Addressing Impediments to Growth and Development in Africa:

AN INFRASTRUCTURE DEVELOPMENT PERSPECTIVE

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AIIB

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Presidency Note prepared by Asian Infrastructure Investment Bank (AIIB) [1]

This Note presents a streamlined strategy for developing and financing infrastructure to support sustainable economic development within planetary boundaries.[2] It begins by introducing a stylised conceptual framework for structural transformation, placing sustainable infrastructure at the centre of efforts to advance rural development, urban planning, value chain connectivity, and regional integration. This framework is then applied to the current global context - characterised by constrained fiscal space, evolving globalisation dynamics, and shifting patterns of development assistance - to derive actionable policy recommendations. These recommendations leverage Africa's unique demographic and geographic advantages, including its youth bulge, rapid urbanisation, and abundant natural resource endowments. While not exhaustive, the recommendations aim to address some of the most binding infrastructure constraints to growth and development across the continent. In general, the Note argues that African countries must identify new engines of growth that are more domestically anchored, regionally integrated, and increasingly leverage the services sector, while also aligning with environmental imperatives by transitioning to lower-emission energy systems. In this context, rising global demand for critical minerals and the proper valuation of natural capital presents compelling opportunities for sustainable growth. Capitalising on these opportunities requires infrastructure that is not only productive, but also financially viable and environmentally sustainable. This includes transport and energy systems that support agricultural productivity; urban infrastructure for housing, water and sanitation; cross-border infrastructure to foster regional integration; and systems that unlock the full value of Africa's critical minerals and natural capital. To be effective, infrastructure investments must be strategically selected, properly sequenced, well-executed and professionally managed. Their success also depends on being embedded within a local context of strong institutions, good governance and coherent policy frameworks.

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[1] We would like to express our sincere gratitude to the World Bank for its substantial contributions to the development of this Note. Their insights and materials were instrumental in shaping the Note and its recommendations. We also gratefully acknowledge the support of the Multilateral Cooperation Center for Development Finance (MCDF), which contributed to the discussion related to infrastructure for critical minerals in Africa and offered valuable recommendations related to investments in climate-resilient infrastructure. Their inputs enriched the Note and helped strengthen its relevance to ongoing climate and development challenges. We would also like to thank the G20 Infrastructure Working Group for their valuable insights that substantially improved this Note.

[2] Planetary boundaries define the safe operating space for humanity, outlining nine crucial thresholds related to Earth's systems that must not be crossed in order to ensure a stable and habitable planet. These boundaries, such as climate change and biodiversity loss, represent limits beyond which human activities could trigger irreversible environmental changes with potentially catastrophic consequences.

1. Introduction

Africa stands at a pivotal juncture. Traditional development models have proven inadequate in delivering inclusive and sustainable growth. However, a new trajectory anchored in strategic infrastructure investment offers unprecedented opportunities to unlock productivity, enhance competitiveness, and build resilience.

Across the continent, underdeveloped transportation networks, unreliable energy systems, and fragmented logistics continue to constrain economic performance. These deficiencies elevate the cost of doing business and restrict access to both regional and global markets. The challenges are further exacerbated by the intensifying impacts of climate change and biodiversity loss, which have disproportionately burdened African economies and communities, eroding development gains and amplifying structural vulnerabilities. The imperative to adapt and build resilience is becoming increasingly urgent, demanding coordinated and forward-looking policy responses.

In this context, strategic infrastructure development emerges not merely as a technical solution, but as a foundational lever for catalysing economic growth and improving societal welfare. Targeted investments can lower the cost of doing business, enable economic diversification and drive structural transformation and job creation. Moreover, infrastructure plays a critical role in enhancing climate resilience, promoting social equity, and improving health outcomes – foundations essential for achieving long-term sustainable development.[3]

Beyond economic infrastructure, investment in social infrastructure - particularly water supply, sanitation, healthcare, affordable housing, social protection and education - is essential for building human capital. Access to clean water and proper sanitation improves public health and enhances productivity. Access to quality healthcare and education empowers communities, cultivates a skilled and productive workforce, and promotes an equitable distribution of the benefits of economic growth. These systems complement transport and energy infrastructure by enabling inclusive participation in economic development.

However, Africa faces a significant infrastructure financing gap. The Sub-Saharan Africa (SSA) region must invest 7.1 percent of its gross domestic product (GDP) annually until 2030 to close this gap but has only been spending about half that

[3] *See AIF (2021) and (2025), respectively.*

amount (IFC 2023). Fiscal constraints, rising debt burdens and declining Official Development Assistance further complicate the landscape. Even where infrastructure investment occurs, it is often fragmented and lacks strategic cohesion, undermining efficiency, affordability, inclusiveness, and resilience. Evidence from the Global South highlights the risks associated with poorly planned infrastructure, including urban sprawl that fails to generate meaningful employment, increased congestion, and speculative real-estate dynamics that deepen socio-economic inequalities (Peng et al. 2024; Goodfellow 2017). Weak institutional capacity, legal and land tenure barriers, and operational inefficiencies further hinder progress.

Given these constraints, it is imperative to invest efficiently in infrastructure that delivers multidimensional benefits – advancing environmental sustainability, productivity and inclusive growth. This Note proposes a holistic, mission-oriented infrastructure strategy tailored to Africa's rural, urban and regional contexts. It is informed by global opportunities including rising demand for critical minerals, the transition to cleaner technologies, and the emergence of nature-based industries.

The recommendations are guided by the need to generate employment, harness Africa's demographic dividend, and its rapid urbanisation trends. These emphasise the role of domestic growth drivers and regional integration in a shifting global landscape. Financing options are designed to be innovative and context-sensitive, mobilising resources without overburdening fiscally constrained countries.

While the focus is on Africa, the insights and framework presented are applicable to other Emerging Markets and Developing Economies (EMDEs) facing similar challenges. The Note does not attempt to cover all infrastructure sectors or issues. Instead, it identifies priority areas for planning and investment, offering evidence-based recommendations grounded in the latest academic research, international best practices and adapted to local circumstances.

The next section introduces a framework linking infrastructure to sectoral outcomes, structural transformation, and growth within planetary boundaries. Subsequent sections apply this framework to Africa's current context.

- Section III: Rural infrastructure constraints and policy options.
- Section IV: Urban infrastructure development strategies.
- Section V: Cross-border and regional infrastructure integration.
- Section VI: Leveraging natural capital for sustainable development.
- Section VII: Financing mechanisms for infrastructure development.
- Section VIII: Conclusion and strategic implications.

2. Toward a Mission-Oriented Approach to Sustainable Infrastructure Development

Infrastructure spending must move beyond siloed, sector-specific initiatives toward a mission-oriented and multi-sectoral approach, as advocated by Mazzucato (2018) and Africa Investment Forum (2022). Rather than treating transport, energy, information and communication technologies, and water as isolated initiatives, the focus should be on how such investments shape the development trajectories and structural transformation of African economies.

Such a reframing of siloed infrastructure initiatives into a cohesive investment strategy requires that infrastructure be seen not only as physical capital, but as a strategic tool to achieve broader missions like poverty alleviation, inclusive economic growth, and environmental sustainability as depicted in Figure 1. This figure presents a conceptual schematic that shows how decisions made at the infrastructure planning and implementation stage contribute to both sectoral and economy-wide goals, while safeguarding the environment and nature throughout the process. It is worth noting that this figure provides a generalised framework linking infrastructural investments to structural transformation and development goals. However, the context of each African country might be different, and each country's structural transformation may take a different form than that of other regional counterparts.

This framework posits two key pre-requisites that each investment should satisfy, notably: (a) socio-economic sustainability, i.e., each investment actively contributes to producing desirable outcomes such as job creation, improved efficiency and economic growth, together with social and inclusive participation

and health co-benefits 4 ; and (b) financial sustainability, i.e., sovereign debt burdens should be managed effectively while ensuring provision of affordable infrastructure. In addition, the institutional frameworks and local entities responsible for infrastructure development must be reformed to enhance their financial viability and operational effectiveness.[5]

Given increasingly binding planetary boundaries, environmental sustainability and nature restoration need to be integrated into each stage of planning.[6] In particular, infrastructure investments should strive to contribute to mitigation and adaptation goals using a full spectrum of climate solutions including renewables, demand side management, and abatement technologies like carbon capture, utilisation and storage, where possible and considering national circumstances.

