



# Reviewer Comments

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### **Valuable information and insights for Indonesia infrastructure development stakeholders.**

The book is a highly commendable, wholly Indonesian-led effort aimed at documenting and analysing a wide range of topics related to the government's implementation of the *Proyek Strategis Nasional* (PSN) since 2016. Taken together, the book's analytical insights, case studies, and data are a valuable knowledge product and fill a major gap in obtaining comprehensive information on the PSN. The book's findings should be of interest to government authorities at both the central and regional levels, academics, international development agencies, infrastructure finance institutions, and infrastructure project sponsors and developers. In addition, the book's findings may be of interest to infrastructure policymakers in other middle-income countries as well as the G20-affiliated Global Infrastructure Hub.

**Thoughtful overview of the historical context of infrastructure investment in Indonesia.** The authors provide an informative overview, along with data, of Indonesia's infrastructure investment experience going back to the Suharto New Order government era. They also include the 'lost decade' of investment following the 1997 Asian financial crisis and budget complexities in managing the 'big bang' decentralisation of governance. This historical context is all too often ignored in external critiques of the government's record with respect to infrastructure investment.

**Impressive progress and impact achieved.** This is even more impressive against the backdrop of the COVID-19 pandemic. Utilising an economic impact multiplier model based on input-output methodology (along with a non-survey instrument), the authors' analysis of the economic impact of PSN projects during 2016–2022, as well as projects to be completed in 2023, add credibility to the book's conclusions. The book notes the overall infrastructure investment-enabling frameworks that were developed prior to 2016 through a series of legal, policy, regulatory, institutional, and financing reforms/arrangements. These include the government's efforts to establish specialised infrastructure financing and guarantee institutions, public–private partnership (PPP)-related reforms and coordination bodies, and various project development support mechanisms for PPPs (e.g. a project development facility and project preparation and transaction advisory through special mission vehicles like PT Sarana Multi Infrastruktur [PT SMI] and Indonesia Infrastructure Guarantee Fund [IIGF]).

**Implementation and project delivery.** As the locus of the PSN and the government entity charged with 'de-bottlenecking' infrastructure project implementation, Komite Percepatan Penyediaan Infrastruktur Prioritas (Committee for the Acceleration of Priority Infrastructure Delivery, KPPIP) is a success story in 'getting projects done' in the Indonesian context – a huge country with highly decentralised governance structures. As much as the actual PSN projects' outputs/impacts matter, most would have never reached operation if not for the coordination and implementation troubleshooting delivered by KPPIP. Given the oft-cited issue of poor coordination across government entities in Indonesia – coupled with the complexities of decentralised governance and funding mechanisms – there are broader economic governance lessons to be gained from the KPPIP experience that may be relevant in other sectors.

**Political economy of public sector, state-owned enterprise (SOE), and private sector investment.**

The book includes useful information regarding the source of financing for PSN projects. While there may be a perception that PSN infrastructure investment has been SOE-driven, the authors' analysis of KPPIP data indicates that in terms of value of projects, the financing and delivery partners are highly mixed. The authors present a highly informative analysis of PSN projects structured as PPPs. The sections on PSN PPPs are well written and serve as informative case studies for PPP practitioners. Overall, the book provides a practical entry point for further analyses as to how the government and KPPIP made decisions on the allocation and prioritisation of funding sources for PSN projects. This may be relevant with respect to external studies conducted by Asian Development Bank (ADB), Organisation for Economic Co-operation and Development, and World Bank on the role of SOEs in Indonesia's infrastructure sector and concerns about crowding out private sector investment, financial sustainability, and increased government exposure to unfunded SOE debt risks as the de facto lender of last resort.

**International infrastructure investment benchmarking.** As a G20 economy with ambitious aspirations to achieve high-income status, Indonesia cannot count on a business-as-usual approach to mobilising infrastructure-related investment. Various authors cite the infrastructure financing challenges inherent in Indonesia's relatively shallow domestic financial and capital markets. As such, larger private foreign investment is key. Yet barriers to mobilising increased foreign investment in infrastructure remain (e.g. lack of a robust project pipeline, relatively low commercial returns, favoured position of SOEs, and a complex foreign investment enabling environment). While significant progress has been achieved through the PSN, which rightly has a focus on project execution, the question remains as to how much foreign investment may have been forgone since 2016. This is even more important as the government moves forwards with massive projects such as the new capital city, Nusantara. In this regard, recent government efforts to take a more proactive approach to easing barriers and mobilising foreign investment in infrastructure are positive signs.

**Land acquisition.** The book cites the enduring challenge of land acquisition – and this despite important reforms introduced with Law No. 2 of 2012 and subsequent reforms specific to land acquisition to facilitate the PSN. There is some discussion as to why this is the case – landowners and/or community interests are not aligned with broader public interests, compensation is calculated only on the value of physical assets, and PSN project planning and regional spatial plans are inconsistent (e.g. the acquisition site is within a regional government-declared forest zone). These are important points. As such, the book provides an important reference for additional focus by policymakers in addressing the continuing challenge of land acquisition.

**Indonesia's urbanisation trend and national and sub-national coordination.** The authors raise an interesting point in making the case for the establishment of a lead agency (i.e. Ministry of Urban Areas) to coordinate urban infrastructure development from a macro perspective. Given Indonesia's urbanisation trend, this could be a beneficial approach. Ideally, it would be balanced with some rationalisation and streamlining of existing governance structures so it does not add yet another layer of bureaucratic complexity with respect to infrastructure planning, coordination, and investment.

**Innovative financing.** The core subject area of one chapter provides a summary of various financing schemes utilised for the PSN. The authors note the impressive role of government *sukuk* in funding the PSN. Most interestingly, they cite project-based financing *sukuk* for 2013–2023 totalling Rp210 trillion across all 34 provinces. One area that is not addressed in the chapter is the potential use of asset recycling for brownfield infrastructure through limited concession schemes. This is a policy area that KPPIP has been pursuing over the past several years, including potential pilot projects. Limited concession schemes are particularly relevant to address overleveraged SOE balance sheets and may also be used by the Indonesia Investment Authority. Likewise, there is significant upsides to exploring the use of a value capture approach that enables governments to recover and to reinvest land-based value increases and incremental economic value that result from public investment, especially for urban and transport infrastructure.

**Positive socio-economic impact of the PSN.** In the chapter on the socio-economic impact, the authors take a pragmatic approach in focussing on a sub-set of 200 PSN projects: toll roads (associated with productivity enhancement through improved access and connectivity) and bulk water supply (associated with equitable access to basic services). The stylised Infrastructure Financing Prioritisation Framework presented is insightful with respect to how PSN projects were selected and financed. Encouragingly, their ex-ante analysis concludes that 44 projects out of 61 in 'quadrant 4' (i.e. high socio-economic impact and low financial viability) were financed through the State Budget; one-third of government financing was still channelled to projects that are financially viable. This substantial public sector contribution indicates that increased crowding in of private investment in infrastructure remains a top priority.

**More balanced approach to Java versus off-Java development.** The authors document the remaining challenges and historical context of 23 years of decentralisation. Still, there has been significant progress over the past decade to advance more inclusive regional growth, especially in East Indonesia. There has been political commitment at the highest levels to address regional disparities, including through the PSN.

**Climate change and financing schemes.** The chapter on climate change includes a thorough discussion of the government's financing approach. The information on green sukuk is particularly useful as Indonesia is the second largest issuer of green bonds in the Association of Southeast Asian Nations (ASEAN) region after Singapore. The authors' reference to the ADB green bond market survey for Indonesia adds analytical depth to the chapter and allows readers to delve into the specific issues and obstacles as seen from an investor perspective. This, in turn, provides a menu of actions that need to be taken to expand the role of green financing in meeting Indonesia's infrastructure needs.

**Overall, a welcome knowledge product of high relevance to Indonesia policymakers and infrastructure development practitioners.** Congratulations to the Ministry of Finance and the Economic Research Institute for ASEAN and East Asia (ERIA) in spearheading this comprehensive book that presents a wealth of information as well as perceptive analysis on a wide range of infrastructure issues in Indonesia.

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### Infrastructure Policy: Some Analytical Considerations

Efficient and broad-based infrastructure in all of its forms is an essential prerequisite for successful economic and social development. Roads connect people and markets. Utilities enable businesses to operate efficiently and people to lead comfortable lives. Airports and ports connect people and goods to the rest of the world. The digital revolution is having transformational economic, social, cultural, and political effects. Innovation in all forms of infrastructure is central to addressing the world's looming climate crisis.

Infrastructure matters more to Indonesia than practically any other country. The world's largest archipelagic nation state, each of its approximately 10,000 inhabited islands requires roads, electricity, telecommunications, ports, and often airports. The imperative of territorial integrity is firmly imprinted into the national DNA. Lagging and infrastructure-deficit regions require special policy focus. The country's diversity is also illustrated by the fact that Java is one of the most densely populated islands in the world, that Jakarta is a sprawling megacity with complex infrastructure needs, and that most of the country's major urban settlements are in low-lying coastal regions highly vulnerable to rising sea levels.

Indonesia has had to contend with a huge infrastructure deficit. During the colonial era, infrastructure investments primarily served the needs of the export-oriented extractive industry enclaves and the tiny modern, expatriate-dominated economy. The slow economic growth during the first 2 decades of independence meant that the government was unable to make major infrastructure investments, and the private sector lacked the resources – and commercial incentive – to be a major provider. The country's first nation-wide infrastructure investments on any scale did not occur until the era of rapid economic growth, 1967–1996 – but the 1997 Asian financial crisis abruptly terminated this progress. Faced with soaring public debt – the equivalent of approximately 100% of gross domestic product (GDP) in 1999 – the government froze most capital works. The private corporate and banking sectors were also crippled by the crisis, while many foreign investors exited the country.

In the decade that followed, economic growth resumed, and successive governments implemented a successful programme of fiscal consolidation that resulted in a sharp reduction of public debt. Yet, understandably, major capital investments were not prioritised. The COVID-19 pandemic also put great stress on the government's budget, with health and social protection measures receiving high priority. For these reasons, it is not surprising that Indonesia lags behind most of its middle-income East Asian neighbours on various international infrastructure rankings. It also explains why the government now accords a high priority to the sector, and why important policy-oriented analytical studies – such as this volume – are being undertaken.

Infrastructure is one of the most complex areas of public policy. It requires large investments, typically of at least 5% and more of GDP for fast-growing developing countries. Moreover, infrastructure services are highly diverse, ranging from mega trunk road and airport investments to local roads serving small rural communities. They include massive power stations alongside small-scale local generators. They comprise both space-based telecommunications and local courier services.

Major infrastructure projects pose particular challenges for policymakers. They frequently have natural monopoly characteristics by design or owing to their fundamental economics. It only makes sense for most cities to have just one airport. There will only be one major trunk road and railway line straddling Java and the other major islands. There are very large economies of scale in electricity generation and transmission (although emerging technologies are making decentralised power grids increasingly viable). In these cases, the public policy imperative is to regulate monopoly providers to ensure high-quality services at reasonable prices. Asymmetric information can also be a major challenge in these cases, in the sense that the infrastructure provider knows more than – or may even ‘capture’ – the regulator. There is typically no market for some of these services, so some sort of international benchmarking is often the most useful guide.

The issue of natural monopolies is present not just for megaprojects. Each urban settlement typically has just one water and sanitation authority, adjacent towns have just one connecting transport mode, and town planning is usually under the jurisdiction of just one authority.<sup>1</sup> At the local level, the political market is therefore crucial – that is, the community elects officials who are expected to manage the delivery of these services; if they do not, the theory (if not always the practice) is that ballot box substitutes for competitive markets in providing the discipline to maintain service quality.

In other cases, the main task of public policy is to ensure that markets work efficiently. Even here, economies of scale are such that many of the industries are highly concentrated. In telecommunications, for example, there are typically a small number of providers, even in a vast country like Indonesia. Where these providers are privately owned – as is the case in most countries but not Indonesia – some sort of competition authority is required to ensure that at least the market is contestable in the sense that entry is unrestricted. In cases of poor service quality – and where for some reason market pressures are not operative – governments have other policy weapons at their disposal, ranging from public information campaigns to withdrawal of business licences.

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<sup>1</sup> Although in some cases, urban settlements are privately run, as noted below with reference to Indonesia.

Another important feature of infrastructure service provision is the importance of coordinating complementary inputs that operate in each sector. Jakarta's Soekarno-Hatta International Airport and various ancillary operations supply the package of airport services, and then a mix of state and privately owned airlines provide domestic and international civil aviation services. For efficient passenger and goods traffic, both groups of service providers, in turn, need to operate efficiently. The role for policymakers is to ensure that the monopoly airport is efficient – whether in state or private hands – whereas its role in civil aviation is to ensure that there are competitive markets along with meeting safety and security standards. A similar set of considerations applies to shipping (i.e. a monopoly port provider servicing a competitive shipping industry).

Of course, airports and ports are local – not national – monopolies. Especially in large countries, there may be sub-national competition for the provision of these services. In Indonesia, this does not appear to be a significant factor, in part owing to the concentration of economic activity in and around Jakarta, and Java more generally. Moreover, in the case of port management, Indonesia's approach has been to assign primary responsibility to the state-owned port operator, Pelindo. As a result, the competition for the provision of port logistics services – including by foreign firms – has remained relatively limited.

Project evaluation is an essential feature of infrastructure policy, but here, too, there is much complexity. First, rigorous cost–benefit analysis (CBA) is inherently difficult for major investments in which some sort of market test is not readily available. In the competition for scarce investment resources, how should policymakers decide amongst, for example, a trans-Papua highway, extension of the Jakarta mass transit system, the trans-Java fast train network, and upgrading the provincial port network? Should (and could) the new Indonesian capital city, Nusantara, be subject to some sort of CBA? The textbook approach involves comparing the initial construction costs against a discounted stream of future net earnings, yet a moment's reflection highlights the obstacles. President Joko Widodo clearly sees Nusantara as nation building and promoting more balanced regional development – both of which cannot be readily subject to conventional CBA scrutiny. In the case of Papua roads, the government's concern is the region's lagging socio-economic development and whether a particular project is economically viable.

In addition, there are externalities, both positive and negative. An efficient urban mass transit system, for example, should contribute to lower air pollution as commuters migrate from cars and buses as well as lower road tolls. Workers should have quicker commute times to work and therefore better health. There can be negative externalities in major infrastructure projects, too; communities are resistant to coal-fired power plants and their attendant health risks, for example.

There are also many governance issues. Politicians are prone to support uneconomic 'white elephant' projects and monument building. There is political pressure to favour particular constituencies in a manner that overrides conventional CBA. Often, this is to reward patronage (e.g. donors to political parties) or to attract voter support in hotly contested electorates. Almost



all major infrastructure projects also involve more than one tier of government, making inter-jurisdictional coordination a major challenge. A common example concerns land acquisition for major transport corridors. This not only involves the relocation of households – often on a large scale – but also some major transport projects are planned on the assumption that they will be partially funded by being able to capture the real estate appreciation that occurs as a result of the construction of a proposed road or rail project.

Malfeasance is also a ubiquitous feature of large corruption projects. Again, there is the problem of asymmetric information since information flows are opaque. There may not be readily available market prices for the construction of a port in a remote location, for example. There will be cost guidelines, but these will be imperfect at best, and the construction company will invariably have greater commercial knowledge than the regulators. Similarly, the tendering process – if there is one – can be subject to widespread manipulation. These problems appear to be present regardless of whether the key providers are state or private entities.<sup>2</sup> A safeguard of the public interest is to have high-quality, incorruptible regulators and transparent information flows, yet this lofty ideal is more often honoured in the breach.

The pricing of infrastructure is often a vexed issue as well. The starting point is that infrastructure projects should be self-financing. This ideal, however, only provides guidance where no externalities nor social objectives are present. Yet politically motivated price suppression is present in most countries, including Indonesia. For example, the state electricity company, PLN, is under pressure to subsidise small-scale consumers on the assumption that they are also lower-income households. The issue then is how the subsidies should be financed. Larger consumers may be expected to cross-subsidise small consumers, yet this has disadvantages. Trade-exposed producers (i.e. exporting and import-competing firms) have cost handicaps. In addition, manipulation can occur, for example, through large households sub-dividing their electricity accounts.

Price suppression – including the possibility of its subsequent introduction – will also deter potential private sector providers, thus transferring the responsibility to the public sector. The subsidies should then at least be explicit and transparent; if PLN is expected to subsidise certain consumers, ideally this would be clearly costed and recorded in the government budget. In a well-

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<sup>2</sup> According to one school of thought, private providers are the most efficient infrastructure providers, on the assumption that they only invest in a project if it is commercially viable; in effect, the CBA issue is thereby addressed. However, this is not necessarily the case for the reasons adumbrated above – infrastructure markets are imperfect and opaque. Sometimes governments seek to attract private infrastructure by offering additional concessions, including restraint on competition and guaranteed rates of return. See, for example, the mixed record of the world's largest private infrastructure provider, Australia's Macquarie Group (*Financial Times*, 2023).

functioning tax and transfer system, the best policy would be to support low-income households directly through tax relief and/or social benefits. Yet this theory assumes that low-income households can be accurately identified and that the subsidies are politically palatable.

Social objectives are present in many other infrastructure areas. For example, the literature on 'getting agriculture moving' has clearly shown the beneficial effects for small farmers of improved rural roads. Farmers benefit from lower farm-to-market transport costs, and the improved road network also introduces more traders – and therefore competition – lowering marketing costs.

## Indonesia and Infrastructure Development: Some Observations

**Introduction.** This section provides some observations on Indonesian infrastructure development and policies, drawing on the contributions to this volume and my own thinking about these issues. Three general points need to be made at the outset.

First, there has been great progress – indeed an infrastructure revolution – in Indonesia over the past half century. Infrastructure investments have massive socio-economic impacts and benefits, as emphasised in Chapters 4 and 5. On virtually every indicator, Indonesia's achievements have been remarkable. It is now possible to move around the archipelago, including to quite remote locations, quickly. The road, inter-island shipping, and civil aviation networks have been transformed. Utilities have expanded rapidly, especially electrification. Connectivity via telecommunications has improved dramatically.<sup>3</sup>

Second, as Chapter 1 emphasises, in the comparative East Asian context, Indonesia lags behind most of its middle-income neighbours on the various infrastructure surveys and rankings. This is not necessarily surprising, as the more advanced East Asian economies are at the international frontiers of high-quality infrastructure, and Indonesia's initial conditions meant that there was a huge backlog to be overcome. Moreover, the Asian financial crisis and its aftermath were huge setbacks for the country and its fiscal capacities. