



Chapter 4

Innovative Financing for Strategic Infrastructure Development

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Anbumozhi, V., T.Riefky, E.Hariyanto, and H.Alamsyah (2023), 'Innovative Financing for Strategic Infrastructure Development', in Indrawati, S.M., T.Anas, C.F.Ananda and F. Zen (eds.), *Infrastructure for Inclusive Economic Development Vol.1: Lessons Learnt from Indonesia*. Jakarta: ERIA and Ministry of Finance, pp. 82- 107.

Infrastructure contributes positively to resolving economic, social, and environmental issues through its role in improving economic growth, decreasing disparity, enhancing connectivity, and strengthening resilience through climate mitigation and adaptation efforts; infrastructure development in Indonesia is unquestionably needed. However, there is a substantial gap in infrastructure financing. As stated in the *Rencana Pembangunan Jangka Menengah Nasional* (National Medium-Term Development Plan), national infrastructure investment throughout 2020–2024 necessitates Rp6,445 trillion. Such an amount entails the need for alternative financing. This chapter formulates policy recommendations that could be implemented to spur the growth of innovative financing for infrastructure development.

1. Background

Indonesia spans more than 5,000 kilometres across South-East Asia, comprising over 17,000 islands. It straddles the equator and is positioned in the Ring of Fire, where almost 90% of global earthquake events occur (Kramer, 1996). Indonesia is home to a population exceeding 275 million people, ranking it as the fourth most populous country globally.¹ With the third-longest coastline, Indonesia faces a heightened vulnerability to the adverse effects of climate change and biodiversity loss.

The ramifications of climate change in Indonesia are multifaceted, encompassing aspects like increased precipitation, sea-level rise, and disruptions in the food supply (Case, Ardiansyah, and Spector, 2007). The susceptibility of Indonesia towards rising sea levels is also reflected by the fact that around 25% of Indonesian economic activities takes place on its coastline (Dahuri and Dutton, 2002). A 1-metre sea-level rise could flood 405,000 hectares of coastal lands, specifically on the northern coast of Java, eastern coast of Sumatra, and southern coast of Sulawesi (Oktaviani et al., 2011). This could impact agricultural activities through storm surges, flooding, and salinisation of coastal aquifers. Moreover, Badan Riset dan Inovasi Nasional (National Research and Innovation Agency, BRIN) estimated that hundreds of Indonesia's small islands are at serious risk of sinking due to sea-level rise and land subsidence (Ramdhan, Amri, Priyambodo, 2019).

The changing global climate also poses a serious threat to Indonesia's food security and overall well-being/welfare. Boer (2010) estimated that climate change may/could lead to a reduction of approximately reduce its rice supply and maize output by around 300,000 tonnes in rice supply and up to 10,000 tonnes in maize output in the country. Given that Indonesia has the , respectively.

¹ Worldometer, Countries in the World by Population (2022), <https://www.worldometers.info/world-population/population-by-country/> (accessed 16 July 2023).

Having the sixth-largest cropland area worldwide globally, nearly almost 30% of its Indonesia's labour force is engaged is working in agriculture--related sectors, and contributinges to approximately around 12% of the country's Indonesian its rice supply by about 300,000 tonnes and maize output by up to 10,000 tonnes. As a country with the sixth-largest cropland area in the world, almost 30% of its labour is working in agriculture-related sectors, contributing around 12% of gross domestic product (GDP) (Statistics Indonesia, 2022). The threat risk of elevated high and fluctuating volatile food prices is especially pronounced for impoverished even more prevalent for poor and vulnerable households ,as the lowest bottom decile allocates as much as their spending to food up to 64.3% of their expenditure to food, in stark contrast to the while the top 20% of households, who allocate 'only' allocated 41.9% of their spending toon food (World Bank, 2020). Furthermore, it has been also observed in poor household that impoverished households experience a higher incidence of they have higher incidence of food malnutrition, often due to as it is related to a rather insufficient access to healthcare conditions and calorie intake.

Indonesia is also the fourth-biggest polluter in the world, producing around 1,959 metric tonnes of carbon dioxide equivalent.² Economic activity is driven by highly carbon-intensive manufacturing, the largest sector in the economy with around 20% of contribution to GDP. While Indonesia has sustained a steady 5% growth rate over the past 2 decades, this achievement has come at a significant environmental cost. The expansion of production and economic activities has led to extensive deforestation. In the period from 2001 to 2020, Indonesia lost approximately 227.7 million hectares of forest cover, which accounts for roughly 17% of the country's total forest cover and 6.7% of the global tree cover loss.³ Consequently, the forestry sector emerges as the leading source of greenhouse gas emissions in Indonesia.

All of these issues have hindered Indonesia's achievement of the Sustainable Development Goals (SDGs). Of 17 SDGs, seven are still facing 'major challenges', seven are facing 'significant challenges', and only three face 'challenges' (Sachs et al., 2023). Regardless, Indonesia is progressing steadily towards SDG achievement. In 2010, its overall SDG index was 61.7, gradually increasing to 69.2 in 2022. Four SDGs are on track, nine have been moderately improving, and four are stagnating (Sachs et al., 2023).

Indonesia is thus at a critical juncture. After the turmoil brought by the COVID-19 pandemic, it is time to face the challenges of long-term development such as economic growth, welfare, and climate change. Infrastructure serves as a fundamental means to resolve these challenges. The provision of well-distributed and resilient infrastructure contributes to wide-ranging goals, from poverty eradication to resolving climate threats. SDG 9 – building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation – is the most direct reference to the role of infrastructure in supporting the sustainable development agenda. Indonesia also

² Climate Watch, <http://cait.wri.org>

³ Global Forest Watch, <https://www.globalforestwatch.org/> (accessed 10 May 2022).

must push forward climate-change adaptation efforts, and resilient infrastructure plays a vital role in this effort. Indonesia will suffer a loss of Rp544 trillion during 2020–2024 from climate change without substantial adaptation efforts (Bappenas, 2021); therefore, it must incorporate resiliency in its infrastructure development. Resilient infrastructure is defined as ‘a component, system or facility that is able to withstand damage or disruptions, but if affected, can be readily and cost-effectively restored’ (Scalingi, 2007). The Organisation of Economic Co-operation and Development (2018) further elaborated that resilient infrastructure should anticipate, prepare for, and adapt to changing climate conditions so that this idea is integrated into every stage of infrastructure development.