Once these pre-requisites for infrastructure investments are met, the next step is to ensure that they act as a lever for achieving cross-sectoral outcomes in the form of increased agricultural productivity, strengthened manufacturing capabilities, and the growth of service sectors, in line with each country's needs, capabilities, and priorities. These outcomes contribute directly to rural, urban, and regional development, which in turn drive broader goals like job creation, economic growth, and poverty reduction. Infrastructure investments must also ensure rural-urban and inter-city connectivity, which is vital in promoting economic and social development across EMDEs. Therefore, infrastructure must be planned and evaluated not only in terms of immediate outputs but also through its contribution to these interconnected and long-term development processes.

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[4] See Africa Investment Forum (2025) for a detailed discussion on the health co-benefits of good infrastructure planning and investment.

[5] The Note acknowledges that such due diligence may enhance the complexity of projects in terms of approval, implementation, and financing. However, without ensuring that positive outcomes are achieved and negative outcomes minimised, infrastructure spending runs the risk of creating sub-optimal infrastructure designs, leading to undesirable outcomes such as low-density sprawl and air pollution, which require further costly investments to be corrected and adapted.

[6] Investments in nature and biodiversity provide a multitude of economic and non-economic benefits much like many other traditional forms of infrastructure investment. See Africa Investment Forum (2023) for a detailed discussion on 'Nature as Infrastructure'.

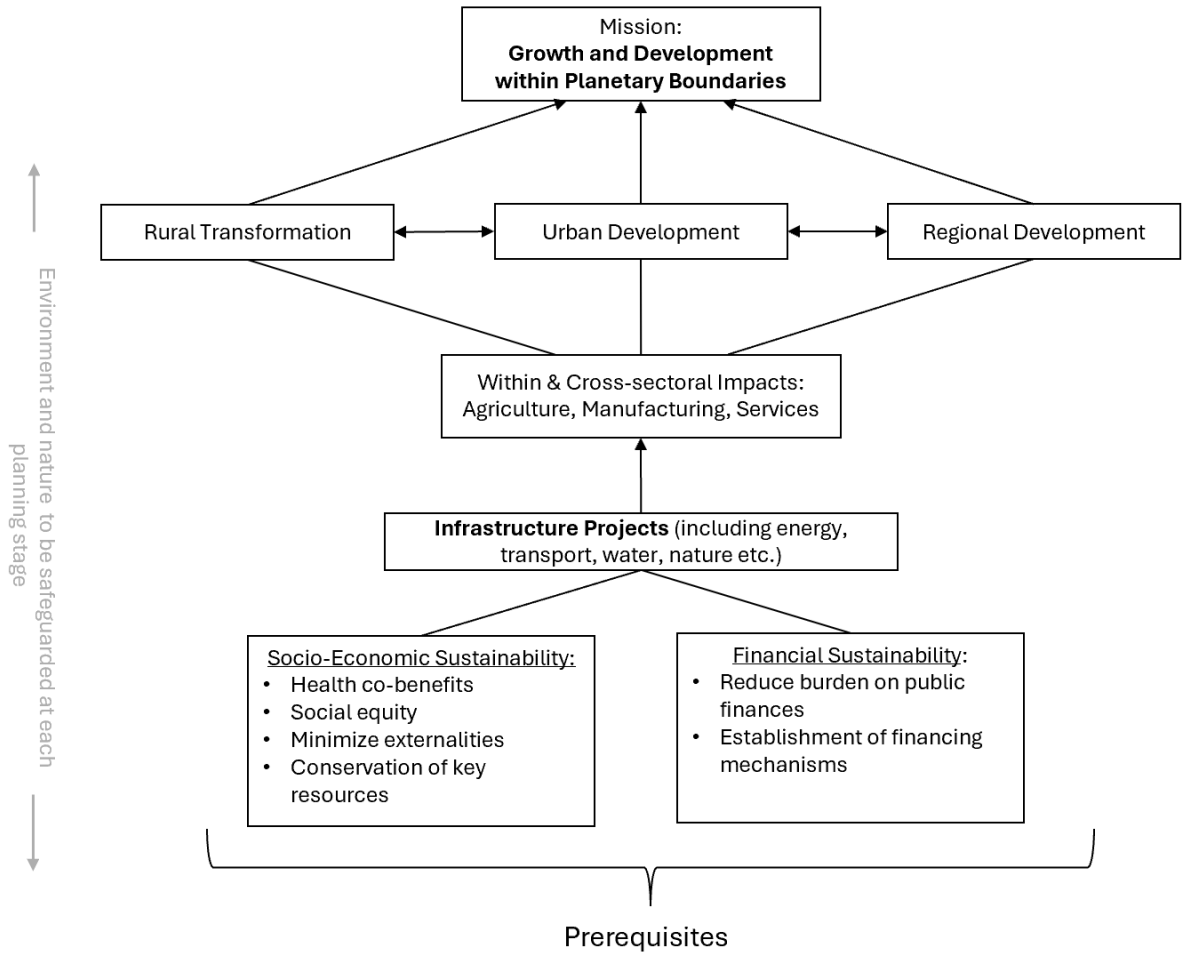

Figure 1. A Mission-oriented Approach towards Sustainable Infrastructure Development

This holistic approach calls for integrated planning across ministries and governance levels, linking infrastructure investments to clearly defined development pathways outlined in the structural transformation literature (Lewis 1954 and Gollin 2014). For example, the impact of a rural road should be assessed in relation to agricultural value chains, labour and factor mobility, and environmental consequences—not merely its physical construction (e.g., Garg et al. 2024). Similarly, urban transit should be aligned with objectives like spatial equity, economic density, and climate resilience, and must not lead to sprawl. When infrastructure satisfies the underlying best-practices outlined in this approach, its role as a cohesive driver of structural transformation and inclusive development becomes evident, allowing countries to tailor interventions according to their unique positions within this mission-oriented framework.

3. Infrastructure for Rural Development and Structural Transformation

Infrastructure can play a pivotal role in bolstering agricultural productivity, food security, and economic diversification. By 2023, 53% of Africa's workforce remained engaged in rural activities and agriculture (Davis et al. 2023). To drive rural development and structural transformation, it is critical to identify infrastructure investments that not only enhance the productivity of agriculture but also facilitate market access and the movement of factors of production between different productive sectors.

Using the mission-oriented framework, we identify key infrastructure sectors where investments can significantly improve food security, drive rural development, and advance structural transformation. For example, investments in the transport sector can have significant advantages in improving food trade, enhancing food security, and building rural-urban links important for labour mobility. Similarly, energy access can bolster productivity and enhance value addition in terms of food and non-food products. Furthermore, investments in enhancing the sustainability of agricultural production in Africa are essential to conserve water, soil, and ecosystems, notwithstanding multiple challenges due to trade-offs related to short-terms goals and long-term gains as well as small-holder profitability. Below, we provide recommendations related to infrastructure spending to drive food security, growth, and development in the rural areas of African countries, disaggregated by some key infrastructure sectors.

Transport

Enhance Rural and National Connectivity. It is important to invest in maintaining and upgrading existing roads in the short-term, while expanding access to all-season roads over time to better connect rural farmers with markets and stabilise food distribution. It is also crucial to enhance redundancy of transport networks in the long term so that disruptions caused by severe weather and other hazards are minimised.

Reduce Regional Trade Barriers and Long Supply Chains. At the regional level, trade in food commodities is limited, and can be enhanced by reducing non-tariff barriers such as bureaucratic and hidden costs. Alleviating these hidden costs and bureaucratic barriers should be a short to medium-term priority. Furthermore, in Africa, food travels about 10 times more in terms of distance in kilometers compared to advanced economies, leading to delays and post-harvest losses. Gradual improvements in port infrastructures and maritime corridors can reduce

delays and congestion and enhance intra-continental food trade (Kunaka et al. 2025).

Build Commodity Storage. Modern storage facilities can minimise post-harvest losses, stabilise food supply chains, and enhance food security. Public private partnerships (PPPs) can be promoted to fund storage expansion and operational improvements (Kunaka et al. 2025).

Energy

Expand Rural Access and Promote Productive Energy Use. In the short-term, last-mile grid extensions to connect rural areas should be prioritised, while scaling up cleaner energy solutions, including decentralised renewable energy systems and clean cooking technologies such as the use of liquefied petroleum gas instead of firewood or charcoal for off-grid communities. At the same time, rural electrification can both improve agricultural yields through increased irrigation application and facilitate structural transformation by promoting non-agricultural business activity. Furthermore, electrification can rationalise excessive out-migration from rural areas, easing pressures on urban centres (Fried and Lagakos 2021).

Enhance Security of Supply and Generation. Investment in climate-resilient generation infrastructure should be prioritised as far as possible, incorporating diverse and clean energy solutions, including hydrogen, abatement and removal technologies, renewable energy sources such as solar and wind, as well as other low-carbon and reliable options that support grid stability to enhance energy security. To ensure a stable power supply, it is crucial to diversify generation sources, reduce dependence on particular technologies, and integrate with regional power pools. It is also important to improve the efficiency and reliability of existing power plants and transmission assets through regular maintenance and upgrades to keep the energy matrix at low-carbon levels, particularly in the context of the gradual implementation of the European carbon adjustment mechanism.

Prioritise Areas with Productive Energy Uses and Leverage Users to Overcome Last-Mile Costs. The focus should be on grid expansion to reach productive end-users (e.g., grain mills, businesses, etc.) to boost electrification and economic development. Policies should involve these users in financing or managing local grid infrastructure, like low-voltage networks. For instance, in Zambia, grain mills helped reduce fixed costs, promoting wider adoption. Utilities like Zambia Electricity Supply Corporation Limited could also offer group connection schemes to share infrastructure costs (Walter and Moneke, 2024).

Strengthen Governance, Affordability, and Local Investment Climate. In the short to medium term, countries can support cost-reflective tariffs balanced with rural affordability, improve performance of public utilities and public infrastructure entities as the quality of rural service delivery is intertwined with public sector performance, and de-risk rural energy investments through regulatory and financial reforms.

Improve Regulatory and Institutional Frameworks. Stable and transparent regulations should be established, together with comprehensive PPP policies. These measures will help reduce investor risk, minimise delays, and foster a competitive market environment, essential for sustaining growth and investment in sectors such as renewables and fossil fuel energy sources.

Energy and connectivity infrastructure will also help Africa extract its critical minerals and connect them with global supply chains. Box 1 provides recommendations related to infrastructure investment specifically to enhance growth in this sector.

BOX 1. CRITICAL MINERALS AND INFRASTRUCTURE IN AFRICA

The market for critical minerals is poised for significant growth. According to the International Energy Agency (IEA), the combined global market for the most important critical minerals is expected to more than double from current levels to approximately USD 770 billion by 2040 (IEA, 2024). The International Monetary Fund (IMF) estimates that SSA's potential revenues over the next 25 years from cobalt, copper, lithium, and nickel could be as much as USD1.6 trillion (Chen et al. 2024). Reaching this level of revenues requires important reforms in the mining sector, complementary infrastructure investments, and prudent fiscal management, including the use of tested tools to tackle potential "Dutch disease" (Asiamah et al. 2022). The recently approved African Union Green Minerals Strategy presents a clear vision for developing the green minerals mining sector and its associated value chains, integrating industrialisation and electrification approaches, and promoting sustainable development (African Union, 2024).

Energy infrastructure investments are urgently needed to develop the critical minerals sector in Africa. Mining accounts for approximately 38% of global industrial energy use (Igogo et al., 2021) and can serve as an anchor consumer to catapult the expansion of energy services to households and businesses at lower costs, as well as to mobilise private sector investments (World Bank, 2016). The recently launched Mission 300, a regional programme aimed at connecting 300 million people with energy access in SSA by 2030 (Herscowitz, 2024),

supported by several development partners, can expand market opportunities if planned well in conjunction with mining operations.

Transport infrastructure is also needed to support the critical minerals sector, including roads, railways, ports, and airports. In many cases, transport corridors crossing multiple countries will be necessary, alongside fair and equitable benefit-sharing arrangements between mining countries and countries along the export corridors (NEPAD, 2023). The African Union's Programme for Infrastructure Development in Africa has identified key transportation corridors (AfDB 2019).

In a highly competitive global market for critical minerals, speed is of the essence. It takes, on average, 18 years to develop new mines (Manalo 2025). The complementary infrastructure may add time to this horizon. Africa needs to offer speedier options to be attractive to investors.

Considering the opportunities described above, African countries may consider four recommendations:

- Enhance the national coordination for speedy planning, approval, finance mobilisation, and private sector engagement for investments in mining, energy, and transportation, including through the naming of a high-level coordinator in the Prime Minister/President's office.
- Identify complementary investments such as well-designed special economic zones (Zeng 2021) along development corridors from mine to port that can attract job-generating investments in agribusiness or export-oriented industries (African Development Bank 2018).
- Leverage the African Continental Free Trade Area to harmonise standards and licensing requirements, reduce border crossing delays, and consider calibrated tariff policies for gradually eliminating tariffs on minerals processing equipment (Rampai and Nupen, 2024) consistent with World Trade Organisation rules, to support the development of domestic value addition.
- Ensure environmental and social considerations are integral to the planning and development of infrastructure and mining investments to attract global private players (Ijjasz et al. 2025).
- Ensure regional coordination to enhance resource governance, infrastructure sharing, and market leverage, enabling more sustainable and equitable value creation from critical minerals.

4. Infrastructure and Urban Development

Urbanisation presents a major opportunity for Africa to drive economic prosperity. However, without coordinated strategies tailored to national contexts and circumstances, rapid urban growth could exacerbate inequality and environmental degradation. Urban spatial patterns and infrastructure systems are path-dependent: once cities adopt inefficient forms—like low-density sprawl or outdated centralised utilities—they become expensive and difficult to correct. For instance, low-density cities use two to three times more energy per capita than compact cities. In contrast, compact urban forms can cut infrastructure costs by 20–30%, offering both economic and environmental benefits. Integrated urban planning incorporating land-use zoning and tenure security for informal settlements, corridors, water and sanitation, and multimodal transit must be prioritised for sustainable urban development.

In this section, we highlight recommendations related to the housing and water and sanitation sectors in urban areas of Africa. Improving the infrastructure in these sectors will significantly enrich the lived experiences and productivity of Africa's urban populations, especially since about half of them live in informal settlements, lacking high-quality housing and water, sanitation and hygiene facilities.[7] We see these investments as pre-requisites or enablers that drive structural transformation and sustainable development.

Housing

Overall, Africa faces a housing deficit of 51 million units. In SSA, 60% of urban residents live in informal settlements due to widespread affordability gaps (World Bank, 2020). Nairobi exemplifies these spatial inequalities: slums house 70% of the population while occupying only 5% of the city's land—an outcome shaped by colonial planning legacies (Myers, 2015; UN-Habitat, 2021). Similarly, in Lagos, formal housing is beyond reach for most, with only 10% of households able to afford it (Abegunde, 2023). These challenges highlight the urgent need for more inclusive and affordable housing solutions, with some key recommendations discussed below.

Adopt Inclusive Zoning Policies. Adopting mixed-income housing strategies would help to promote social integration and affordability, as well as improve living conditions in informal settlements. These zoning policies can be matched with

[7] *While other sectors such as urban transport and energy are also important, they are not covered in this note due to space limitations.*

basic infrastructure such as roads and access to energy, driving high-quality urban development. An example of this is the Kigali Master Plan 2050, which mandates that at least 15% of housing in designated zones be allocated to affordable units. Additionally, large-scale developments (10+ units) must provide 10% of units with universal accessibility to support people with disabilities and the elderly. The plan also emphasises the incremental, in-situ upgrading of slums with basic infrastructure such as roads, electricity, street lighting, and drainage. The plan aims to reduce informal settlements from around 60% to 20% through in-place upgrading, rehousing and planned resettlement, and growth of affordable housing.

Capture Land Value. Land-value gains should be used to finance affordable housing through tools like Transferable Development Rights (TDR). TDR allows landowners to transfer unused development rights to developers in higher-density zones. This balances conservation and growth while directing land value toward public benefits. For example, Mumbai's TDR policy is a land-based financing tool designed to incentivise private sector participation in public interest projects, particularly slum redevelopment and affordable housing. Under this mechanism, developers who rehabilitate slum dwellers or surrender land for public utilities—such as roads, schools, or parks—are awarded additional development rights in the form of Floor Space Index, which they can use elsewhere in the city or sell on the market. This creates a market-driven incentive for slum clearance without displacing the urban poor, as it enables the construction of free housing for eligible residents while maintaining developer profitability through extra buildable space in high-demand areas. TDR has thus helped bridge the gap between limited public resources and massive demand for affordable housing in Mumbai's dense urban environment, fostering both redevelopment and spatial equity (Bertaud, 2014).

Upgrade Incrementally. Community-led initiatives should be supported to gradually improve basic services, tenure security, and formalisation in informal settlements. Rather than large-scale resettlement, this approach enables residents to co-plan and upgrade housing, roads, water, and sanitation with support from local authorities. A good example is Thailand's Baan Mankong Programme. Since 2003, over 1,000 communities and 130,000 households have upgraded housing through participatory processes, enhancing both conditions and community ownership (Boonyabancha, 2009). A central goal of the programme is to provide residents with security of tenure. Communities negotiate directly with landowners, both public and private, to obtain land through purchase, lease, or land-sharing agreements. This legal recognition reduces the risk of eviction and encourages long-term investment in housing and community development. The Community Organizations Development Institute, a public agency, provides

infrastructure subsidies and low-interest loans directly to community cooperatives. These subsidies support housing construction, infrastructure improvements, and the establishment of community welfare programmes. By pooling resources and sharing financial responsibilities, communities enhance their collective capacity to manage and sustain development projects.

Integrate Housing with Special Economic Zones. The Tanger Med Industrial Platform (TMIP) in northern Morocco is widely regarded as a leading example of an integrated Special Economic Zone in Africa. Located near the Tanger-Med Port, the largest in Africa by capacity, TMIP spans multiple industrial zones and hosts over 1,100 companies from sectors including automotive, aerospace, textiles, and logistics (Tanger Med Zones, 2023). A key success factor has been its holistic infrastructure planning (in line with the framework presented in this note), which includes not only transport and energy but also worker-related services such as affordable housing, access to piped water, sanitation, and public transport connections between residential and industrial areas (World Bank, 2020; UNCTAD, 2019). This integration has supported manufacturing industries through higher labour retention and productivity, helping attract major global firms like Renault-Nissan and Delphi. Unlike many African Special Economic Zones, TMIP is closely linked to structural transformation and sustainable development, preventing the growth of informal settlements and ensuring that social infrastructure supports economic expansion (Farole and Moberg, 2017).

Water and Sanitation

Water and sanitation challenges often accompany housing challenges in cities with rapid urbanisation. By 2030, water demand in African cities is projected to double. Yet only 44% of urban residents currently have access to safely managed water services (WHO/UNICEF, 2021). Poor sanitation imposes economic losses of up to 5% of SSA's GDP, primarily through disease and lost productivity (World Bank, 2019). These issues are likely to be exacerbated by climate change. Therefore, solving the problems associated with the water and sanitation sector is a key priority and some recommendations for this are presented below.

Build Decentralised Systems. Investments in modular treatment systems, neighbourhood-level infrastructure, and rainwater harvesting must be prioritised. Good examples include:

- *Durban, South Africa,* has implemented a pilot programme to introduce decentralised wastewater treatment systems in informal settlements, aiming to address sanitation challenges in areas lacking access to centralised sewer infrastructure (UNEP 2020). Technologies such as Clear Full Recirculation

Toilets and Aquonic Wastewater Treatment disinfect water, making it reusable for flushing and irrigation purposes. These technologies are particularly suitable for informal settlements as they operate off-grid, require minimal water, and can be deployed rapidly, offering an alternative to extensive sewer networks.

- *Kampala, Uganda:* Community water kiosks operated by the National Water and Sewerage Corporation in Kampala are small-scale, utility-managed tap stations designed to provide affordable, reliable access to clean water in informal settlements and underserved urban zones. Typically featuring multiple taps, these kiosks serve hundreds of households, who purchase water, usually at a subsidised rate. By combining low-cost, scalable public infrastructure with prepaid, digital payment and inclusive management, the Corporation's community kiosks bridge the gap where household connections are unaffordable or impractical. They deliver safe water at social tariffs directly to vulnerable communities, improving health outcomes, reducing reliance on expensive water vendors, and empowering residents through local operation and oversight. These kiosks have reduced travel time, supported equity, and improved access, especially for women and children (Kooy et al., 2018).

Implement Pro-Poor Tariffs. Tiered billing structures based on the quantity of energy and water consumed to protect vulnerable households must be established. A good illustration of this approach is the "Tubig Para sa Barangay" programme in Manila, Philippines, launched in 1998, which delivers affordable water to over 1.8 million slum residents. The programme transforms water access for underserved communities by combining financial subsidies, legal infrastructure, and community partnership. In so doing, it delivers safe, uninterrupted water while tackling system inefficiencies and empowering residents. It includes subsidised connection costs with Manila Water covering about 65% of the connection fee and reduces network losses by enhancing metered legal connections. Furthermore, the programme lays new pipes, fixes leaks, and tackles low-pressure issues (Asian Water, 2022). The increasing block tariff system for water consumption in Cape Town is another good example of a tiered billing structure.

Ensure Participatory Governance. Involving communities in the design and management of water services is a must. For instance, community water committees in Luanda, Angola – popularly known as the Model of Community Water Management (MoGeCA) – were established in the early 2000s with support from Development Workshop and later institutionalised through the backing of the

United States Agency for International Development (USAID) and national policy. These locally elected committees oversee daily operations of water kiosks installed in Luanda's peri urban musseques, working in partnership with municipal authorities. They manage kiosk attendants, collect user fees at socially equitable tariffs, coordinate routine repairs (aided by mobile reporting platforms like "VerAgua"), and receive basic technical training and social mobilisation support. Through this arrangement, over 120 kiosks serving tens of thousands of residents were actively monitored in 2015, significantly lowering water prices for low-income households, reducing reliance on expensive informal water markets, and improving service accountability. The community-based model has been so effective that the Angolan government adopted it nationally, with hundreds of committees formed and more than 82,000 people reached by 2020. It now constitutes the cornerstone of the country's post-war water for all strategy.

Do Not Neglect Waste Treatment and Recycling. To ensure the health of urban residents, management of landfill sites is of utmost importance as they can be a major source of disease, groundwater pollution, and methane emissions. A good example is the Reppie Waste-to-Energy Plant in Addis Ababa, Ethiopia, Africa's first facility of its kind, transforming municipal solid waste into electricity, costing about USD 120 million to build. Constructed on the former Koshe landfill site, the plant addresses both waste management and energy production challenges in the city. The plant processes approximately 1,400 tons of waste daily, accounting for about 80% of the city's waste, and provides about 185 giga-watt hour of electricity (25% of city’s annual demand) annually. Such integrated waste management and energy solutions can reduce landfill volumes and provide access to energy to African cities while providing co-benefits related to the health of the population and the environment. Another example is Cairo’s El Zabaleen composting and recycling initiative, backed by non-government organisations like Association for the Protection of the Environment, USAID, and Procter & Gamble, which has turned an informal “Garbage City” into a productive eco-enterprise. Launched in the early 2000s, the programme invested in community infrastructure, including a mechanised composting plant, plastic recycling equipment, and small-scale biogas digesters that convert organic waste into cooking gas and fertiliser. The programme recycles up to 85% of collected waste (compared to just 20–25% for formal systems), dramatically cuts organic waste going to landfills, generates income through compost, recycled materials, and biogas, while also improving living conditions.

5. Infrastructure for Regional Integration

Beyond the structural transformation from rural to urban development domestically, the observation that trade and economic exchanges between countries have been a powerful driver of economic prosperity prompts the need for investments to support cross-border connectivity. Over the past few decades, economic integration has lifted millions out of poverty and fostered unprecedented growth. Developing countries, including ones in Africa, have increased their share of global exports, benefiting from integration into global value chains. This integration has not only boosted productivity but also facilitated access to technology and investment, contributing to economic development. In this vein, Africa's total exports are expected to approach USD 1 trillion by 2035, with intra-Africa trade projected to reach USD 140 billion, equating to 15% of Africa's total exports.[8] With the paradigm around globalisation shifting, the onus on regional integration is likely to become even more pressing in coming decades.

In the context of regional integration, cross-border infrastructure will be key. Roads, bridges, railways, and transmission lines promote trade and travel, create opportunities, lift living standards, and improve competitiveness. Cross-border infrastructure also facilitates the provision of regional public goods, such as environmental protection, health responses, and peacekeeping. By connecting remote and underserved areas, cross-border projects help to reduce regional disparities and promote equitable development.

However, delivering cross-border infrastructure is a complex endeavour that entails unique challenges. Incentives to create a cross-border infrastructure are asymmetric. Building common infrastructure also necessitates policy coordination and special institutional arrangements. Norms and standards for the flow of goods and services, which require negotiation between the authorities of neighbouring countries, including subnational entities, have a significant impact on the ability to implement successful cross-border infrastructure. Moreover, the financing of common infrastructure brings another layer of complexity. Countries financing the largest sections of projects might not gain the most from them. This section discusses how these challenges to cross-border infrastructure can be addressed, in support of regional integration.

[8] *Africa's total exports expected to hit close to USD1 trillion by 2035, Standard Chartered report reveals*.

Providing an Enabling Environment for Building Cross-border Infrastructure

Before making actual investment plans and commitments for a pipeline of infrastructure projects, investors tend to evaluate the infrastructure investment environment as a first step. In this regard, the three-pillar conceptual framework laid out below provides a good benchmark to create an enabling environment for investment in the short-term, before the actual investment pipelines kick in to facilitate the structural transformation and sustainable development in the medium and long-term[9]:

Pillar 1: Economic Rationale and Planning. An enabling environment for building cross-border infrastructure hinges on a compelling economic rationale for the countries and regions involved, together with sound planning. It requires accurate economic assessment at aggregate and national levels to identify and value the additional benefits arising from regional cooperation, including the facilitation of technology transfer alongside increased foreign direct investment and efficiency gains from regional specialisation based on selling in a larger market. At the same time, costs and benefits tend to be distributed unevenly across countries and among stakeholders. In this context, distributional analysis is essential to inform project planning on the complementarity or competition between countries. On the planning front, alignment of the project with the national development goals of all the countries involved is critical, such as those related to growth, poverty reduction, connectivity, job creation, trade, and supply chains. To generate such alignment, a high-level cross-border infrastructure commission empowered with resources and decision-making authority is a useful device.

Pillar 2: Political Support and Governance. The inception of a cross-border project requires high-level political will and support. On the governance side, success hinges on policy alignment and cross-border institutional arrangements that can bridge differences in laws and regulations, and act as a coordinating mechanism. To mitigate political risks, an inter-government agreement can help by aligning policy, planning, and legal frameworks between countries. Such agreements can take various forms, have varying degrees of binding powers, and can evolve over time. Inter-governmental institutional arrangements, such as joint implementation committees at the technical level and joint coordination committees, are also needed to coordinate implementation and decision-making,

[9] *See G20 Report on "Delivering Cross-Border Infrastructure: Conceptual Framework and Case Studies"*

as well as to mitigate asymmetry in government capacity. Cross-border projects necessitate strong governance capacity as reflected in policy certainty and predictability, good management of contracts and sound monitoring, as well as enforcement ability.

Pillar 3: Finance and Management. The design of the financial structure of a cross-border project is vital to its viability and success. While the exact structure is project-specific, it should aim to respect the respective national policy parameters, provide value for money, reduce risk, competitively determine financing requirements, and provide buffers for contingent liabilities. The risks that such projects face are unique, spanning from geopolitical to counterparty to demand and currency risks. Therefore, public funds, together with support from multilateral development banks (MDBs), are often needed to crowd in the private sector and make projects bankable. In addition to providing some part of the financing, the private sector can also play a major role in the design, construction, operation, and maintenance phases of cross-border projects.

Developing an Investable Cross-border Infrastructure Pipeline[10]

In addition to an enabling environment, an investable cross-border infrastructure project pipeline relies crucially on the proper identification of economic gains, embedding the cross-border infrastructure as a part of regional economic integration, and managing the project through its lifecycle. These are key objectives to be achieved in the medium and long-term.

Estimate impact and anticipate distribution of costs and benefits. Tools such as cost benefit analysis, Flowmax for transport projects and Infrastructure Sector Assessment Program can be used for estimating the economic returns. Where costs and benefits are asymmetric, balancing mechanisms should be developed to ensure that no country feels disadvantaged.

Embed governance in national and regional systems such as national infrastructure plans, regional development strategies, and regional economic communities. A regional approach can help overcome coordination failures as well as constraints of individual countries arising from poor port access, lack of connectivity, and deficiencies in energy and water endowments. This approach could be particularly useful for transboundary water-related infrastructure. Africa is a region with many transboundary river basins. The need to manage water

[10] *Many recommendations listed in this subsection are cited from upcoming work of 2025 G20 IWG Priority 3 on cross-border infrastructure toolkit.*

resources and hydropower, as well as the urgent requirement for inland waterways transport, necessitate effective cross-country cooperations. Also, one could consider using regional platforms (such as the Africa Investment Forum and Western Balkans Investment Framework) as useful coordination devices to assemble multiple countries and investors and resolve financial, environmental, and social issues.

Establish permanent cross-border institutions with clear mandates, staffing, and budgets such as the West African Power Pool under Economic Community of West African States and the South African Power Pool under Southern African Development Community.

Pay attention to financing and agree on fair cost and revenue sharing to ensure each country can raise the necessary funds for its section of the infrastructure.

Securing Environmental and Social Sustainability in Cross-border Infrastructure

For longer-term considerations, addressing environmental and social impacts is vital to mitigate negative externalities, such as pollution and displacement, thereby promoting sustainable development and social equity. These elements collectively contribute to the resilience and success of cross-border infrastructure initiatives. Below are some good practices which highlight an integrated climate/nature/health/social frame for infrastructure investment:[11]

Address environmental impacts to mitigate negative externalities, thereby promoting sustainable development. The *Integral Sanitation Program for the Cities of the Uruguay River Basin* project is an example that helps to address the historical binational concern of the river's contamination caused by untreated wastewater discharges from the towns within the Uruguay River Basin. As a result, the positive environmental impact of this project could be considered a major beneficial component of the project assessment.[12]

Incorporate inclusion and equity considerations into the project design. In practice, various good practices including Job Quotas, Skills Training, and

[11] *Please see AIIB AIF Report 2022 - Introduction, 2023 AIIB Asian Infrastructure Finance Report: Nature as Infrastructure, and 2025 AIIB Asian Infrastructure Finance Report.*

[12] *2024 G20 Report on Cross-border Infrastructure..*

Connecting Isolated Communities could allow cross-border infrastructure projects to benefit vulnerable groups and create a more equitable distribution of benefits.[13]

Institute an effective complaint-handling mechanism to ensure smooth implementation and delivery. One example is the AIIB Project-affected People's Mechanism. The mechanism was established by AIIB to provide an opportunity for an independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by failure to implement the Bank's Environmental and Social Policy when their concerns cannot be addressed satisfactorily through project-level grievance redress mechanisms or AIIB Management's processes.[14]

6. Leveraging Africa's Natural Resource Endowments: Nature as Infrastructure

Infrastructure development, population and economic growth, and climate change have put immense pressure on Africa's natural ecosystems. Recognising these challenges, a recent study from the Overseas Development Institute identifies three prominent ecosystem restoration approaches in Africa, emphasising their multidimensional benefits for sustainable development and disaster risk reduction: land degradation neutrality, catchment restoration, and coastal ecosystem restoration.[15]

Forms and Functions of Nature-Based Infrastructure

The concept of nature as infrastructure, or nature-based infrastructure, recognises that nature itself functions as essential infrastructure, delivering critical services such as climate regulation, water purification, and biodiversity support. Many of these services are infrastructure-like but often go unpriced. This concept embraces a transformative approach by exploring the intrinsic value of nature and enhancing investment in the protection of nature and biodiversity. [16]

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[13] See Financing Cross-Border Infrastructure Projects – Sharing of … and Delivering and Enabling Impactful Cross-Border Solutions.

[14] *For more detailed information, please see How We Assist You - Project-Affected People's Mechanism.*

[15] *https://media.odi.org/documents/Nature-based_green_infrastructure_-_A_review_of_African_experience_and_potenti_ic8LcVA.pdf*

[16] *See Africa Investment Forum (2023) for a more detailed discussion of the concept of nature as infrastructure.*

Land Degradation Neutrality: Vegetative Corridors and Ecological Barriers

Initiatives such as the Great Green Wall initiative across the Sahara and the Sahel are strategically designed to halt desertification, restore degraded soils, and enhance community climate resilience through establishing ecological belts along desert margins. The Saudi and Middle East Green Initiatives with similar purposes also offer a nature-based solution to absorb carbon emissions. Another successful example is the *Action Against Desertification* project in northern Nigeria. Despite initial concerns about restricting agricultural land use, economic evaluations reveal that restoration initiatives improved food security and community income. Key to this success has been the promotion of alternative livelihoods through high-value non-timber forest products (NTFPs), such as honey, enabling communities to diversify away from traditional agriculture (O Campos et al. 2024).

Coastal Ecosystem Restoration: Green-Grey Hybrid Infrastructure

Integrating natural ecosystems with conventional infrastructure provides effective coastal protection against flooding and rising sea levels. The city of Beira, Mozambique, exemplifies this hybrid approach. Beira combined traditional drainage improvements with the restoration of the Chiveve River corridor, including mangrove replanting and widening drainage channels, creating a controllable tidal outlet. Additionally, this initiative transformed previously degraded areas into a multifunctional 17-hectare public park with walkways, event venues, markets, and kiosks, significantly enhancing urban liveability and local economic opportunities. World Resources Institute's Green-Grey Infrastructure Accelerator is supporting 11 cities in SSA to scale nature-based and hybrid infrastructure that builds climate resilience, bridges infrastructure gaps, and delivers green jobs and public health gains.

Catchment Restoration: Wetlands, Forests, and Agricultural Ecosystems

Restoration of catchment ecosystems – including forests, wetlands, and agricultural corridors – enhances hydrological regulation, reduces vulnerability to climate extremes such as floods and droughts, and strengthens local agricultural resilience. Rwanda's Green Gicumbi Project illustrates these benefits, with initiatives including the rehabilitation of over 1,100 hectares of degraded forests, creation of terraces and check dams to reduce soil erosion, and the establishment of automated weather stations. Additional interventions, such as climate-resilient

housing and clean cookstove distribution, have created thousands of green jobs and enhanced food security and rural resilience.

Together, these examples demonstrate how nature-based infrastructure enhances biodiversity, reinforces hydrological systems, and supports inclusive, climate-resilient development.

Key Policy Recommendations

Deepen Community Participation. Restoration programmes should prioritise participatory planning by allowing communities to co-select tree species and restoration methods based on their local needs. This enhances community ownership and ensures that restoration supports both environmental and livelihood goals.

Integrate Livelihood Support with Restoration. Restoration initiatives must actively promote alternative income sources, particularly climate-resilient options such as small livestock rearing and the collection and commercialisation of high-value NTFPs like balanites oil and gum Arabic, to offset restrictions on land use.

Improve Market Access and Value Chains. Governments and donors should invest in infrastructure, local processing, and value chain development to help rural households sell NTFPs and livestock products at better prices, ensuring economic sustainability of restoration outcomes.

Integrate Green and Grey Infrastructure. Ecological engineering approaches like reforestation, wetland buffers, and green corridors should be scaled, in tandem with traditional grey infrastructure, to enhance resilience and service delivery.

Enhance Financial and Technical Support. Early warning systems and meteorological capacity should be expanded. Providing technical assistance for early-stage project development and leveraging carbon finance and blended instruments to de-risk and scale investments are also important priorities.

Prioritise Inclusion of Women and Youth. Programmes should specifically include women and young people in agroforestry training, group activities, and benefit-sharing schemes, as they are often more involved in small-scale livestock, NTFP collection, and tree planting, and benefit directly from improved access to resources.

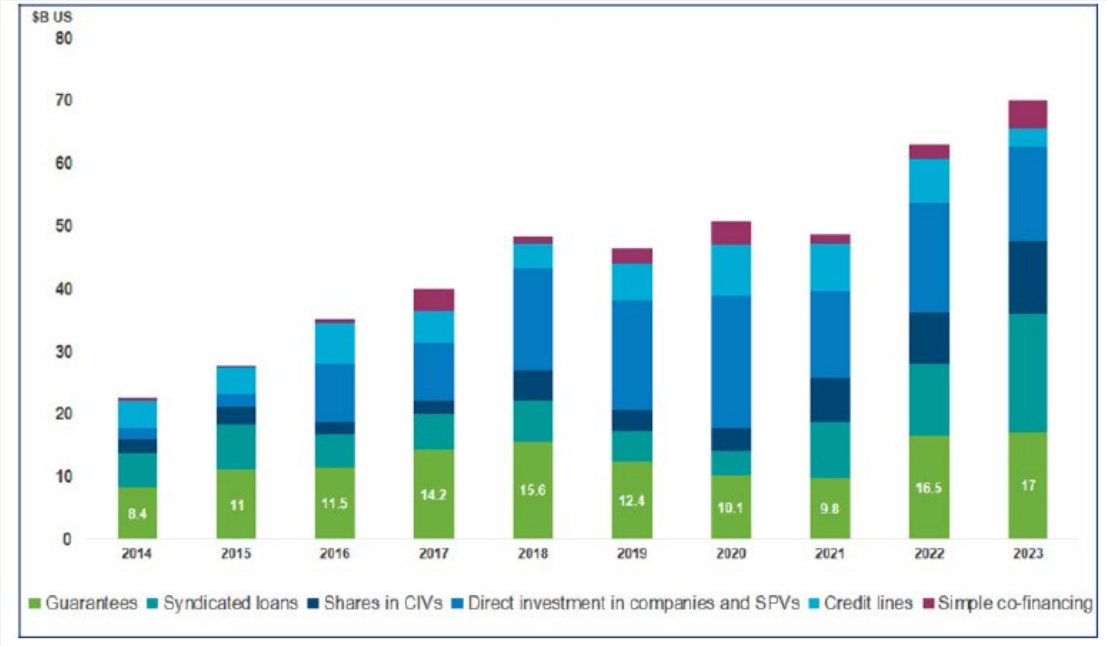
7. Mobilising Resources to Finance the Infrastructure Strategy

In this section, we present recommendations for how to finance the infrastructure strategy laid out in the above sections.

In the context of urgent need for infrastructure combined with significant fiscal constraints, which limits the ability of governments to finance infrastructure development at the necessary pace and scale through public spending, mobilising private capital will be essential to accelerate infrastructure investments. Accordingly, this section presents recommendations on how to develop infrastructure by leveraging private capital. Currently, private capital flow to Africa remains persistently low—of the USD 86.0 billion of global private sector investments in infrastructure or private participation in infrastructure in 2023, only USD 3.5 billion was attributed to SSA[17]. Therefore, the following sets out critical action needed if Africa is to scale up private investment to meet the infrastructure needs outlined in this note.

[17] *PPI Database Annual Report 2023, World Bank*

BOX 2. MOBILISATION POTENTIAL OF GUARANTEES AND CREDIT ENHANCEMENTS



Source: OECD Data Explore

Among the various mechanisms and instruments that may contribute to de-risking investments and mobilising private finance, guarantees have shown great potential. Since 2015, total private finance mobilised by guarantees has amounted to USD 118 billion, representing around 27% of total private finance mobilised by official development finance interventions.

Source: Drawn from the Progress Note of G20 report prepare by OECD-Scaling Up Sustainable Infrastructure Investment through Blended Finance (Priority 2 of 2025 G20 IWG)

Enabling a Pipeline of Investable Projects

The framework under development under South Africa's G20 Presidency Infrastructure Working Group - Priority 1 highlights two main strategies for developing an investable pipeline capable of mobilising private capital in infrastructure: (i) establishing a strong enabling environment; and (ii) structuring and preparing sound infrastructure projects. At the macro policy-level, macroeconomic stability and long-term political commitment to private participation are pre-conditions to attract the volumes and tenors required in infrastructure.

Countries that have seen growth in private infrastructure investment at scale have built a strong enabling environment. The three pillars of a successful enabling environment are:

Legal and Regulatory Frameworks. Clear policies, laws, and structures to encourage private sector participation in public infrastructure projects should be established. Countries can learn from global practices and tailor them to their specific context. Regulatory reforms in 140 countries were associated with a nearly USD 488 million[18] increase in private infrastructure investments, confirming the link between reforms and private investment. Many African countries have begun establishing legal frameworks and institutions; however, the main challenge is moving from an established framework to an operational one. This needs to be an iterative process tailored to practical experience over one-size-fits-all approach.

Government Capacity and Institutions. Government institutions must continuously build their institutional ability and expertise to plan, structure, implement, and manage infrastructure projects to translate policy into practice. It is highly recommended to establish effective institutions with strong mandates and technical expertise together with building capacity across governments and with contracting authorities who will ultimately manage the partnership for years to come. MBDs, for example through facilities such as the World Bank's Public Private Infrastructure Advisory Facility[19], can play an important role through tailored capacity building and leveraging existing resources and global experience to inform practice on the ground.

Funding and Financing Mechanisms. Public funding for early stages of preparation and financing at the portfolio level that can help prepare and de-risk projects, respectively, remain crucial for the success of private participation in Africa.

Developing projects and large-scale programmes involves various expertise and stakeholders, especially in nascent markets such as Africa. Sound project preparation support can enhance government capacity and attract new market entrants through well-structured, bankable projects and effectively de-risking transactions. Key infrastructure life cycle steps include:

- **Identifying Needs and Planning**: Conducting comprehensive needs assessments and prioritise projects aligning with national and regional goals.

[18] *Benchmarking Infrastructure Development, 2024, World Bank.*

[19] *The Public-Private Infrastructure Advisory Facility is a leading global facility dedicated to enabling private sector investment in infrastructure in emerging and developing economies by addressing critical policy, regulatory, and institutional challenges.*

- **Screening Process**: Evaluating options for private sector involvement and early-stage viability.
- **Appraisal and Structuring**: Addressing technical requirements, balanced risk matrices, and financial considerations.
- **Contract Drafting and Bidding**: Ensuring well-drafted contracts and transparent bidding processes for credibility and value for money.

Facilities such as the Global Infrastructure Facility[20], which works in partnership with MDBs, such as AIIB, World Bank Group and African Development Bank, offers comprehensive support to governments throughout these critical stages of infrastructure development to support private capital mobilisation.

Increasing Bankability for the Pipeline of Investable Projects

Develop bankable project pipelines through analytic process and risk mitigation[21]. Implementing a systematic analytic process to develop pipelines of bankable projects that meet investor requirements is key. Meanwhile, addressing key risk-sharing protocols early in the project development stage could enhance bankability. For example, the Scaling Solar program in Zambia successfully developed a pipeline of solar projects by addressing off-taker and currency risks, resulting in competitive tariffs and attracting significant private investment. The Scaling Solar program applied a package of payment and loan guarantees, public debt financing, and pre-negotiated template documents to mitigate risks.

Enhance commercial viability through feasibility studies and stakeholder engagement[22]. Conducting thorough feasibility studies to ensure projects are practical, feasible, and financially promising must be a priority. The International Renewable Energy Agency highlights that 45% of projects submitted for financing considerations are rejected due to low levels of readiness. In addition, adopting a collaborative approach to engage with stakeholders, including commercial banks and investors, to assess and improve the risk profiles of projects tend to ensure that all parties are aligned and confident in the project's success.

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[20] *The Global Infrastructure Facility , a G20 initiative, is a global collaboration platform that integrates efforts to boost private investment in sustainable, quality infrastructure projects in developing countries and emerging markets.*
[21] *Developing bankable project pipelines to address multiple risks and ...*

[22] *Integrating Urban Priorities into Country Platforms: Scaling Climate ...*

Strengthening Domestic Resource Mobilisation and Private Capital Mobilisation[23]

Mobilise Domestic Capital for Infrastructure. It is essential to tap into the continent's untapped capital pools of USD 4 trillion. Drawing lessons from Asia, African policymakers could focus on raising domestic savings and targeted financial intermediation to drive industrialisation and infrastructure investment. The banking sector, with its low loan-to-deposit ratios, needs to enhance its capacity for long-term infrastructure finance. Institutional investors, holding USD 777 billion, can also be incentivised through regulatory reforms to invest in infrastructure. Public development banks and sovereign wealth funds, managing USD 400 billion, require clearer mandates and better coordination. Remittances, exceeding USD 95 billion annually, can also be channelled into infrastructure through diaspora bonds and targeted financial instruments. Addressing informality by expanding digital public infrastructure, financial inclusion, and pension participation is crucial. Finally, deepening capital markets and promoting regional integration through initiatives like the African Exchanges Linkage Project can facilitate larger-scale, cross-border investments in infrastructure.[24]

Promote PPPs. PPPs are a powerful tool for mobilising private capital for infrastructure investment. By combining the strengths of both public and private sectors, PPPs can attract private investment through risk-sharing mechanisms (including public institutions assuming construction risk), financial incentives, and clear regulatory frameworks. Governments, ensuring the fiscal sustainability and affordability of projects, can offer guarantees, subsidies, and tax breaks to reduce the financial risks for private investors, making infrastructure projects more attractive. Additionally, well-structured PPPs facilitate the efficient allocation of resources and expertise, ensuring that projects are completed on time and within budget. As a good example, Colombia developed a comprehensive PPP programme through significant legal and regulatory reforms. The establishment of the National Infrastructure Agency was crucial in streamlining processes and ensuring transparency. The country advanced financial sector reforms to overcome limitations and used Development Financial Institutions (DFIs) support to enable commercial financing. In addition, Philippines has a robust legal framework for PPPs, including the Build-Operate-Transfer Law, which provides a clear legal basis for PPP projects. The country has developed effective risk-sharing mechanisms,

[23] *Please see Stepping up domestic resource mobilization: a new joint ... - IMF and Final_DC2025-0002.pdf*

[24] *Please see AFC - Our publications*

ensuring that risks are appropriately allocated between the public and private sectors. [25] Other successful examples, such as the United Kingdom's Private Finance Initiative and India's PPP model in highway construction, demonstrate how PPPs can effectively leverage private capital to meet public infrastructure needs, driving economic growth and development.

Lower Capital Costs. Low and middle-income countries, particularly in Africa, face a systemic challenge of very high capital costs. Reducing the cost of capital necessitates a coherent strategy that integrates domestic reforms with international engagement, which requires countries to: (1) strengthen domestic financial systems, (2) improve risk perception and signalling , and (3) expand development and risk mitigation tools.[26]

Leverage Blended Finance. In scaling up sustainable infrastructure investment through blended finance, de-risking instruments such as guarantees and credit enhancements are useful in offering opportunities to address risk, both perceived and actual, directly through the structuring of deals. They can be provided by MDBs, National Development Banks, DFIs), and governments to drive investment into sustainable infrastructure by alleviating investor concerns and improving an asset's risk profile (Box 2).

Leveraging Multilateral and Climate and Nature Finance

Collaborate with MDBs. DFIs and MDBs remain critical in catalysing private investment – especially in lower-income and smaller markets. Between 2018 and 2023, nearly a third of debt financing for infrastructure in emerging markets came from DFIs. That financing is nearly indispensable to private participation in low-income markets while, in middle-income markets, it gives way to government funding and a larger commercial financing stack. MDBs mobilise private capital through various mechanisms, including direct instruments such as guarantees and advisory services, as well as indirect approaches like co-financing. As MDBs have increasingly prioritised capital mobilisation, their efforts were particularly effective across emerging markets in 2023—registering a 23 percent increase compared to 2022.

Leverage Climate Finance to Develop Infrastructure in Africa. Africa faces significant challenges due to climate change, despite contributing less than 4% of global greenhouse gas emissions. Every year, Africa faces approximately 152

[25] *Beyond regulations: Country paths to achieving PPP success*.

[26] *See G20 Issues Note "Bridging the Cost-of-Capital Divide for Sustainable and Equitable Growth" (April 2025 Version).*

disaster events (African Union, n.d.) and incurs an Average Annual Loss of USD 13.89 billion due to natural hazards, with 27% losses attributable to geological hazards apart from the climate induced hydrometeorological hazards (CDRI, n.d.). To address these challenges and unlock greater volumes of sustainable finance, African countries should consider the following actions:

- **Create a Sound Enabling Environment.** Putting in place appropriate legal and regulatory frameworks that will enable private sector participation in sustainable finance is important.
- **Align Infrastructure Plans with National Climate Strategies.** Embedding infrastructure priorities in nationally determined contributions (NDCs), National Adaptation Plans, and Long-Term Strategies enhances project eligibility for climate finance and supports coherence with MDB investment criteria is critical. Having said that, it is also important to recognise that national circumstances and development priorities vary significantly across countries, including within Africa.
- **Mainstream Climate Risk and Resilience into Project Design.** Early integration of climate diagnostics and disaster resilience metrics ensures infrastructure is future-proof, sustainable development goals-aligned and contributes to the goals of the Paris Agreement —key prerequisites for access to multilateral climate funds.
- **Develop Bankable Projects.** Investing in project preparation to create a pipeline of viable, climate-aligned infrastructure projects must be prioritised.
- **Align Projects with Investment Criteria of Key Climate Finance Sources.** During the early stages of project design, it is key to identify potential sources of climate finance and align projects with eligibility criteria. African countries have access to various climate finance instruments, including grants, loans, guarantees, equity, insurance, green bonds, and commercial loans from multiple sources. Blended finance is increasingly being used to address barriers and de-risk investments using both private and public sources of finance.
- **Strengthen Institutional Capacity to Manage Climate Finance.** Countries require robust public institutions to originate and manage climate-smart investments. Strengthening PPP units, planning agencies, and national climate authorities are key to improving access and implementation.
- **Capitalise on Regional and Programmatic Approaches.** Bundling projects into cross-border or sector-based programmes can enhance scale, efficiency, and visibility—making them more attractive to MDBs and climate finance institutions.

- **Prioritise Climate-smart Basic Infrastructure.** Resources are always scarce. Targeting infrastructure that addresses fundamental human needs (such as clean energy access, safe water and sanitation, and rural transport) in Africa, while integrating climate-resilient and low-emission standards, is important. This involves developing a catalogue of technologies, measures and supporting standards. This dual focus ensures alignment with both climate goals as well as the most urgent development goals.
- **Leverage Carbon Markets into an African Opportunity.** Tapping into Africa's rich renewable energy and vast natural capital (forests, wetlands, mangroves, and degraded lands with restoration potential) to build high-integrity carbon credit systems offers a valuable opportunity. Carbon markets can create revenue streams by attracting climate finance from voluntary and emerging global carbon markets. Governments should develop enabling policies; measurement, reporting and verification systems; and benefit-sharing frameworks to operationalise the market and appeal to market players for participation.
- **Scale Nature-Based Finance.** Despite its strong alignment with climate and development priorities, nature-based infrastructure in Africa remains significantly underfunded. Only a small portion of public and private finance currently supports ecosystem restoration. Bridging this gap requires a combination of domestic reform and international financial innovation. In contexts where livelihood diversification options are limited, governments may need to implement payment for ecosystem services – though these can be difficult to institutionalise given fiscal constraints and high debt burdens. Ministries of finance must play a central role in recognising and financing nature as critical infrastructure. This includes integrating nature-based solutions (NbS) into national development strategies and aligning them with climate and sectoral infrastructure plans. Cross-sectoral coordination—particularly across transport, water, and energy ministries—is essential to ensure NbS is mainstreamed into public investment portfolios and policy frameworks. At the same time, nature-based infrastructure also opens new pathways to tap into global biodiversity, climate, and sustainability finance. Instruments such as green bonds, nature performance bonds, and debt-for-nature swaps are gaining traction. Carbon and nature markets can also support NbS financing by linking ecosystem services to carbon pricing. However, improved institutional capacity and technical support are essential to enable local access to these mechanisms.
- **Develop Country and Regional Climate Investment Platforms.** Drawing on lessons from past development finance efforts, these platforms aim to

overcome fragmented donor coordination, weak alignment with national priorities, and under-stressed country ownership. Governments could establish multi-stakeholder platforms that bring together key ministries, MDBs, bilateral donors, and private actors to identify the pain points and co-develop prioritised pipelines. These platforms best leverage the strengths of individual contributors and ensure alignment of the investment plans with NDCs and national strategies. Likewise, a regional platform can facilitate cross-border coordination and economies of scale for infrastructure solutions with shared climate benefits (e.g., regional solutions for grid connection).

8. Final Thoughts

Africa is the world's youngest and fastest urbanising continent, increasingly leveraging emerging technologies in its pursuit of sustainable economic development. Historically, such development has been driven by structural transformation, marked by a shift from agrarian economies to those driven by manufacturing and, subsequently , services. This evolution has been facilitated by investments in infrastructure, human capital, the adoption of productivity-enhancing technologies, and rural-to-urban labour migration.

Over the last few decades, this transformation has also benefited from globalisation, which enabled the flow of capital, goods and ideas across borders, allowing low-income countries to expand beyond domestic markets.

However, this traditional model is now under strain. Shifting globalisation dynamics, rising automation, and binding planetary constraints, particularly environmental degradation and nature loss, are reshaping the development landscape. In response, African countries must identify alternative growth engines that are home-grown, regionally integrated, and increasingly service-oriented, while remaining within environmental limits. This transition requires shifts towards lower-emission energy systems, sustainable resource use, and infrastructure that supports inclusive and resilient growth.

This Note outlines how infrastructure can be developed and financed to support this new growth paradigm. Key opportunities include:

- Transitioning to lower-emission energy systems
- Responding to the global demand for critical minerals
- Valuing and leveraging natural capital

Realising these opportunities demands infrastructure that is productive, financially viable and environmentally sustainable. This includes:

- Transport and energy systems that support agricultural productivity and food security
- Urban infrastructure for housing, water and sanitation
- Cross-border infrastructure to foster regional integration
- Systems that maximise the value of Africa's critical minerals and natural capital.

To be effective, infrastructure investment must be strategically selected, properly sequenced, well-executed, and professionally managed. Success also depends on strong institutions, good governance and coherent policy frameworks – principles echoed in complementary notes by the World Bank and IMF. Box 3 consolidates the high-level policy recommendations presented in this note, offering a roadmap for infrastructure-led growth that is both sustainable and inclusive.

BOX 3. CONSOLIDATED POLICY RECOMMENDATIONS OF THE NOTE

Infrastructure for Rural Development and Structural Transformation

TRANSPORT

- Enhance Rural and National Connectivity.
- Reduce Regional Trade Barriers and Long Supply Chains.
- Build Commodity Storage.

ENERGY

- Expand Rural Access and Promote Productive Energy Use.
- Enhance Security of Supply and Generation.
- Prioritise Areas with Productive Energy Uses and Leverage Users to Overcome Last-Mile Costs.
- Strengthen Governance, Affordability, and Local Investment Climate.
- Improve Regulatory and Institutional Frameworks.

Infrastructure and Urban Development

HOUSING

- Adopt Inclusive Zoning Policies.
- Capture Land Value.

- Upgrade Incrementally.
- Integrate Housing with Special Economic Zones.

Water and Sanitation

- Build Decentralised Systems.
- Implement Pro-Poor Tariffs.
- Ensure Participatory Governance.
- Do Not Neglect Waste Treatment and Recycling.

Infrastructure for Regional Integration

Providing an Enabling Environment for Building Cross-border Infrastructure

- Establish compelling economic rationale for the countries and regions involved and sound planning.
- Secure political support and governance through policy alignment and cross-border institutional arrangements.
- For finance and management, respect the respective national policy parameters, provide value for money, reduce risk, competitively determine financing requirements, and provide buffers for contingent liabilities.

Developing an Investable Cross-border Infrastructure Pipeline

- Estimate impact and anticipate distribution of costs and benefits.
- Embed governance in national and regional systems such as national infrastructure plans, regional development strategies, and regional economic communities.
- Establish permanent cross-border institutions with clear mandates, staffing, and budgets.
- Pay attention to financing and agree on fair cost and revenue sharing.

Securing Environmental and Social Sustainability in Cross-border Infrastructure

- Address environmental impacts to mitigate negative externalities, thereby promoting sustainable development.
- Incorporate inclusion and equity considerations into the project design.
- Institute an effective complaint-handling mechanism to ensure smooth implementation and delivery.

Leveraging Africa's Natural Resource Endowments: Nature as Infrastructure

- Deepen Community Participation.
- Integrate Livelihood Support with Restoration.
- Improve Market Access and Value Chains.
- Integrate Green and Grey Infrastructure.
- Enhance Financial and Technical Support.
- Prioritise Inclusion of Women and Youth.

Mobilising Resources to Finance the Infrastructure Strategy

Enabling a Pipeline of Investable Projects

- Establish clear policies, laws, and structures to encourage private sector participation in public infrastructure projects.
- Continuously build institutional ability and expertise of government institutions to plan, structure, implement, and manage infrastructure projects to translate policy into practice.
- Leverage public funding for early stages of preparation and financing at the portfolio level that can help prepare and de-risk projects, respectively, remain crucial for the success of private participation in Africa.
- Conduct comprehensive needs assessments and prioritise projects aligning with national and regional goals.
- Evaluate options for private sector involvement and early-stage viability.
- Address technical requirements, balanced risk matrices, and financial considerations.
- Ensure well-drafted contracts and transparent bidding processes for credibility and value for money.

Increasing Bankability for the Pipeline of Investable Projects

- Develop bankable project pipelines through analytic process and risk mitigation.
- Enhance commercial viability through feasibility studies and stakeholder engagement.

Strengthening Domestic Resource Mobilisation and Private Capital Mobilisation

- Mobilise Domestic Capital for Infrastructure.
- Promote PPPs.
- Lower Capital Costs.
- Leverage Blended Finance.

Leveraging Multilateral and Climate and Nature Finance

- Collaborate with MDBs.
- Leverage Climate Finance to Develop Infrastructure in Africa.
  - Create a Sound Enabling Environment. Putting in place appropriate legal and regulatory frameworks that will enable private sector participation in sustainable finance.
  - Align Infrastructure Plans with National Climate Strategies while recognising that national circumstances and development priorities vary significantly across countries, including within Africa.
  - Mainstream Climate Risk and Resilience into Project Design.
  - Develop Bankable Projects.
  - Align Projects with Investment Criteria of Key Climate Finance Sources.
  - Strengthen Institutional Capacity to Manage Climate Finance.
  - Capitalise on Regional and Programmatic Approaches.

  - Prioritise Climate-smart Basic Infrastructure.
  - Leverage Carbon Markets into an African Opportunity.
- Scale Nature-Based Finance.
- Develop Country and Regional Climate Investment Platforms.

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