized purely because the airport exists; and

- If the answer is the latter, the induced traffic may not be attributed directly to the existence of the Project. However, the Project may contribute to the development of the activities at the destination alongside other factors such as GoT policies, economic incentives, and other infrastructure development.

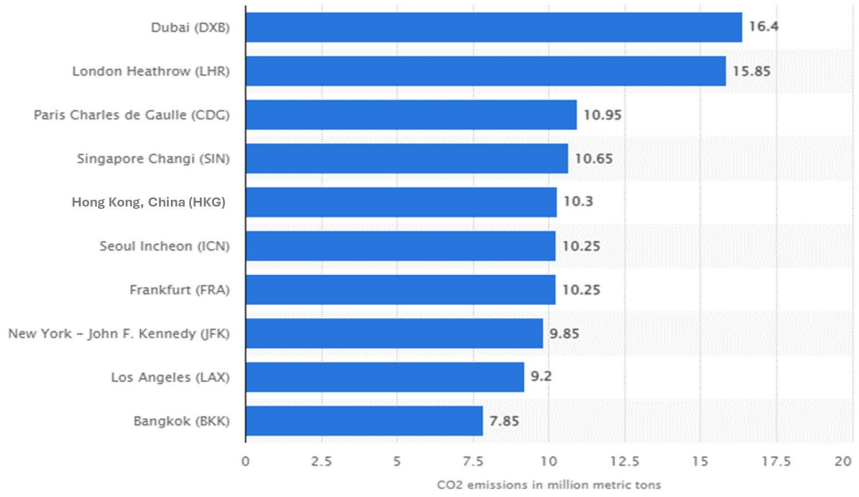
(ii) Diverted traffic – has the meaning of traffic whose point of origin or final destination is UTIA but that is, at present, coming or going to another airport or using another transport mode. In future forecasts, this traffic would exist anyway and may use other modes of transport (i.e., other airports, high-speed rail, etc.). Diverted traffic, then, is primarily a result of existing attractions in Thailand and the development of the EEC region and includes spillover traffic from the existing Bangkok-area airports. Therefore, diverted traffic would exist irrespective of the construction of the capacity expansion of UTIA (inclusive of the Project), either because of existing activities or would be a causal effect of the activity development of the EEC region. Therefore, diverted traffic, in fact, cannot be attributable to the airport.

22. The ICAO & the International Council on Clean Transportation (ICCT) methodology identifies key assumptions and inputs that are required to forecast the potential GHG emission for air traffic of an airport. Through these sources, a minimum and maximum calculation of average annual GHG emissions has been performed whereby only the induced traffic is considered in the calculation, as it is the only traffic attributable to the project. As mentioned above, while it is clear the connecting flights are induced traffic attributable directly to the Project, the

induced traffic caused by activities served by the airport are less clearly attributable to the Project. As such, a forecasted annual average GHG emissions range for the Project (over the 50-year concession) is calculated between 0.03 and 6.33 million metric tons (MT).

23. If the GHG emissions resulting from all forecasted flights flying into and out of UTIA (over the 50-year concession) were calculated it would result in 7.03 million metric tons (MT). In comparison to other major international airports globally (per Figure 11), including Bangkok's Suvarnabhumi airport, the Project's total forecasted GHG emissions (induced and diverted traffic) are well below that of its peers.

Figure 11: Sample of International Airports by GHG Emissions (Statista, 2019)



24. Finally, the Project Team highlights that the range in GHG emissions does not consider three additional factors that are important considerations on the impact of the Project.

(i) As the Project is a brownfield expansion project for an existing airport, there will only be an incremental GHG emission impact by the construction of the Project. As the existing runway is capable of handling up to 20 MAP, the Project Team has calculated that the maximum GHG emissions that should be considered as a result of the Project to be 6.72 MT, which considers all traffic subsequent to the airport achieving 20 MAP.

(ii) The UTIA will be responsible for handling both domestic and international traffic. Under the current air traffic projections over the 50-year concession, the projected international traffic will represent 77% of all traffic. Unlike other continents (such as Europe and North America), the geographic distribution in Asia (and in particular, Southeast Asia) does not often allow for suitable alternative modalities of transport to replace international air travel. Further, while Thailand has various domestic transport modes that may be utilized (i.e., rail, road), there is no suitable alternative mode that is both efficient and carbon-friendly to replace domestic air travel for the routes served by domestic flights coming in and out of UTIA. Therefore, it is assumed that there is no diverted traffic either for international or domestic flights from alternative land transport modes. This is a conservative assumption

in terms of GHG emissions as the only possible alternative would be road transport; a less efficient transport mode.

(iii) GHG emissions forecast has been calculated over the 50-year concession period, using current internationally acceptable assumptions. However, as previously stated, there is a strong expectation that the airline and aviation industry(s) will start integrating the use of sustainable aviation fuel in the future. According to the World Economic Forum, “the use of sustainable aviation fuel (SAF) – fuel either made from biogenic feedstocks such as waste cooking oil, agricultural residues and municipal waste, or through next generation SAF technologies such as power-to-liquid from recycled CO2 and carbon-capture technologies – will play an indispensable part in achieving this transition.” Therefore, the current range of GHG emissions forecast for the Project may be conservative under the notion that carbon emissions from air transport are reduced in the future.

25. Based on the due diligence performed by the Project Team over the joint methodology for PA and the potential GHG emission impact of the Project, the Project Team concludes that the Project is fully aligned with PA and has acceptable mitigation measures and strategies in place to minimize the impact of GHG emissions.

Annex 5: Gender Equality

1. With a value of 0.359 and above the world average, Thailand ranks 80th (2019) in the United Nations (UN) gender inequality index (GII) *(UNDP, 2020)*, below Viet Nam and Philippines but above all its neighbors and China. Similar to the GINI coefficient the GII indicates male and female equality across health, empowerment and labour market dimensions. Thailand also fairs above the world average in the UN gender development indicator (GDI) where it measured 1.008 in 2019 and has measured around or above 1 since 2010 *(UNDP, 2022)*. A significant improvement from 0.976 value in 1995. The GDI is a ratio of the UN female and male human development indicators, if above 1 the human development indicator is higher for women than for men. The world average GDI and GII is 0.943 (2019) and 0.436 (2019) respectively, noting when the indicator nears 0 higher equality is measured *(UNDP, 2022)*. Thailand also ranks 79th (2020) in the World Economic Forum global gender gap index which measures the gender gap across economic participation and opportunity, educational attainment, health and survival and political empowerment *(WEF, 2021)*.

2. Thailand has ratified the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) in 1985 and its Optional Protocol in 2000, endorsed the Beijing Platform for Action (BPFA) in 1995, and committed to the Sustainable Development Goals (SDGs) in 2015 *(UN Women, 2022)*. Thailand has made significant efforts to integrate the international principles and instruments into legislation and policy, evident in the Constitution of the Kingdom of Thailand B.E. 2560 *(GoT, 2017)*, which specifies that "men and women shall enjoy equal rights". The Gender Equality Act 2558 (2015) established a Committee to Promote Gender Equality (CPGE) to enact the Act's legal policies and mechanisms to advance gender equality. In addition, the Women Development Strategy (2017-2021), developed by the Ministry of Social Development and Human Security, sets out goals, objectives and targets in the area of gender equality *(UNDP, 2018)*.

3. In terms of labour market regulations Thailand's Labour Protection Act B.E. 2541 *(GoT, 2014)* stipulates in Section 15, "An Employer shall treat male and female Employees equally in employment unless the description or nature of work prevents such treatment", and in Section 16, "An Employer, a chief, a supervisor, or a work inspector shall be prohibited from committing sexual abuse, harassment or nuisance against an employee", and Section 53, "whereas the work is of the same nature and quality and equal quantity, an Employer shall fix equal Wages, Overtime Pay, Holiday Pay and Holiday Overtime Pay to be paid to an Employee, notwithstanding that the Employee is male or female". Furthermore, the Act provides provisions for protection of pregnant women in employment and prohibits employment of women in jobs deemed hazardous. The Act regulates overtime, paid leave and working hours and a grievance mechanism for workers. Employers of more than 10 employees are obliged to present them with written rules, regulations and rights stipulated in the Act. Finally, the Act defines the role of the Labour Inspectors that supervise the application of the Act. In terms of social protection provisions, Thailand provides paid maternity leave for female workers and ensures the right to returning to their employment.

4. According to a recent study of women in business *(Grant Thornton, 2020)*, Thailand fairs well in terms of the position women hold in business, but less well in the political arena and in the

rural sector. Thailand has a greater percentage of women in senior leadership positions than both the Asia-Pacific region and the global average. In mid-market companies, women hold 32% of senior leadership positions against, the global average of 27% and the number of businesses with no women in senior management has decreased by 5 percentage points – from 19% in 2019, to 14% in 2020. Thailand is also performing comparatively well when it comes to having women in the highest positions of power: 24% of CEOs / Managing Directors in Thailand are women, compared to 20% worldwide and only 13% in Asia-Pacific. The senior leadership position held most by women in Thailand is that of Chief Financial Officer, which contributes 43%, making Thailand the world's highest percentage of female CFOs and the third-highest percentage of female CEOs. Thai women, however, are generally still underrepresented in the public sector, especially in the parliament, government, judiciary and administration both at national and local levels. Women account for only 23.9 % of high-ranking civil servants, and gender equality in senior leadership positions has only risen by 3% in the last fifteen years. According to the OECD (2018), in the rural areas of Thailand many women are affected by poverty and discrimination in contrast with the situation in the urban areas. They work in the agriculture sector in informal and insecure jobs and suffer unfair treatment and discriminatory practices from employers.

5. Within the framework of the UTIA a number of public consultations were carried out as part of the environmental and health impact assessment of the Project. The consultations were structured around the geographical areas with different levels of noise exposure impacts forecasted as the airport comes into peak operation by 2048. In these different levels, the gender composition of the people consulted is as follows: a) For households in NEF⩾ 40 area: 52.3% women consulted, 47.7% men; b) For households in NEF 30 to 40 area: 57.9% women consulted, 42.1% men; c) For households in NEF <30 area: 3% women consulted, 35.7% men; and d) in the socioeconomic survey of community leaders, 11 were women, 15 men. In the assessment of the potential impacts representation of women has been equitable. The results of these consultations have and will inform the mitigation measures and compensation framework of affected people *(GoT, 2022)*.

6. Consistent with AIIB's ESF the Bank supports clients seeking to identify gender-specific opportunities, risks and impacts under its projects. In this respect, infrastructure projects present four areas where gender-specific issues may be identified: (i) in the design of the project, and its individual elements: (ii) in the construction of all the infrastructure components of the project; (iii) in the operation of the services supported by the project: (iv) in the stakeholder engagement and consultation process carried out for the development of the design and for the definition of impact mitigation measures to be applied to the project *(AIIB, 2021)*. The gender assessment for the Project determined the possibilities of including gender-specific actions as part of the Project to improve outcomes and mitigate related risks in each area.

7. For the introduction of gender-specific designs, it was noted that the Project is being implemented through a PPP Concession Agreement, and as such, UTA is responsible for designing, constructing, operating, and maintaining the UTIA, with the exception of the design and construction of the second runway and taxiway which falls under the GoT contribution to the Project through the AIIB loan. Due to the nature of the runway and taxiway, introducing gender-specific designs to the infrastructure elements financed by AIIB is not envisaged. The components

to be designed and constructed by UTA under the Concession Agreement such as (but not limited too) Passenger Terminal Building (Terminal 3), satellite concourse, airport ancillary & support areas, cargo terminal, car parks, and public spaces will be designed in a universally accessible manner. Such features will include wheelchair-accessibility, additional space in female toilet areas, diaper rooms, family rooms, etc. The design of restrooms will follow ACRP Report 130 Guidelines for Airport Restroom and Design, all other elements will follow the most modern airport design standards *(ACRP, 2015)*.

8. For the introduction of gender-specific actions applicable to the construction and operation stages of the Project, the possible actions envisaged are linked to employment opportunities for women in the contracts associated with the construction and operation of the airport. As mentioned above, the AIIB loan concerns the construction and consulting supervision contracts related to the second runway and taxiway, all other elements will be constructed by UTA under their designs, plans, conditions and timeline. Under the terms of the Concession Agreement, it is noted that UTIA will be responsible for abiding by and operating within the robust legislation and labour laws of Thailand, including (but not limited too), The Gender Equality Act and Thailand's Labour Protection Act B.E. 2541 *(GoT, 2014)*. The prescriptive language contained in the Concession Agreement will ensure that the private sector abides by the relevant Thai legislation to ensure that the UTIA is implemented and operated in a manner that promotes gender equality, inclusiveness, and fair labour practices . It is noted that the Thai legal framework affords reasonable guarantees to women in the labour market, nonetheless, provisions are included in the tender documents of the contracts financed by AIIB to preclude any employment or wage gender discrimination.

9. The stakeholder engagement, public consultations, and other outreach activities that have been carried out to date demonstrate the PIA's track record in ensuring equitable gender participation, seen through the gender proportions of participants in the consultations. Future stakeholder engagement activities will be conducted in a similar manner adhering to the promotion of equitable gender participation. In addition, to reinforce female participation in the consultations it was agreed with the PIA, to conduct women only focus groups in parallel to the public consultations carried out as per the SEP.

Annex 6: Economic and Financial Analysis

A. Introduction

1. The economic and financial analysis was undertaken to assess the economic and financial viability of the UTIA as well as that of the Project. The economic and financial analysis was performed by the consulting firms KPMG and AECOM in preparation of the FS and was reviewed by the Project Team as part of the due diligence process. For the economic evaluation, the applied methodology is an input-output analysis. The input-output analysis estimates how the investments in a particular project circulate throughout the economy, through calculating indirect, induced, and catalytic impacts of the investment. In particular, this methodology is well suited to the Project as it incorporates the wider economic benefits of the infrastructure as opposed to a cost-benefit analysis which does not capture the full purview of benefits.

2. The input-output analysis considers the expected direct, indirect, induced, and catalytic operating benefits of the Project in addition to all operating, capital, replacement and maintenance expenditures over the life of the Project. Under the Base Case, the Project is economically viable with an EIRR of 30.1%, a Benefit-Cost Ratio of 12.3 and an ENPV of USD 5.9 billion using a discount rate of 12%. Importantly, the analysis performed does not quantify all possible positive externalities of the Project, mainly as it is one infrastructure project of a more extensive EEC masterplan with long-term benefits and possible spillover effects.

3. The economic analysis at the FS is further supported by the signing of the Concession Agreement in June 2020. Under the terms of the Concession Agreement, UTA will have a minimum annual revenue sharing with the GoT that is worth an expected USD 9.2 billion over the 50-year concession. Further, UTA is expected to make capital expenditure investments equal to USD 3.8 billion. The executed Concession Agreement supports that the private sector concurs with the traffic demand and economic analysis contained within the initial FS and highlights the overall project economic and financial viability. Finally, under the terms of the Concession Agreement there is no commercial and/or demand guarantee by the GoT to UTA.

B. Economic Analysis

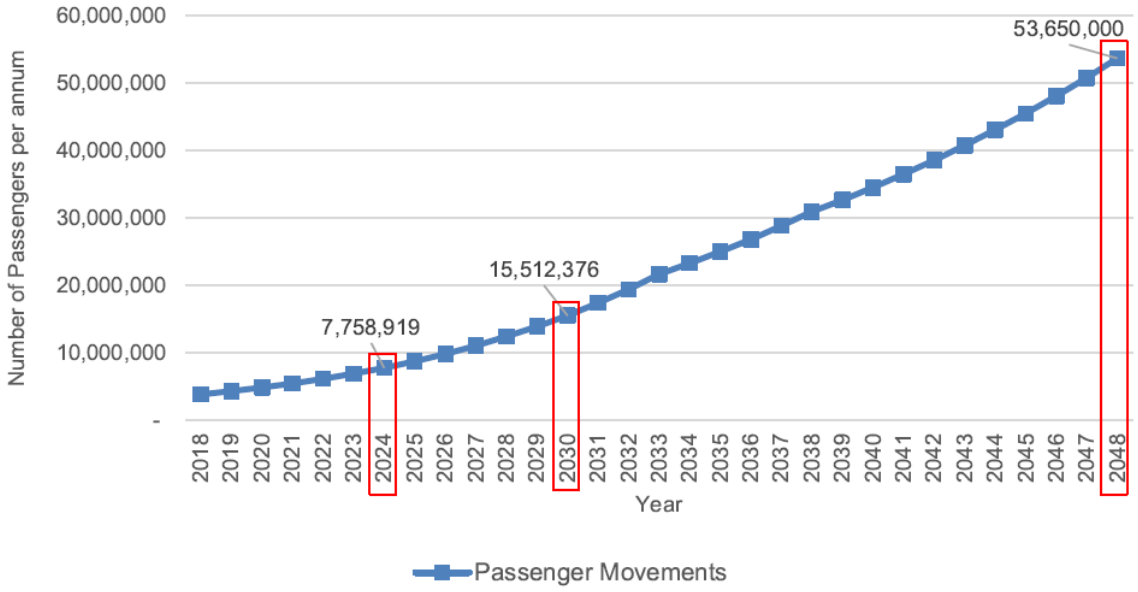
4. **Historical Traffic Demand.** Traffic at the UTIA has increased dramatically between 2014 and 2019. In 2014, it carried a total of 133,166 passengers, while this figure increased to 1,859,064 and 1,716,159 by 2018 and 2019 respectively. The average for 2018 and 2019 corresponds to approximately 8,500 passenger fleets. The composition of passengers in 2019 is disaggregated between international (53%) and domestic (47%). Sources of international passenger traffic are as follows, based on passengers' country of origin: China (34.7%), Thailand – outbound (23.7%), Russia (22.7%) and rest of the world (18.9%). Carrier types include low-cost carrier (46.6%), charter (47.6%) and 5.9% (full-service). The origins of planes landing at the UTIA are provided below.

Table 12: Origins of Aircraft Landing at UTIA *(EECO, 2022)*

Country	Airport of Origin	Flights per Year
Thailand	Chiang Mai	2,166
	Hat Yai	730
	Khon Kaen	394
	Ko Samui	744
	Phuket	1,660
	Udon Thani	734
China	Chengdu	236
	Guiyang	157
	Haikou	571
	Meixian	40
	Nanning	235
	Shijiazhuang	50
	Yichang	26
	Macau	275
Malaysia	Kuala Lumpur	390

5. **Forecasted Traffic Demand.** As part of the Project due diligence process the Project Team has reviewed the initial 30-year passenger movement forecasts that have been prepared as part of the project feasibility by SAP Group, a reputable aviation consulting firm specializing in the preparation of aviation activity forecasts and strategic business plans. The 30-year passenger movement forecasts were based on UTIA's assumed share of overall demand within the three-airport system of Bangkok, inclusive of considering the expansion plans of the other two Bangkok-area airports (Suvarnabhumi and Don Mueang). The forecasted passenger movement over the 30-year period from 2018 – 2048 is highlighted in Figure 12.

Figure 12: Forecasted Passenger Movement (2018-2048) *(KPMG, 2018)*



6. Under the terms of the Concession Agreement, all demand risk is the responsibility of UTA and GoT is entitled to a minimum annual revenue share irrespective of passenger movement at the airport. Further, the Concession Agreement was signed and executed in June 2020 during the COVID-19 pandemic. As such, the Project Team notes that UTA engaged a technical expert to perform an updated passenger forecast and sensitivity analysis prior to signing the Concession Agreement that continued to deem the Project economically and financially viable despite demand uncertainty arising from the pandemic.

7. **Input-Output Assumptions.** The economic analysis is carried out for the Project and the ancillary infrastructure that is included in the Concession Agreement over the 50-year concession period. The economic analysis was performed over a 50-year period from 2018 through 2068 (matching to the expected Concession Agreement timeline at the feasibility stage of the project). Based on the due diligence performed, the economic assumptions contained within the economic analysis remain valid.

8. The assumptions contained within the economic model are measured by their Gross Value Added (GVA), which is calculated as the output created by the sector less the cost of inputs generated from the Project's economic activity. Under this approach, the GVA derives an estimate of the airport's overall output, referred to as the direct contribution to GDP. The economic analysis measured three types of direct contribution:

(i) Direct Airport Operations include the impacts directly associated with airport operations. These include operations flowing directly through the airport operator including direct staff, terminal service concessions, and other operation where the airport operator is directly or indirectly paying the operating costs.

(ii) Other Airport User Operations include government users (i.e. immigration, customs, etc.) and other private sub-concessionaires operating at the project site. Impacts associated with other private users generally pertain to contractual service companies such as aircraft MRO, cargo terminals, and other commercial businesses in the airport such as duty free and retail stores.

(iii) Capital Programs include impacts associated with the current and proposed capital, replacement and maintenance expenditures.

9. Subsequent to defining and calculating the direct contribution impact, the Project's economic footprint is calculated by adding the jobs and output created through the following four channels:

(i) Direct – relate to output and employment of the firms in the airport.

(ii) Indirect – relate to output and employment supported through the airport's Thai based supply chain.

(iii) Induced – related to output and employment supported by the spending of those directly or indirectly employed by the airport.

(iv) Catalytic – spillover benefits associated with the aviation sector, including activity supported by the spending of foreign visitors travelling to Thailand via UTIA. On average, 77% of flight traffic in UTIA is expected to be generated by international passengers. Catalytic contributions do not include productivity, trade, and investment impacts.

10. **Input-Output Multiplier.** The input-output multiplier estimates how the initial capital expenditure investment in the Project circulates throughout the economy. Multipliers measure the re-spending of dollars in the economy and are used to calculate indirect, induced, and catalytic impacts of the Project. In calculating the expected economic impact and input-output multiplier of the Project, over 60-specific impact studies were selected and evaluated based on their alignment with the characteristics of the Project, expansion plans, and economic region. Case studies were compiled from a variety of technical sources including Air Transport Action Group (ATAG), Airports of Thailand (AOT), International Air Transport Association (IATA), and Oxford Economics. Based on this analysis, the project specific multiplier was calculated and is highlighted in Table 13. The key finding from the economic analysis highlights that airports with greater passenger movements show greater output and a higher multiplier.

Table 13: Summary of Input-Output Multipliers *(KPMG, 2018)*

	Indirect + Induced				Catalytic	
	Airport Operations		Capital Programs			
Passenger Movement	Output	Employment	Output	Employment	Output	Employment
< 15 MPPA	1.67	2.03	1.46	1.62	0.81	1.15
15 – 30 MPPA	1.80	2.08	1.67	2.06	1.71	1.93
30 – 40 MPPA	2.21	2.16	1.80	2.08	2.18	2.05
40 – 55 MPPA	2.35	2.85	1.96	2.34	2.23	4.05
55 – 70 MPPA	2.45	2.91	2.12	2.63	2.68	4.35

11. The input-output multipliers calculated in the FS are reasonable in comparison with previous studies. The International Civil Aviation Organization calculated that the output and employment multipliers of air transport, considering indirect, induced and catalytic impacts, are at 3.25 and 6.1 times, respectively, worldwide *(ICAO, n.d.)*. In the U.S. aviation sector, the output and employment multipliers are 4.69 and 6.86, respectively. Further, an analysis by Ernst & Young using publicly available data of indirect and induced multipliers of key airports shows the following: In North America, the weighted average output multiplier for 7 airports is 3.5. In Europe, the weighted average multiplier for 2 airports is 3.6. In Australia, the weighted average output multiplier for 3 airports is 2.0. For Asia and the Middle East, the weighted average multiplier for 2 airports is 3.1. On aggregate, the weighted average output multiplier for the 14 airports studied is 3.4. This means that, on average, an airport will have a total economic impact of 3.4 times the size of its direct impact due to indirect and induced effects. The study also citied survey evidence of 25 European airports, which shows that the indirect and induced jobs multiplier for these airports is about 2.1, on average. Overall, the study concluded that there is strong heterogeneity in the size of these effects across different airports (i.e., some airports have an output multiplier larger than 5), with little consistency between airport multipliers within the same region and with the same number of passengers. Nonetheless, the general conclusion of the above-mentioned study is that airports have substantial economic impacts in the countries and communities where these airports are located *(Ernest & Young, 2012)*.

12. **Non-quantitative Benefits.** In addition to the quantifiable benefits considered in the economic analysis, the expected non-quantitative benefits of the Project are the following:

(i) Economic stimulation in the micro-region surrounding the UTIA.

(ii) Increased business opportunities and job creation.

(iii) Social empowerment of women through increased job opportunities in the airport and surrounding infrastructure.

(iv) Facilitation of better planning and up-grading of the Project area.

13. **Results of the Input-Output Analysis.** Three types of direct contributions are measured: (i) direct impacts associated directly with UTIA airport operations; (ii) other airport user operations, i.e., those coming from government users (customs, immigration) and other private sub-concessionaire operating at the airport through UTA; and (iii) capital programs, including impacts associated with current and proposed capital, replacement and maintenance expenditures. These direct contributions are expected to further spur indirect economic activities through three channels: indirect (output and employment supported through the airport's Thai-based supply chain); induced (output and employment supported by the spending of those employed by the airport); and catalytic contributions (spillover benefits associated with the aviation sector). A snapshot of the results of the economic analysis and overall expected operating position of the project may be seen in Table 14.

Table 14: Summary of Project Contribution to EEC and Operating Position *(KPMG, 2018)*

	Output		Employment	Wages	
	USD millions	*THB millions*		*USD millions*	*THB millions*
Direct Airport Operator (PPP Co)					
Direct Impact	210	6,700	11,000	90	3,000
Multiplier Impact	460	14,800	23,800	200	6,500
Direct + Multiplier	670	21,500	34,800	290	9,400
Catalytic Impact	450	14,600	22,600	190	6,100
Total PPP Co. Impact	1,120	36,100	57,400	480	15,600
Other Airport Users (Government + Private Concessionaires)					
Direct Impact	260	8,300	25,700	130	4,200
Multiplier Impact	570	18,200	55,700	280	9,000
Direct + Multiplier	820	26,500	81,500	410	13,200
Catalytic Impact	560	18,000	52,800	270	8,600
Total Concessionaire Impact	1,380	44,500	134,300	670	21,800
Capital Programs					
Direct Impact	10	400	600	5	200
Multiplier Impact	20	600	1,200	10	300
Total Capital Impact	30	1,000	1,800	15	500

**Numbers may not sum due to rounding.*

U-Tapao International Airport Expansion, 2018-2068		
	USD billions	**THB billions**
Net Present Value, 50 years, 12% Discount Rate	6	189
Average Annual Operating Position	4	140

14. **Sensitivity analysis.** A sensitivity analysis was performed on the ENPV (at a 12% discount rate), EIRR, and Benefit-Cost Ratio considering sensitivities on the projected economic benefits and costs of the Project. Under this sensitivity analysis, a downside scenario was performed whereby economic benefits are reduced by up to 20% and economic costs are increased by up to 20%. In all sensitivities performed the Project remains economically viable with an ENPV that is positive and an EIRR that exceeds 20%. The sensitivity analysis on the ENPV and EIRR are highlighted in Table 15 and Table 16 respectively.

Table 15: Sensitivity Analysis on Expected Economic Net Present Value (USD Billions) (KPMG, 2018)

USD billions		Economic Benefits						
		-20%	-10%	-5%	Base Case	5%	10%	20%
Economic Costs	20%	$4.0	$4.7	$5.1	$5.5	$5.9	$6.3	$7.0
	10%	$4.1	$4.9	$5.3	$5.7	$6.1	$6.4	$7.2
	5%	$4.2	$5.0	$5.4	$5.8	$6.1	$6.5	$7.3
	Base Case	$4.3	$5.1	$5.5	$5.9	$6.2	$6.6	$7.4
	-5%	$4.4	$5.2	$5.6	$5.9	$6.3	$6.7	$7.5
	-10%	$4.5	$5.3	$5.7	$6.0	$6.4	$6.8	$7.6
	-20%	$4.7	$5.4	$5.8	$6.2	$6.6	$7.0	$7.7

Table 16: Sensitivity Analysis on Expected Economic Internal Rate of Return (%) *(KPMG, 2018*

		Economic Benefits						
		-20%	-10%	-5%	Base Case	5%	10%	20%
Economic Costs	20%	24.0%	25.7%	26.5%	27.2%	28.0%	28.7%	30.1%
	10%	25.2%	27.0%	27.8%	28.6%	29.4%	30.1%	31.6%
	5%	25.9%	27.7%	28.5%	29.3%	30.1%	30.9%	32.4%
	Base Case	26.6%	28.4%	29.3%	30.1%	30.9%	31.7%	33.3%
	-5%	27.4%	29.2%	30.1%	31.0%	31.8%	32.6%	34.2%
	-10%	28.2%	30.1%	31.0%	31.9%	32.8%	33.6%	35.2%
	-20%	30.1%	32.1%	33.1%	34.0%	34.9%	35.8%	37.4%

15. The Project Team acknowledges that there may be capacity restrictions in the economy that could mute the indirect and induced and catalytic effects. In such a situation, additional spending of those employed by the airport would not in fact lead to additional economic activities but to inflation. While capacity constraints are perhaps more plausible in the short run, these are less likely to persist in the long run given market adjustments. Nonetheless, the Project Team conducted further analysis that assumed a 20% and 30% reduction to the indirect and induced multiplier over the 50-year concession period. A further 20% and 30% reduction to the catalytic multiplier was also applied given the same concern regarding spillover benefits to the tourism

sector. In both scenarios, the EIRRs ranged between 24% and 29%. This is well above the hurdle rate of 9%. To further test the robustness of these results, a 20% reduction in benefits and a 20% increase in costs is assumed. Again, the EIRRs remain above the hurdle rate, with EIRRs ranging between 13% and 18%. This shows that the project investment is robust to withstand variations in the multipliers as well as cost and demand shocks.

16. The Project team also considered the GHG emissions resulting from forecasted air traffic associated with the Project as part of an additional economic scenario to ensure compliance with the methodology on PA alignment. Using the shadow carbon price in calculating the emissions costs, the economic analysis shows that the Project remains economically viable *(World Bank, 2017)*. The EIRR across various GHG emissions scenarios (refer to Annex 4 for an explanation) range between 13% and 20%, even when considering the worst-case scenario of 20% economic benefits reduction and 20% increase in economic costs.

C. Financial Analysis

17. **Capital and Replacement Capital Costs.** The capital and replacement capital costs have been estimated by the external financial and technical consultants in the development of the Project feasibility study and have been re-confirmed through the tender of the UTIA Concession Agreement. The assumed methodology for the capital and replacement capital cost estimation is aligned with current industry practice.

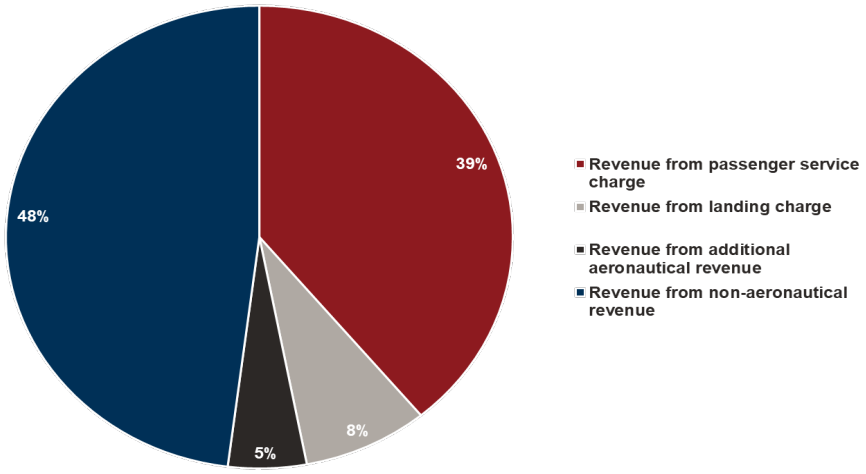
18. **O&M Cost.** O&M costs for the Project include a land lease expenditure payable by UTA to EECO (on behalf of GoT) for use of the land and standard airport fixed and variable operating costs including staff wages & benefits, utilities, and repair & maintenance costs. The fixed operating costs have been calculated as a percentage of capital costs broken down by capital cost category. The variable operating expenses have been calculated as 4 USD per passenger and therefore variable operating expenses will vary year-over-year as airport traffic increases. The operating expenses have been estimated by the airport technical consultant based on benchmarking of similar airports within Thailand and the region. Under the Concession Agreement, UTA will be responsible for bearing the O&M cost and risks on the project. To mitigate the O&M risk on the project, UTA has executed an O&M contract with NAA, an experienced airport operator in the region.

19. **Government Revenue Sharing.** Under the terms of the Concession Agreement there is a payment mechanism that governs an annual payment from UTA to EECO (on behalf of GoT) for operating the airport. The payment mechanism stipulates that UTA shall pay a minimum of 5% of gross revenue, encapsulating total revenue inclusive of aeronautical, non-aeronautical and ancillary revenue. Under the payment mechanism the actual level of revenue sharing is dependent on the level of revenue generated by the airport operations (and therefore highly correlated to airport passenger movements) and there is no cap on the payment mechanism. In the financial FS performed on the Project, an annual revenue sharing of 5% of gross revenues was assumed. The Project Team assesses this to be a fair assumption, noting that a higher revenue share percentage will reduce the project and equity FIRR but not to a level that would enable the project to be considered financially unviable.

20. **Aeronautical Revenue.** Aeronautical revenue pertains to the regulated charges levied at the airport through aeronautical activity. Aeronautical revenue includes landing fees, terminal area navigation fees, airport noise charges, passenger service charges, ground handling charges, and night flight fees. Aeronautical revenues of the airport are highly dependent and correlated to the forecasted air traffic and to the number of airlines operating at the airport. The financial FS notes that 52% of total passenger terminal revenue will be generated through aeronautical revenues. Over time as the airport matures it is expected that the share of aeronautical revenues vs. non-aeronautical revenue will decline which is standard for global airport operators.

21. **Non-Aeronautical Revenue.** Non-aeronautical revenue pertains to all non-aero related revenue streams and include items such as concession fees on aviation fuel & oil, concession fees on commercial activities, car parking & car rental services, rentals on airport land & buildings, and fees charged for commercial activities (for example, airport tours, etc.). Non-aeronautical revenues are highly dependent on passenger traffic and therefore the forecasted traffic of the airport is critical to this revenue stream. Further, non-aeronautical revenues tend to have a slower ramp up period than aeronautical revenues given it may take time to lease out property and establish commercial business within the airport (and surrounding areas). The financial FS notes that 48% of total passenger terminal revenue will be generated through non-aeronautical revenues. A breakdown of the assumed aeronautical and non-aeronautical revenue is depicted below.

Figure 13: Forecasted Passenger Terminal Building Revenue *(KPMG, 2018)*



22. **The Outcome of the Financial Analysis.** Based on the assumptions mentioned above, calculations for FIRR were carried out. As previously noted, the FIRR evaluation was performed over the entire UTIA, inclusive of ancillary infrastructure considerations such as the Cargo Village. However, given the successful tender and award of the Concession Agreement it demonstrates high financial viability of the Project. The evaluation results show that the project FIRR is 11.76% and the equity FIRR is 12.39%. An assumed weighted average cost of capital (as calculated) has

been used as a discount rate to calculate the NPV of the Project. The evaluation shows that the project NPV is THB 74,229 million (USD 2.27 billion) and an equity NPV of THB 1,189 million (USD 36 million). A sensitivity analysis was also performed on the Project to demonstrate the impact of an accelerated passenger traffic movement to 60 MAP by 2039. The outcome of the base case and sensitivity analysis performed is noted below:

Table 17: Outcome of Financial Analysis and Sensitivity Analysis *(KPMG, 2018)*

Assumptions	Scenario 1 Base case	Scenario 2 60 MAP Accelerated Traffic Forecast
Gross revenue share to Governement	5% of gross revenue	
Operational model - PTB	Construct and operate	
Operational model - All other components (cargo village, comm. Gateway and cargo zone)	Land lease with trunk infra	
Aero revenues	AOT rates with rebates	
Financial Outputs		
Land lease (UIA overall)	THB 76,327 mil	
Amount of revenue share (UIA overall)	THB 125,601 mil	THB 147,806 mil
Project IRR (UIA overall)	11.76%	14.30%
Equity IRR (UIA overall)	12.39%	15.57%
Project IRR (PTB only)	11.42%	14.11%
Equity IRR (PTB only)	11.94%	15.30%
Project NPV (UIA overall)	THB 74,229 mil	THB 117,243 mil
Equity NPV (UIA overall)	THB 1,189 mil	THB 12,121 mil

23. **Weighted Average Cost of Capital (WACC).** The financial FS has utilized an assumed weighted average cost of capital to calculate the project and equity NPV. The WACC has assumed that the cost of equity will be 12% and the average cost of debt (based on an average margin over LIBOR at the time of the FS) of 5% and an overall project debt-to-equity ratio of 70:30. The Project assumes a corporate tax rate of 20%, a tax-loss carryforward of 8 years, and a tax holiday for the passenger terminal building and cargo village of 8 years and 5 years respectively. Based on these assumptions the assumed WACC is 6.4%.

Annex 7: Member and Sector Context

A. Country context

1. The Thailand economy grew at approximately 4 percent per annum after the Asian Financial Crisis, which was lower than its peers in the region. Weak growth in private investment, political tensions and uncertainty, and stalled structural reforms contributed to the sluggish growth. In 2019, growth further slowed to 2.3 percent due to trade tension and pre-existing structural issues, including slow productivity growth, low human and capital accumulation, high household debt, and weak social safety nets. As a result, inequality and informality remain high in the Thai economy. The pandemic has further exacted a heavy toll on the Thai economy. Tourism was hardest hit, as the government-imposed travel restrictions on foreign tourists while pandemic containment measures impacted domestic activity. As a result, the economic output contracted by 6.1 percent in 2020 before growing modestly by 1 percent in 2021.

2. To combat the pandemic and restore the economy, the government introduced an array of fiscal and monetary policies, which resulted in the expansion of the fiscal deficit from 4.7 percent of GDP to 6.9 percent of GDP in 2021. Accordingly, public debt increased from 50 percent of GDP to 58 percent of GDP in 2021, however, external debt remains largely stable at around 32 percent of GDP since the dollarization of public debt is low.

3. Thailand has successfully lifted millions out of poverty with the poverty rate reducing from 20.4 percent in 2008 to 6.2 percent in 2019. Unlike many other countries, the pandemic did not result in a sharp increase in poverty rate thanks to comprehensive social and economic assistance from the government. The poverty rate marginally increased to 6.4 percent in 2021. Without government intervention, the poverty rate would be an estimated 1 percent higher, meaning an additional 700,000 people would have fallen into poverty[19]. Nevertheless, the pandemic had a substantial impact at the household level with more than 50 percent of respondents of a survey experiencing reduced pay, job loss, or temporary work stoppages *(World Bank, 2021)*. In addition, the vulnerable groups, such as women, youth, and the low-skilled, were disproportionally affected by the contraction in the economy.

4. Further, Thailand's unemployment rate has been rising, with the pandemic causing the unemployment rates to rise from below 1 percent in early 2020 to over 2 percent in the third quarter of 2021. While the aggregate employment rate remains stable, there are large regional variations, with urban employment decreasing and rural employment increasing, as the pandemic resulted in displaced workers in urban areas returning to agriculture. To abridge the information mismatch, Thailand Professional Qualification Institute (TPQI) established the E-workforce Ecosystem in late 2021 to electronically link relevant public databases from several government platforms.

5. The recovery from the pandemic-induced recession has been relatively quick, with economic growth rebounding to 2.5 percent in 2022, though it moderated to 1.9 percent in 2023

[19] The poverty rate at the upper-middle-income poverty line is 5.5 dollars a day (2011 PPP)

due to weak external demand and slow domestic investment. Growth is projected at 2.9 percent in 2024, supported by improvements in external demand and robust private consumption. Further, Thailand economy is projected to recover, growing by an average of 3.8 percent per year till 2026. The growth is expected to be driven by the recovery of international tourism and export receipts, competitive business environment (The World Bank, 2020), low borrowing-cost environment and high saving-to-investment ratio. At the same time Thailand faces development constraints that will have to be resolved for it to achieve the vision outlined in National Strategy 2018-2037. The broad strategies include enhancing competitiveness, ecology friendly development, public sector development, human capital, social equity and national security.