According to Lu (2019) and World Bank (2019), building resilient infrastructure provides extensive benefits, especially for Indonesia as one of the most disaster-prone countries in the world. Identifying climate and disaster risks in building and the maintenance of infrastructure increases infrastructure’s lifespan and ensures prolonged utilisation and lower maintenance costs, and minimises the damage to livelihoods and welfare of citizens impacted by disasters. Moreover, resilient infrastructure can ensure business continuity due to minimum business disturbances in the event of a disaster.

Infrastructure development plays an important role towards achieving other SDGs (Casier, 2015). In terms of economic growth and distribution, various studies found that infrastructure provision promotes economic growth, and higher quantity and quality of infrastructure are associated with lower income inequality (Kessides, 1933; Calderón and Servén, 2004; Égert, Kozluk, Sutherland, 2009; Srinivasu and Rao, 2013; Mutiiria, Ju, Dumor, 2020; Syadullah and Setyawan, 2020; Fosu and Twumasi, 2022).

The government’s commitment to accelerate infrastructure development is demonstrated by the creation of a priority programme known as *Proyek Strategis Nasional* (PSN), managed by *Komite Percepatan Penyediaan Infrastruktur Prioritas* (the Committee for the Acceleration of Priority Infrastructure Delivery, KPPIP). By developing infrastructure, the PSN aims to accelerate economic growth, accelerate the development agenda, increase welfare, and reduce socioeconomic inequalities across its many regions in a sustainable manner. PSN projects span various sectors – such as transport, energy, information technology, and housing – and are aligned with the SDGs.

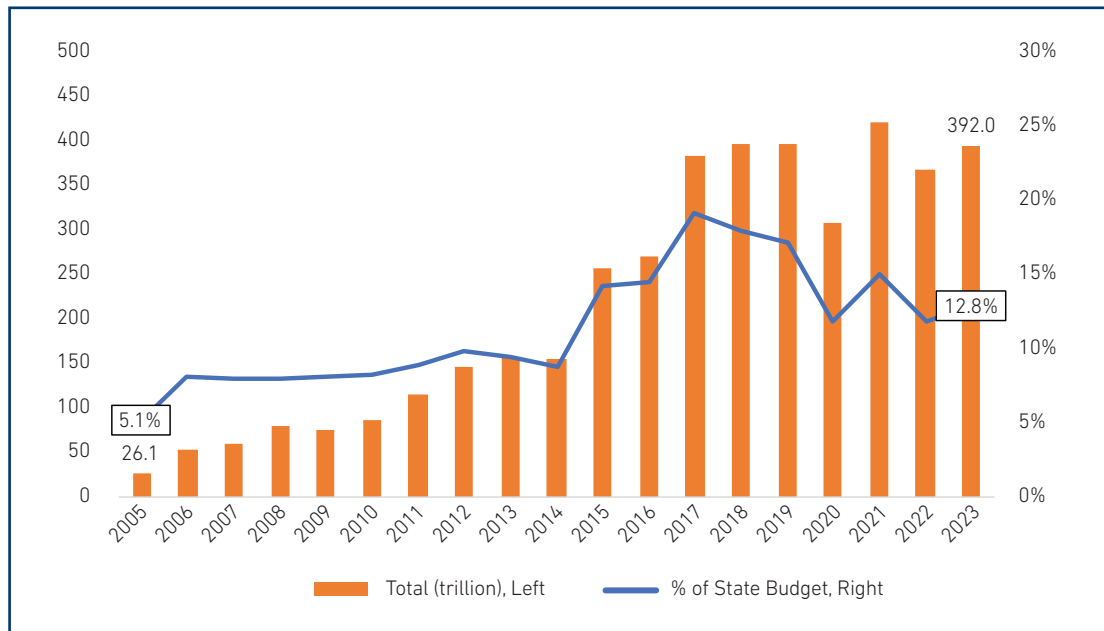
Given Indonesia’s limited financial resources, the most significant obstacle is financing these enormous undertakings. Due to the inflexibility of the State Budget on both the expenditure and revenue sides, financing infrastructure development requires substantial contributions from other sources – a prevalent global practice. Infrastructure also necessitates technological innovation, which is the primary capability of the private sector. Consequently, there is a pressing need to utilise the private sector for infrastructure financing. Yet accessing private funds is difficult, particularly given Indonesia’s relatively shallow financial market.

2. Financing Sources for Infrastructure in Indonesia

As stated in the *Rencana Pembangunan Jangka Menengah Nasional* (National Medium-Term Development Plan, RPJMN), 2020–2024, the need for national infrastructure investment will reach Rp6,445 trillion – equivalent to around 11% of the annual GDP, 68% of annual realised national government spending and 29% of total financial assets (CEIC, n.d.). The State Budget is expected to fund 37%, state-owned enterprises (SOEs) 21%, and the private sector 42%.

KPPIP has completed 153 PSN projects, with estimated financing of Rp1.040 trillion since 2016 (KPPIP, 2022). This amount is small to the total financing needs for all PSN development, as total projects number 210. From 2022 to 2024, total investment needs for all PSN projects is around Rp5.746 trillion (KPPIP, 2022).

Figure 4.1. Infrastructure Allocation in State Budget, 2005–2023



Source: CEIC (n.d.).

Allocation for infrastructure spending is Rp392 trillion or around 12.8% of total 2023 State Budget expenditure (Figure 4.1). Despite increasing over the last 15 years, infrastructure spending has slightly decreased from its peak of Rp418.26 trillion in 2021. Also, as a portion of the State Budget, infrastructure spending reached its height in 2017, at almost 20% of the total State Budget. The State Budget for infrastructure spending will be allocated through four spending groups.

Of the Rp392 trillion, Rp189.2 trillion (48%) will be from various ministries and governmental bodies. About Rp93.0 trillion (24%) will be from regional governments, which includes *dana alokasi khusus* (special allocation funds, DAK), special autonomy funds for infrastructure, and village funds. Next, Rp85.7 trillion (22%) will be allocated through refinancing, which includes a liquidity facility and *penyertaan modal negara* (state equity participation, PMN) for SOEs. While there are no details regarding PMN in the infrastructure budget for 2023, its figure reached its peak in 2022 with Rp38.5 trillion, an increase of more than 100% compared to only Rp19.0 trillion in 2021. This spending was intended to restructure some infrastructure SOEs and to bolster their financing capacity in building infrastructure. In addition, non-governmental bodies will contribute about Rp24.2 trillion (6%), including viability gap funding (VGF) and official grants and assistance. Official grants and assistance reached Rp4.8 trillion in 2022 and are expected to decrease; as of 2023, Indonesia is no longer categorised as lower middle-income country but as an upper middle-income country.

From the standpoint of the State Budget, Indonesia is comparable to most developing nations in that it has relatively limited fiscal space. The RPJMN 2020–2024 projects that the State Budget contribution to infrastructure investment will be approximately Rp477 trillion per year or Rp2,384.65 trillion until 2024. However, cumulative spending for infrastructure from the State Budget during 2020–2023 only amounted to Rp1,483 trillion or Rp371 trillion annually. As mentioned, according to the 2023 State Budget, the allocation for infrastructure spending is only around Rp392 trillion, suggesting that the allocation for infrastructure spending in the 2024 State Budget must reach Rp902 trillion – an increase of 230% from 2023 – to fulfil its expected contribution.

Increasing the State Budget allocation for infrastructure would be challenging. Due to numerous mandatory spending items, debt burden obligations, a sizable amount of social spending, and brown energy subsidies, Indonesia's public spending posture is relatively inflexible regarding prioritising infrastructure financing without drastic reform. The State Budget's realisation for energy subsidies and compensation in 2022 was recorded at Rp551.2 trillion, around 40% higher than allocated infrastructure spending for 2023.

The government did announce a fuel subsidy reform in September 2022. This reform involved raising fuel prices to preempt potential increases in anticipate further fuel subsidies hike and to better target improve subsidies target towards vulnerable groups. Nevertheless, Indonesia's efforts to reform fuel subsidies should be accompanied by a comprehensive strategy to enhance the complemented with various effort of quality of government spending improvement.

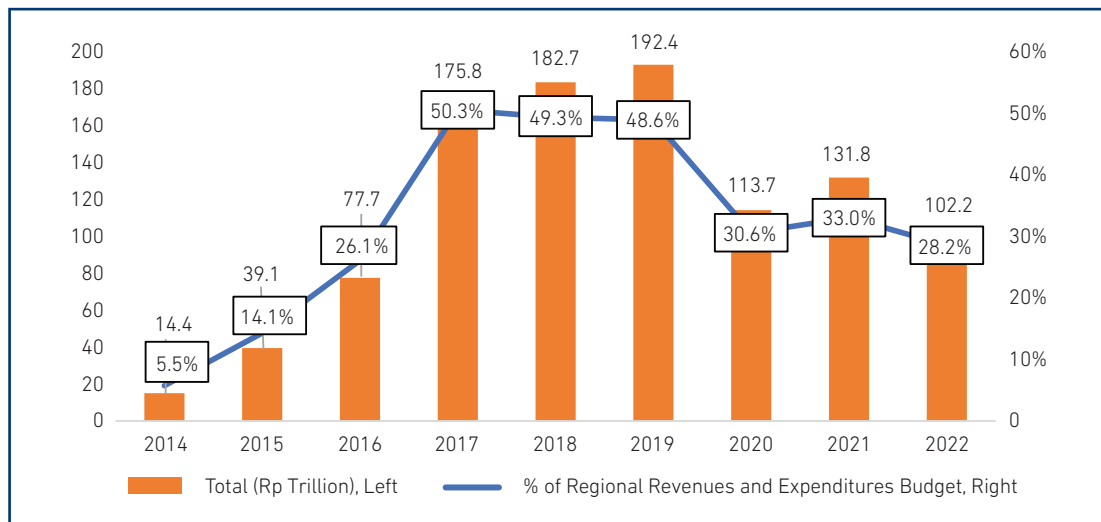
Indonesia's Several key areas to be focused on by Indonesia's fiscal spending should prioritise several key areas, as outlined by the World Bank in 2020, including social assistance, education, healthcare, housing, road and infrastructure, road development, water resources, and sanitation

(World Bank, 2020). Moreover, efforts to improve spending allocation must be improvement should also be coupled with advancements in expenditure management, the utilisation of data, utilization, and reforms in intergovernmental fiscal transfer systems reform.

Nevertheless, the question of increasing overall budget spending or increasing the budget deficit is often met with the issue of debt sustainability. Although the State Budget deficit must stay below 3% of GDP each year, the current burden of interest payments as a share of government expenditure has been doubled due to the need for expansionary fiscal policy during the COVID-19 pandemic. Now at 15% of total State Budget expenditure, interest payments more than doubled compared to the 2013 figure of only around 7%. In addition, the current higher interest rate regime cycle has pushed up government bond yields. Therefore, the inevitability of accumulating more debt arises if any augmentation in fiscal spending is not accompanied by a proportionate increase in revenue. Consequently, a larger share of future spending will have to be allocated to interest payments, further exacerbating Indonesia's debt sustainability challenges.

The challenge of enhancing fiscal capacity also lies in revenue. Indonesia enjoyed stable and high economic growth due to a commodity boom until 2013. During 2022, the world experienced a cycle of high energy prices; Indonesia had a windfall profit in terms of state revenue, marking its first budget surplus since 2014. However, during the normal absence of high commodity prices, Indonesia has had stubbornly low tax revenue. Despite a slight increase to 10.4% of tax revenue to GDP in 2022 from 9.1% in 2021, Indonesia's average tax ratio has been 10.3% since 2010, substantially lower than the Asia-Pacific average of 21.0% and Organisation for Economic Co-operation and Development (OECD) countries' average of 33.4%.

Figure 4.2. Region Transfer and Village Funds for Infrastructure Purposes



Source: CEIC (n.d.).

On the sub-national level, the capacity to finance infrastructure development is also low. Based on the 2022 realised provincial state budget, total provincial state expenditure is around Rp361 trillion (Figure 4.2). Comparing this with the total regional transfer and village funds for infrastructure from the central government, the central government share in the regional state budget for infrastructure is rather substantial. Despite showing a lower trend, the share in 2022 is around 28%, suggesting that the financing for infrastructure development on the sub-national level relies heavily on the budget transfer from the central government.

Given the inflexibility of the State Budget – both from the expenditure and revenue side and on the national and sub-national level – financing for infrastructure development requires considerable contributions outside of the State Budget. In addition, forcing the State Budget to carry the burden of infrastructure development without significant contributions from other economic actors is not feasible. The government is aware of this situation; the RPJMN 2020–2024 suggests that 19% or Rp1,353 trillion of infrastructure investment will be from SOEs. The largest portion of infrastructure investment – around 42% – will be contributed by the private sector, around Rp2,706 trillion.

The government may mandate that SOEs build particular projects or may invite SOEs to participate in the public–private partnership (PPP) tendering process as profit-seeking enterprises competing with other private companies – however, this action should be done with caution. Crowding-out effects must be avoided, which would prevent private investment from taking part in the infrastructure sector if SOEs compete with other private enterprises for PPP contracts. It is crucial to support the private sector in the long run to have a robust, effective, and healthy infrastructure market. SOEs may be granted some advantages over their wholly private competitors, however. For instance, they can obtain funds from the State Budget at a lower rate.

If SOEs are given infrastructure development tasks that are unattractive to private enterprises, they may forgo their potential earnings by taking on riskier projects. Although the government's assignment is often accompanied by a partial capital injection, projects with a low ability to recover costs may require further subsidies to operate. This may reveal hidden liabilities for the State Budget's future. Policymakers should thus place SOEs and private investors fairly to avoid jeopardising their potential for growth and to balance their respective contributions to the infrastructure market.

Indeed, tapping into private funds for infrastructure development is by no means easy. One substantial factor is Indonesia's relatively shallow domestic financial market, which is characterised by the dominance of the banking sector, which accounted for around 76% of total financial sector assets. Banking dominance poses a problem, as bank lending is not well designed

to finance long-term infrastructure projects. Today, high infrastructure financing demand cannot be matched by bank financing only, as the 2008 global financial crisis resulted in stricter regulations on banks and their lending requirements under Basel III. Banks that have short-term liabilities are not well suited to hold long-term debt, as this inevitably limits infrastructure assets that can safely be held. Thus, Indonesia's financial market must be deepened to enhance domestic resources mobilisation towards infrastructure.

3. Innovative Finance: Potential and Implementation

3.1. Definition

The inability to fulfil the investment needs for Indonesia's infrastructure development agenda through the State Budget and traditional private financing schemes has created the need to use innovative financing. The term 'innovative financing for development' was coined in the early 2000s, but there is no internationally agreed on definition. The term encompasses a heterogeneous mix of innovations in fundraising and innovations in spending. The World Bank (2009) defined innovative financing for development as

those that depart from traditional approaches to mobilizing development finance—that is, through budget outlays from established sovereign donors or bonds issued by multilateral and national development banks exclusively to achieve funding objectives. Innovative development finance therefore involves non-traditional applications of solidarity, PPP, and catalytic mechanisms that (i) support fundraising by tapping new sources and engaging investors beyond the financial dimension of transactions, as partners and stakeholders in development; or (ii) deliver financial solutions to development problems on the ground.

In addition, Sandor et. al. (2009) from OECD considered innovative financing to comprise the mechanism of raising funds or stimulating actions in support of international development that go beyond traditional spending approaches by either public or private sectors.

Based on those definitions, innovative financing can take many forms, including government *sukuk*, PPPs, and SDG financing. To enhance the potential of innovative financing, it is essential to formulate the right scale and mix of finance and to leverage synergies between private and public financial flows. Further, domestic resources mobilisation is crucial to optimise the flow of financing towards infrastructure projects. Besides domestic resources, external funding can be key (Songwe et al., 2022). This external financing can come from multilateral institutions, philanthropy, or international private financial institutions.

3.2. Types

There are two popular types of innovative finance: PPPs and blended finance. In both cases, additional funding is provided by sources other than the government budget, with stipulations attached. Depending on the instruments' funding requirements, the public sector can be responsible for raising or authorising them, albeit through innovative forms of mobilisation.

3.2.1. Public–Private Partnerships

In Indonesia, PPPs began in the early 1990s when the private sector started to participate in toll-road and energy sector projects. From 1990 to 2022, 147 PPPs in Indonesia across various sectors were completed, with a total investment of \$74 billion.⁴ Based on sectoral contribution, electricity dominated, with 72 projects and a total investment of \$43 billion, followed by roads with 29 projects and a total investment of \$8 billion. However, 13 projects representing 9.16% of total investment were cancelled.

To support the development of PPPs to enhance investment participation from the private sector, the government has made continuous efforts to institutionalise and to promote PPPs by enhancing the PPP regulatory framework. Currently, Indonesia has several innovative financing instruments as PPP-facilitating mechanisms, including the Project Development Facility (PDF), guarantees, VGF, availability payments, and a land acquisition financing mechanism. Furthermore, various institutions were established to support PPP facilitation in Indonesia, including PT Indonesia Infrastructure Finance (PT IIF), a private nonbanking finance corporation; PT Penjaminan Infrastruktur Indonesia (PT PII), an SOE under the Ministry of Finance (MOF) that is responsible for providing government guarantees for infrastructure projects developed under PPPs; and PT Sarana Multi Infrastruktur (PT SMI), an SOE that provides long-term financing and advisory services for infrastructure development.

While PPPs continue to play roles in infrastructure investment and innovative financing, the adoption of PPPs still can be improved. Several characteristics are considered significant in spurring their adoption, including consistent policy, public sector capability to handle PPPs appropriately, public sector commitment to developing cooperative relationships with private partners, and leadership (Zen, 2019). In addition, there are four key areas that can be addressed to improve private participation in infrastructure development: improving efficiency in bureaucracy and regulations, enhancing government support and facilities, providing more efficient land acquisition support and mechanisms, and strengthening PPP contracts (APEC Policy Support Unit, 2019).

⁴ World Bank, Country Snapshots: Indonesia, <https://ppi.worldbank.org/en/snapshots/country/indonesia>

3.2.2. Blended Finance

Blended finance schemes are implemented to discover optimal financial structures that combine multiple funding and financing sources from the government, the private sector, donors, and philanthropists in a single project. They aim to reduce risk or to modify risk-reward to transform an intolerable investment opportunity into an acceptable one. Blended financing can be implemented to support the entire lifecycle of a project by being tailored to each phase. For example, a concessional fund assumes a sizeable portion during high-risk phases and progressively decreases as commercial funding increases.

The PDF, VGF, guarantees, and availability payments are all examples of government support for blended finance. The concepts of innovative financing and blended finance have been implemented in infrastructure development in Indonesia, as in the Sumatra Toll Road project. This is a project for 24 toll roads in Sumatra that connect Lampung to Aceh. With a total toll length of 2,749 kilometres, the required investment cost is estimated at Rp684.7 trillion. Due to the large investment cost, based on a presidential regulation, the government optimised the role of SOEs by assigning PT Hutama Karya to construct the toll road. The construction of 24 sections was divided into 4 phases, which are targeted for completion by the end of 2024.

Although the Sumatra Toll Road has a low level of financial feasibility, it provides a crucial economic multiplier impact for the development of Sumatra. In assigning PT Hutama Karya, the government provided guarantees for loans and provision of state equity participation to fulfil the project's equity. In addition, in maintaining the sustainability of toll-road development, the government provided an option for PT Hutama Karya to be able to divest the sections operating, where the proceeds can be used to reduce its financial burden or as capital for the construction of other sections. The asset-recycling concept implemented through the toll-road divestment is a form of blended finance, making several sections have a level of financial feasibility attractive to investors.

Blended finance was implemented in the second phase of the project as well. Through Presidential Decree No. 131 of 2022, the government formulated a funding scheme for the completion of Phase 2 through a construction support scheme – funded through the Ministry of Public Works and Housing's capital expenditure or domestic and foreign loans – and an annuity payment periodically made from the ministry to PT Hutama Karya for services on the Sumatra Toll Road according to the quality and/or criteria stipulated in the toll road concession agreement.

In addition, Indonesia has established SDG Indonesia One, a platform utilising a blended finance scheme to attain the SDGs. Its concept includes SDG development facilities, SDG de-risking facilities, SDG financing facilities, and an SDG equity fund. As of April 2023, it has secured \$3.27 billion in funding commitments, including \$939 million in agreements and \$325 million in realised funds. SDG Indonesia One includes funding for 17 sectors, 38 grants, and 42 technical assistance activities. It has delivered five project preparation, six project financing, and one project management documents as well.⁵

3.2.3. Green Bonds and *Sukuk*

Initiatives to promote the development of green bonds have also started to occur in Indonesia. Since the establishment of the regulation for the issuance and terms of green bonds by Otoritas Jasa Keuangan (Financial Services Authority, OJK) in 2017, the green bond market has slowly been emerging. The regulation brought a positive impact on the development of domestic green bonds and triggered the issuance of 13 deals of green bonds, including 5 corporate bonds issued domestically (Table 4.1). The size of Indonesia's green bond market has grown to \$6.3 billion, the second-biggest green bond market in the Association of Southeast Asian Nations (ASEAN) region after Singapore. According to Badan Kebijakan Fiskal (the Fiscal Policy Agency, BKF) (2019), the green bond market has played a special role in the development of the Ecological Fiscal Transfer instrument in the budget transferring mechanism to sub-national governments.

The green bond market in Indonesia is still dominated by the government, as green bonds issued by MOF and PT SMI account for around 69% of total outstanding green bonds. This is an improvement, as the domination of the government/government-related green bonds issuance previously reached 83% of the total in 2021 (Climate Bonds Initiative, 2022).

⁵ PT SMI, SDG Indonesia One, <https://ptsmi.co.id/sdg-indonesia-one>

Table 4.1. Green Bond Issuance in Indonesia

Issuer Name	Amount Issued	Issue Date	Use of Proceeds
Indonesia (green retail <i>sukuk</i>)	\$350 million	Nov 2021	Energy, Waste, Water
Indonesia (global green <i>sukuk</i>)	\$750 million	Jun 2021	Energy, Waste, Water
Indonesia (green retail <i>sukuk</i>)	\$378 million	Dec 2020	Energy, Waste, Water
Star Energy Geothermal (Darajat II)	\$320 million	Oct 2020	Energy
Star Energy Geothermal (Darajat II)	\$790 million	Oct 2020	Energy
Indonesia	\$750 million	Jun 2020	Energy, Waste, Water
Indonesia (green retail <i>sukuk</i>)	\$98 million	Nov 2019	Energy, Waste, Water
Indonesia	\$750 million	Feb 2019	Energy, Waste, Water
OCBC NISP	\$150 million	Aug 2018	Energy, Transport, Water
PT Sarana Multi Infrastruktur	\$350,000	Jul 2018	Transport, Energy, Waste, Water, Land Use
Star Energy Geothermal (Wayang Windu)	\$580 million	Apr 2018	Energy
Indonesia (global green <i>sukuk</i>)	\$1.25 billion	Mar 2018	Energy, Waste, Water
Tropical Landscape Finance Facility I	\$96 million	Feb 2018	Land Use
Total	\$6.3 billion		

Source: Climate Bonds Initiative (2022).

One of the emerging green bond investment categories is land use (Climate Bonds Initiative, 2019a). As land use, including forestry, is considered a key driver for environmental issues and emits greenhouse gases, it helps increase green bonds in Indonesia and make a positive impact on the environment. One region that targets land use in its green bonds is Latin America (Climate Bonds Initiative, 2019b).

Currently, corporate green bond development is relatively scarce. Besides a liquidity problem, Climate Bonds Initiative (2019a) identified several other aspects that limit the growth of Indonesia's green bond market. First, the cost of green bonds for small issuers is more expensive than loan financing. Legal fees and the costs of reviews and obtaining credit profiles may be an obstacle for smaller borrowers. Second, credit profiles are crucial for investors to determine their willingness to invest in any projects, including green projects. Credit profiles for green projects include the track record of the project sponsor, an independent credit rating (both domestic and international), execution risk, and market risk. A poor credit profile will attract less financing for a project;

in Indonesia, the number of green projects with good credit profiles is low. The absence of an independent multinational rating for green projects also makes it difficult for foreign investors to assess domestic green projects. Furthermore, while some green project developers have good domestic credit ratings, an international credit rating for issuers is usually much lower due to additional risk, such as country and currency risks.

Moreover, there is a lack of market awareness of green instruments. Most developing countries lack awareness of such financial instruments, explaining the shallow financial markets and low demand. This barrier limits the domestic demand for such instruments, so green bonds may need to access international bond markets to gather adequate funds for projects.

3.2.4. Pension Funds

As the nature of infrastructure development is long term, the instruments to fund such projects need match its time horizon. An ideal source of alternative financing is thus pension funds. The stream of funds for pensions is relatively stable; investors are aiming for the long term. Globally, the total value of pension funds invested in infrastructure increased from less than \$29 billion in 2007 to almost \$245 billion in 2018. In addition, the infrastructure investment share of pension funds was 12.0% in 2007, rising to 47.5% in 2018.⁶

A study by Carlo et. al. (2023) found that pension funds with higher allocations to alternative assets are more likely to invest in infrastructure. Infrastructure investment was amongst the best-performing asset classes as measured by net returns, and there was persistence in pension fund infrastructure investment performance over a 1-year horizon.

In Indonesia, utilisation of pension funds for infrastructure investment has potential. As of April 2023, the asset size of pension funds in Indonesia was Rp352 trillion (OJK, 2023). Considering its size, pension fund contribution – if all assets are allocated – to infrastructure investment would be equivalent to 13% of total infrastructure financing by the private sector.

⁶ CEM, <https://www.cembenchmarking.com>

3.2.5. Trust Funds

Trust funds are an underdeveloped financial instrument in Indonesia. Due to the lack of a supporting enabling environment that arises from regulation and policy circumstances, many entities – such as ultra-wealthy individuals, international donors, and investors – have placed their money abroad in trust funds. Some grants, formed from these trust funds, which are dedicated to climate finance in Indonesia are managed by the Indonesia Climate Change Trust Fund (ICCTF). In the first quarter of 2023, cumulative funds disbursed by the ICCTF were \$4.34 million, from a total grant amount of \$5.22 million (ICCTF, 2023). Despite the ICCTF being responsible for piloting managerial and technological innovations that foster the mainstreaming of climate-relevant programmes and activities, the establishment of resilient infrastructure is still lacking in those projects. Meanwhile, in Japan, the Japan International Cooperation Agency Trust Fund managed a ¥4.6 billion grant for rehabilitation and recovery from Typhoon Yolanda in the Philippines, including increasing the resiliency of Tacloban Airport, which amounted to ¥237 million⁷ (JICA, 2022).

3.2.6. Venture Capital

Venture capital typically comes from investors with long-term investment horizons. These investors usually provide a minimum, early-stage investment – seed capital – to spur private investment and to raise more capital. This kind of investment can boost the bankability of infrastructure projects as they address investment gaps from an early stage. One example is Meridiam Infrastructure; with more than 120 projects around the world focussed on critical public services, sustainable mobility, and innovative low-carbon solutions, Meridiam Infrastructure has invested more than \$80 billion since 2005 and currently has more than \$20 billion worth of assets under management.⁸

In Indonesia, there is currently no venture capital investment in infrastructure. In 2021, the value of venture capital funding in Indonesia amounted to around Rp139.5 trillion (Statista, 2023). However, most of this fund has been channelled into digital start-up companies. While it is relatively uncommon to tap venture capital funds to finance infrastructure projects, Indonesia could bridge the infrastructure investment gap. Venture capital is known to have a high tolerance for risks, which is suitable to finance certain infrastructure projects such as geothermal energy power plants.

⁷ https://www2.jica.go.jp/en/evaluation/pdf/2021_1560330_4_f.pdf

⁸ Meridiam, Meridiam at Numbers, <https://www.meridiam.com/our-impact/meridiam-in-numbers/>

3.2.7. Hajj Funds

Another potential source of funds for in Indonesia – a country with the highest Muslim population in the world – are Hajj funds. Pilgrims' saving accounts are managed by the Ministry of Religious Affairs. Based on 2022 financial statements of Badan Pengelola Keuangan Haji (Hajj Fund Management Agency, BPKH), its total assets amount to Rp167.8 trillion – plenty of funds to be invested in conventional bonds, *sukuk*, and state securities. Yet with its nature of long-term income streams, infrastructure serves as an ideal investment alternative in the hajj savings portfolio. Funds can be used to finance resilient infrastructure in accordance with Sharia, as hajj savings requires its use of proceeds to follow such laws.

In Malaysia, Lembaga Tabung Haji has completed projects exceeding RM1 billion in value, including those for infrastructure. However, considering the high risks embedded in these projects, the implementation of hajj savings as a non-conventional financing scheme for resilient infrastructure may be difficult. Therefore, support from other schemes, such as guarantees, can ensure the feasibility of hajj savings as a non-conventional financing scheme.

3.2.8. Land Value Capture

Land-value capture (LVC) is an economic policy approach and type of public financing that recovers and recycles value that public infrastructure generates for private landowners. The uplift in land and property values that result from public investments (e.g. a new road) can be substantial, and LVC allows governments to 'capture' some or all of this uplift to fund the public infrastructure or service provision.

LVC can take various forms and has been implemented in many countries, such as through an infrastructure levy (Colombia), developer obligations (Germany), charges for development rights (Brazil), land readjustment (Japan), and strategic land management (Netherlands). Another example is the extension of the Jubilee Line in London. In the late 1990s, the London Underground extended the Jubilee Line to include several new stations, which improved public transport accessibility to previously less-connected areas (Banister, 2005). This extension led to an increase in property values within 1 kilometre of the new stations by approximately £13.0 billion; the cost of extending the Jubilee Line was only around £3.5 billion. At the time, there was no established LVC mechanism, so the public sector could not capture this uplift in land and property values to help fund the extension.

This case underlined the potential of LVC as a funding source for infrastructure projects and led to a renewed interest in LVC mechanisms throughout the world. It also illustrated missed opportunities when mechanisms are not in place to capture value uplift, emphasising the importance of putting such systems in place before undertaking major infrastructure projects. To anticipate a similar situation in the future, the Greater London Authority and Transport for London are exploring ways to use LVC to fund infrastructure projects, including the Northern Line extension to Battersea and the proposed extension of the Bakerloo Line (Greater London Authority, 2017).

LVC schemes have not been implemented in Indonesia, and the legal framework for LVC is non-existent. The Trans-Sumatra Toll Road, however, has the potential to implement an LVC instrument (ADB, 2021). The challenge is to build the capacity of the relevant parties and to incorporate suitable LVC mechanisms into the development of business cases for large-scale infrastructure projects. ADB (2021) suggested establishing a policy framework, building capacity, and implementing smaller pathfinding projects within the existing regulatory and tax framework in the short term. An action plan would require regulatory changes in the national tax framework, implementation of a national LVC legal framework, and implementation of economic development corridor projects.

3.2.9. Carbon Pricing

As part of an effort to expand fiscal space on the revenue side, MOF implemented tax policy reforms in 2022 through the issuance of the Law on Harmonisation of Tax Regulations. The legislation includes carbon tax regulations and serves as an integral part of Indonesia's broader carbon pricing road map, which also includes introduction of an emissions trading system and carbon crediting mechanism. The initial plan was to implement a 'cap-and-tax' scheme for coal-fired power generations from 1 April 2022, but as of July 2023, there is no clarity on the updates of the carbon tax launch. The regulation specifies that the carbon tax will serve as a levy for coal-fired power plants of Rp30,000 per metric tonne of carbon dioxide equivalent above a set limit.

Despite its limited sector coverage and a relatively low carbon price compared to other nations, the implementation of the carbon tax in Indonesia represents a step forward in the journey towards climate transition and lays the groundwork for the establishment of a carbon market by 2023. The introduction of a carbon market would rectify market distortion by aligning incentive mechanisms with the appropriate level of carbon pricing (Basri and Riefky, 2023). The carbon price needs to be \$50 to \$100 per tonne of carbon dioxide equivalent by 2030 to keep global warming to 2°C (High-Level Commission on Carbon Prices, 2017). Considering this number, the potential revenue from the carbon tax instrument, once implemented, would be substantial and could increase the financing for general infrastructure and other sustainability efforts in Indonesia.

4. Institutions to Implement Innovative Financing

4.1. PT SMI

As a response to the government's commitment to the Paris Agreement and low-carbon and green growth movement, PT SMI is committed to promoting green financing in Indonesia. PT SMI is an SOE and special mission vehicle under MOF. In 2018, as an infrastructure development catalyst, it issued Green Bond Berkelanjutan I Sarana Multi Infrastruktur Stage I. The amount issued was Rp500 billion, part of Rp3 trillion in total, with 3–5-year tenor. About 80.5% of investors are government-related institutions, followed by corporations (10.1%), banks (9.0%), pension funds (7.2%), and individuals (0.2%) (PT SMI, 2022). The Center for International Climate Research-Oslo confirmed that PT SMI's green bond framework complies with the Indonesia Financial Services Authority regulation concerning green bonds and the core principles of *Green Bond Principles 2017* issued by the International Capital Markets Association and *ASEAN Green Bond Standards 2017* issued by the ASEAN Capital Markets Forum (PT SMI, 2020).

Green bonds are used to finance some categories of projects, such as renewable energy, energy efficiency, sustainable pollution management and prevention, low-emissions transport, sustainable natural resources and land-use management, and sustainable water management. These categories ensure alignment with the government's goal regarding green projects. PT SMI stated that projects must have clear environmental benefits and aim to protect, preserve, and/or improve quality and environmental function. PT SMI has allocated all of its funds to three selected projects, two mini hydro projects and one light rapid transit project. It also committed to publishing a report annually to provide investors with information and the progress green bonds on their website. According to World Bank (2018), PT SMI green projects are evaluated based on financial viability and screened for environmental and social risks. PEFINDO, as the rating agency in Indonesia, rates PT SMI's green bonds as AAA.

PT SMI also contributes to infrastructure development through the creation of a funding collaboration platform called SDG Indonesia One. This platform utilises funds from various sources, including private, philanthropic, donor, bilateral and multilateral financial institution, banking, and insurance. As of December 2022, SDG Indonesia One is developing 62 blended finance projects with a \$3.19 billion commitment⁹ through several facilities, including development facilities, de-risking facilities, financing facilities, and equity funds.

⁹ PT SMI, SDG Indonesia One, <https://ptsmi.co.id/sdg-indonesia-one>

4.2. PT PII

Government guarantees for PPPs are part of the role of PT PII as a special mission vehicle of MOF. Additionally, PT PII offers loan guarantees to foreign financial institutions as well as *Pemulihan Ekonomi Nasional* (National Economic Recovery Program) for loans to SOEs. As stated in PPP agreements, the infrastructure guarantee comprises assurances to reimburse business entities for infrastructure-related risks. MOF and PT PII create a joint guarantee when PT PII's financial capacity is insufficient to meet the underwriting.

Infrastructure guarantees have benefited several PPP projects, such as the multifunctional satellite, Palapa Ring Package (West, Central, and East), multiple water supply systems, toll roads, power plants, and trains. These assurances are essential for protecting the project implementing agency's assets and reducing infrastructure risks to the benefit of commercial enterprises.

Through the PDF, PT PII also helps with project planning and transaction support. To obtain funding from financial institutions and to achieve financial closure, the project implementing authority prepares final feasibility studies, tenders paperwork, and offers comprehensive support. An example of a PDF-supported project is the natural gas distribution network for Batam City and Palembang City. Additional projects have received combined PDF and infrastructure guarantees, such as the Makassar–Parepare railway and the Piyungan waste treatment facility.

The combination of the PDF, feasibility support (i.e., VGF), and infrastructure guarantees has also helped facilitate several water supply systems. Feasibility support helps PPP projects with financial feasibility that have already shown economic viability but need more. With approval from the House of Representatives, sub-national governments may also contribute to this support.

As of June 2023, PT PII guaranteed 48 projects with an investment value of Rp498 trillion, including 32 PPP projects and 16 non-PPP projects. The 32 PPP projects are spread across six different sectors, including roads (15 toll roads and 3 non-toll roads), telecommunications (4), electricity (1), water supply (6), transport (2), and energy conservation (1) (PT PII, 2023).

4.3. Lembaga Manajemen Aset Negara

Infrastructure necessitates property acquisition. However, land acquisition presents challenges. Negotiations with landowners frequently involve communities with historical connections to the land. To avoid conflicts and to obtain public support for infrastructure projects, it is necessary to balance the interests of stakeholders and to compensate affected parties. Transparent and inclusive land acquisition procedures aid in problem resolution and confidence building. This method encourages ownership and cooperation amongst affected stakeholders, which facilitates project implementation.

In Indonesia, Law No. 2 of 2012 regulates and simplifies land purchases in the public interest. It defines the government's responsibility for purchasing property for public infrastructure construction. Land acquisition costs are budgeted to ensure the availability of public land. The government has thus established a new position for Lembaga Manajemen Aset Negara (State Asset Management Agency, LMAN) to handle the land acquisition process budget for the PSN. The appointment is governed by Presidential Regulation No. 102 of 2016. LMAN can thus optimise PSN project allocation based on government prioritisation and manage the budget without a 1-year restriction.

During the land acquisition process, several entities collaborate; the procedure is divided into four major steps. The planning process is led by the sector ministry, the project owner. The second stage – preparation – is overseen by the local government. Third, the National Land Agency oversees implementation. Finally, the output is handed up to the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency. During execution, LMAN pays landowners, ensuring fair compensation.

LMAN has updated its landowner compensation policy as well via Presidential Regulation No. 66 of 2020 and MOF Regulation No. 139/PMK.06/2020. The *pembayaran langsung* (direct payment) plan, which pays qualified parties directly, has grown. *Dana Talangan Tanah* (Land Advance Fund, DTT) accounted for 89% of 2020 compensation disbursements (LMAN, 2023).

LMAN received investment budget land acquisition cash from below-the-line State Budget finance, Rp144.46 trillion on 30 June 2023 (LMAN, 2023). LMAN-compensated landowners received Rp113.458 trillion for land for 52 toll road projects, 44 water resource infrastructure projects (38 dam projects, 5 irrigation projects, and 1 raw water facility project), 9 railway projects, 1 port project, 1 national tourism strategic area project, and 6 national capital projects.

4.4. KPPIP

KPPIP plays a significant role in facilitating infrastructure financing in Indonesia. While KPPIP is not a financing entity itself, its work influences the financing environment for infrastructure projects in several ways. First, KPPIP plays a crucial role in preparing projects to make them more attractive to private investors. This includes identifying viable revenue streams, conducting feasibility studies, and helping structure projects in a way that mitigates risks for investors. Second, KPPIP helps facilitate PPPs for infrastructure projects, which can attract private sector financing. It offers VGF and availability payments for projects that are economically viable but not financially viable. Third, KPPIP provides recommendations to the government on policy improvements needed to attract more private sector investment in infrastructure. This can include recommendations on regulatory changes, tax incentives, or other measures to improve the investment climate. Currently, KPPIP is initiating the development of a regulatory framework for LVC in Indonesia and an improvement proposal for infrastructure financing through limited management rights (KPPIP, 2022).

Fourth, KPPIP promotes priority infrastructure projects to potential investors, both domestically and internationally by providing information on projects, facilitating connections between investors and project implementers, and promoting the benefits of investing in Indonesian infrastructure. Lastly, KPPIP acts as a trouble-shooter, helping resolve issues that arise during the financing and implementation of projects. It coordinates with relevant ministries and agencies to address regulatory hurdles, land acquisition issues, and other obstacles that can affect financing.

4.5. Indonesia Investment Authority

The Indonesia Investment Authority (INA), also known as the Sovereign Wealth Fund of Indonesia, was established in 2021 to manage and to invest state funds in productive sectors that can generate economic returns as well as attract foreign investment. INA received a seed capital injection of Rp75 trillion by the government as state equity participation carried out in stages in 2021 (INA, 2023). Until July 2023, INA was able to secure investment commitments from both domestic and foreign investors, amounting to Rp400 trillion.¹⁰ In terms of key sectors, infrastructure is a priority sector of the INA investment portfolio.

As a *sui generis* institution, INA has the unique feature of full authority in investment decision-making to achieve optimal risk-adjusted returns. As an independent entity with a commercial focus, it has the flexibility to explore innovative financing mechanisms and investment structures. This can include infrastructure bonds, green bonds, or other novel financing methods. In addition,

¹⁰ INA, Audited Financial Statements, <https://www.ina.go.id/financial-statement>

INA can play a role in risk mitigation, for example by providing guarantees or other forms of risk sharing. This can make infrastructure projects more attractive to private sector investors. INA can participate in PPPs as an equity investor, helping make infrastructure projects more financially viable and attractive to private sector investors.

5. Financial Market Expansion and Deepening

Generally, financial markets in developing countries are considered underdeveloped, usually characterised by few new transactions, low trading volume, and low liquidity. Indonesia's financial market is no exception. In the context of the bond market, Indonesia is still dominated by local currency-denominated bonds with an amount outstanding at approximately \$411 billion, making up almost 73% of the market. The outstanding amount of foreign currency bonds is about \$152 billion (Asian Bonds Online–ADB, 2023). Regarding local currency bonds, the government also dominates issuance, as 92% of local currency bonds are issued by the central government, sub-national governments, and the central bank (OJK, 2023). Furthermore, as of July 2023, the amount of outstanding corporate bonds only amounted to Rp443 trillion from total bonds outstanding of Rp5,900 trillion, contributing only 8% of Indonesia's bond market (OJK, 2023). Even amongst corporate bonds, the market is rather concentrated. The 30 largest deals account for approximately 70% of the market, with banking and finance sectors dominating others.

Furthermore, only a small fraction of total outstanding conventional bonds and *sukuk* (including green bonds and green *sukuk*) are traded in the secondary market. The small overall size and over-the-counter nature make Indonesia's bond market relatively illiquid, limiting the development of bond issuance for infrastructure purposes, such as green and infrastructure bonds.

Therefore, financial market expansion and deepening are urgently needed. Towards this agenda, the government recently passed the Law on Development and Strengthening of Financial Sector Reform with the purpose of accelerating domestic financial market deepening. Further, it needs to push for the participation of institutional investors who have relatively long-term investment horizons and thus are better suited to financing infrastructure projects.

6. Conclusion and Way Forward

There is little doubt that Indonesia needs to develop its infrastructure. Through its role in boosting economic growth, reducing inequality, and enhancing connectivity, infrastructure provision plays a positive role in resolving economic, social, and environmental issues. It also helps strengthen resilience through efforts at climate mitigation and adaptation. Infrastructure is ideally situated to help Indonesia achieve its long-term development agenda. Indonesia has a significant infrastructure gap that needs to be closed, and doing so will entail a sizable amount of funding.

The main issue is how to finance these enormous projects given Indonesia's comparatively limited financial resources. With the high inflexibility of the State Budget – both from the expenditure and revenue sides – financing for infrastructure development requires considerable participation outside of the State Budget. The urgency to tap potential funds from the private sector to finance infrastructure projects is therefore self-explanatory. Tapping into private funds is by no means easy, especially as Indonesia has a relatively shallow financial market.

Designing and utilising innovative financing, as has been exemplified in other countries, is a critical strategy at this juncture for the successful development of infrastructure projects in Indonesia. If investing in domestic infrastructure projects is commercially viable, the private sector will likely participate. However, because some projects are not fully commercially viable, de-risking measures must be taken. One approach is to expand the use and enhance the utilisation of innovative financing. Considering its potential, the role of innovative financing for infrastructure projects could be optimised through improvements in various aspects.

From an institutional and regulatory standpoint, significant legal restrictions are reasons why some potential sources of finance, including pension funds and hajj savings, are still not fully exploited. The limitation manifests itself as a restriction on investment placements, both in terms of nominal amounts and instrument types. To be able to utilise these sources, some regulatory adjustments are needed, either through reducing limitations or by encouraging investment in resilient infrastructure. In addition, limited institutional capacity to take advantage of innovative financing potential also hampers its growth. This impediment stems from various factors, including a limited supply of capable human resources and incompatible political-economic incentives by policymakers to act in the best interest of infrastructure development. Structural issues, like lack of depth in the domestic financial market, also play a part.

Actions to address the institutional, regulatory, and structural challenges – while enhancing the enabling environment for investment flows – will be vital in unlocking the full potential of innovative financing to support infrastructure in Indonesia.

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