6. The most recent macroeconomic transformation program, known as Thailand 4.0, seeks to raise the medium-term growth to 5 to 6 percent and transform Thailand into an innovation-driven economy. The emphasis is on five new industries: robotics, aviation and logistics, biofuel and biochemicals, digital technologies and medical technologies. Infrastructure investment remains key to achieving this goal. According to Global Infrastructure Outlook, Thailand requires USD494 billion infrastructure investment between 2016 and 2040, of which nearly USD180 billion is required in the transport sector *(Global Infrastructure Hub, 2016)*.

7. The EEC Development Plan under Thailand 4.0 is a high-priority pilot project. A set of incentives have been developed to boost infrastructure investment. EEC targets THB1.7 trillion (USD45 billion) public-and-private investment to upgrade infrastructure and industry in the eastern provinces of Chonburi, Rayong, and Chachoengsao. These measures will help make these provinces the leader in the digital economy, international logistics hub and innovation center, and the top FDI destination within Thailand *(IMF, 2018)*. Given Thailand's advantageous location in Southeast Asia and the extensive preexisting transportation network, the EEC plan is expected to significantly improve Thailand's competitiveness and provide connectivity in the region. It also plans to create opportunities for companies operating in the construction, telecommunications, transportation, logistics, and manufacturing industries by offering tax cuts, convenience of visa service for professional ex-pats, and accelerated investment approvals process. Long-term land leases of 99 years are applied to investments in EEC.

8. The Eastern Economic Corridor is a special economic zone on Thailand’s eastern seaboard in 2018, covering an area of 13,000 km² across the Chachoengsao, Chonburi and Rayong provinces. The key infrastructure projects in the EEC include the UTIA, an aviation maintenance facility and the surrounding airport city; a high-speed rail system connecting Bangkok’s two airports to UTIA; Laem Chabang – a new deep seaport; and Ma Ta Phut Industrial Port expansion. As these projects are being developed as PPPs, they are subject to the PPP Act of 2019.

B. Sector and Institutional Context

9. The Thai passenger aviation industry has experienced steady growth between 2010 and 2019, at an average of 11.4% per year (by passenger volume), with similar growth rates for international and domestic passengers *(CAAT, 2019)*. Pre-COVID-19, Thai airports

accommodated a total of 165 million annual passengers[20] in 2019, nearly triple the number of 2010. The total number of flights also grew between 2010 and 2019, with international volume more than doubling from 223 thousand to 514 thousand in that period, while domestic flights increased from 238 thousand to 595 thousand in 2018, before reducing to 554 thousand in 2019. The top two airports in Thailand (Suvarnabhumi (BKK) and Don Mueang (DMK)) are both located in Bangkok.

10. In 2021, due to the COVID 19 outbreak the number of passengers to the Thai airports was at its lowest point with a reduction to 20 MAP; Suvarnabhumi (BKK) to 6 MAP and Don Mueang (DMK) 7 MAP. The easing of the COVID 19 pandemic together with a visa exemption scheme resulted in a rapid recovery of air transportation volumes. In all Thai airports, the volume of passengers was 100 MAP in 2023; BKK increased to 48 MAP and DMK to 26 MAP which meant an increase of 128% from 2022 (AOT, 2023). At the end of August 2024, the total number of passengers in Thai airports was 111 MAP; BKK increased to 55 MAP and DMK to 27 MAP.

11. Air freight volumes in the country have remained relatively constant between 2010 and 2019 between 1.4 and 1.6 million tonnes per year for international freight and between 80,000 and 120,000 tonnes for domestic freight.

12. As of 2020, there are 39 airports in the country, 638 registered active airframes, 67 ultralight aircraft and 13,195 registered drones in the country. A total of 25 active air operator certificates have been issued. Most of the 380 commercial airplanes are either of the Airbus A320 or the Boeing B737 family *(CAAT, 2020)*.

13. Both Bangkok airports have plans for expansion. If these projects are completed as planned, BKK will reach a target capacity of 90 million annual passengers, while DMK's expansion will allow it to accommodate an additional 8 to 10 million annual passengers.

14. Thailand has been working for many decades to grow its tourist numbers. In 2019, it welcomed a total of 39.7 million international tourists into the country. Given that the majority of tourists enter the country by air, they make up a significant proportion of air passengers, accommodated by Thai airports.

C. Institutional Context.

15. The airline industry in Thailand is mature and well-developed. As of June 2022, four agencies manage the 39 airports operating in the country:

(i) **Department of Airport (DOA)** manages a total of 29 airports (serving 17% of the country's commercial air passengers in 2019) – these are primarily smaller airports and airfields.

[20] An airport passenger is considered either on arrival or on departure, therefore an international tourist would be counted twice if they arrived and departed by air.

(ii) **Airports of Thailand Public Company Limited (AOT)** manages 6 major airports (serving 80.2% of the country's commercial air passengers in 2019) – Bangkok Suvarnabhumi, Bangkok – Don Mueang, Phuket, Chiang Mai, Chang Rai, and Hat Yai.

(iii) **Bangkok Airways Public Company Limited (BA)** manages 3 airports – Samui (serving Koh Samui), Sukhothai, and Trat.

(iv) **Royal Thai Navy (RTN)** manages 1 airport – UTIA. Under the Concession Agreement, the expansion to the commercial airport (Runway No. 2 and Terminal Building is to be operated and managed by EECO & UTA.

16. The RTN is responsible for managing and operating the existing UTIA. Under the terms of the Concession Agreement, a JUA will be signed between the RTN and the UTA which governs the shared usage of the airport. The UTA will be responsible for managing the day-to-day operational aspects of the commercial airport, while all infrastructure under the Concession Agreement will remain under ownership of the GoT.

17. The Civil Aviation Authority of Thailand is the aviation regulator of the country. It is an independent agency under the Ministry of Transport tasked with managing, prescribing, regulating, and auditing the civil aviation industry in the country. All airports and Thailand-based airlines must maintain a valid permit from the agency to operate in the country.

18. Thailand's Ministry of Finance has had extensive experience with PPP projects since the early 1990s, with multiple public transport and motorway projects. While initially operating under a loose PPP framework, the 2019 PPP provided a framework for structuring PPP projects, including the need for creating a business case, ensuring that risk sharing is done fairly and providing for increased bankability and transparency in project procurement.

19. The State Enterprise Policy Office (SEPO) is the coordinating body for Public Private Partnerships, housed under the Ministry of Finance. SEP is also the secretariat of the high-level PPP Policy Committee, chaired by the Prime Minister of the country *(SEPO, 2022)*.

Annex 8: Sovereign Credit Fact Sheet

Recent Economic Development

20. Thailand, an upper-middle-income country with a GDP per capita of USD 7,171.8 and a population of 71.8 million in 2023, experienced a swift economic recovery from the pandemic. GDP growth rebounded from -6.1 percent in 2020 to 1.5 percent in 2021 and further to 2.5 percent in 2022, driven by sustained fiscal packages, increased domestic consumption, and a resurgence in exports. However, in 2023, economic growth moderated to 1.9 percent due to weak external demand and domestic investment, despite robust private consumption supported by a recovery in tourism.

21. Inflation in Thailand remained stable within +/-1 percent between 2015 and 2020. In 2021, inflation rose to 1.2 percent due to increasing energy and food prices. In 2022, inflation surged to 6.1 percent, driven by high commodity prices, significantly exceeding the target range of 1-3 percent. The Bank of Thailand (BOT) implemented eight consecutive 25 basis point increments in the policy rate between August 2022 and September 2023 to tame inflation without derailing the still-fragile recovery. By the end of 2023, inflation decelerated to 1.2 percent, influenced by the monetary policy and the base effect of previous energy and food prices.

22. The fiscal balance turned to a deficit of 4.5 percent of GDP in 2020. Pandemic-related fiscal support widened the deficit to 6.7 percent in 2021. As tax revenue recovered and health spending decreased, the fiscal deficit reduced to 4.5 percent of GDP in 2022. The withdrawal of pandemic-related measures helped contain the deficit at 3.2 percent of GDP in 2023.

23. The public debt to GDP ratio increased from 41 percent in 2019 to 62.4 percent in 2023 due to increased borrowing to mitigate the impact of COVID-19. Despite this rise, it remains much lower than the average of ASEAN-5. The IMF considers Thailand's public debt stable and sustainable because it is largely denominated in local currency, and there is sufficient domestic liquidity to meet the government's refinancing needs. Additionally, the debt service ratio remains very low and well within the government benchmark.

24. The current account surplus narrowed from 7 percent of GDP in 2019 to a deficit of 2 percent of GDP in 2021 due to weak external demand, a sharp decline in tourism receipts, and soaring shipping costs. The current account deficit widened to 3.2 percent of GDP in 2022, reflecting higher commodity prices and slower external demand. In 2023, the current account balance registered a small surplus of 1.3 percent of GDP, aided by the recovery in tourist arrivals, a decline in shipping costs, and a larger compression of imports relative to exports.

25. The IMF assesses Thailand's external debt to be sustainable with limited liquidity risks. External debt increased from 31 percent of GDP in 2019 to 41 percent in 2023, driven by increased external financing needs and the depreciation of the Thai Baht. International reserves were utilized to meet external financing needs during the pandemic, decreasing from USD 286.5 billion in 2020 to USD 245.8 billion in 2022. Despite this reduction, the reserves remain sufficient to cover 10 months of imports for the following year.

Key Economic Indicators

Economic Indicators	2021	2022	2023	2024*	2025*	2026*
Real GDP growth (%)	1.5	2.5	1.9	2.9	3.1	3.0
CPI Inflation (average, % change)	1.2	6.1	1.2	0.7	1.2	1.7
General fiscal balance	-6.7	-4.5	-3.2	-3.7	-3.4	-3.4
General public debt	58.3	60.5	62.4	64.5	65.5	65.8
Public gross financing needs 1/	14.3	9.2	12.5	16.1	8.9	8.8
Current account balance	-2.0	-3.2	1.3	1.7	2.0	2.1
Gross external debt 1/	38.8	40.4	41.0	40.4	41.0	41.3
Debt service ratio (% of exports) 2/	6.7	7.3	9.2	8.8	8.5	8.2
Gross international reserves (USD bn.) 1/	279.2	245.8	245.8	245.8		
Exchange rate THB/USD (EOP) 3/	33.23	34.61	34.35	33.16		

Data source: IMF IMF WEO 2024 April and July version, unless otherwise indicated. Note: * denotes 2024-2026 data are forecasts. Unit is % of GDP unless otherwise stated. 1/ Data sourced from IMF country report No. 21/97, 22/300, and 24/35; 2/ Defined as external debts as a percent of exports of goods and services; 3/ Refinitiv Eikon, data is retrieved on September 16th, 2024.

Economic Outlook and Risks

26. Growth for 2024 is estimated at 2.9 percent, supported by the improvements in external demand and robust growth in private consumption, buttressed by the government's fiscal stimulus. Tourism flows are expected to gradually recover to pre-pandemic levels by 2025, which sustained the growth momentum at 3 percent. As the stimulus is withdrawn, growth would slow to remain stable at around 3 percent in the medium term.

27. Inflation is projected to slow to a regional low of 0.7 percent in 2024, below the central bank's target range, due to the moderation in food and energy prices and a negative output gap. This decline is attributed to lower-than-expected food and energy prices and core inflation, despite the partial withdrawal of energy subsidies. Driven by the demand boost, inflation is expected to accelerate mildly to 1.2 percent in 2025 and 1.7 percent in 2026, but remain within the Bank of Thailand's target range.

28. The fiscal deficit is projected to expand slightly to 3.7 percent of GDP in 2024 due to an increase in social benefits,[21] before returning to 3.4 percent of GDP in the medium. Public debt is projected to increase to 64.5 percent of GDP in 2024 and 65.8 in 2026, remaining within the 70 percent of GDP ceiling. Starting in fiscal year 2025, a gradual, growth-friendly medium-term fiscal consolidation supported by enhanced revenue mobilization,[22] would create room for needed investment in infrastructure while keeping public debt on a declining path.

29. The current account surplus is expected to widen slightly to 1.7 percent of GDP in 2024 and further to 2.1 percent in 2026, as the continued recovery in tourism receipts and a decline in freight costs offset the weak performance of merchandise exports. External debt is projected to

[21] Increase in daily minimum wage in all 77 provinces between 2 and 16 baht, effective on 1 January 2024
[22] In Thailand, the government's fiscal year (FY) is October 1 to September 30 of the following year.

decline slightly to 40.4 percent in 2024 and then rise back to 41 percent in 2025, which the IMF considers sustainable with limited liquidity risk.

30. The economy's rebound is subject to external risks that include an abrupt global slowdown, hikes in commodity prices, tighter-than-expected global financial conditions, and deepening geo-economic fragmentation. Domestic risks add to the uncertainty as the lack of fiscal discipline could undermine macroeconomic stability, elevated private sector debt poses a threat to financial stability, and over-reliance on tourism increases Thailand's vulnerability to external shocks.

31. As for the sovereign rating, S&P Global rated Thailand as BBB+, Moody's rated it as Baa1, and Fitch rated it as BBB+. All ratings come with stable outlooks.

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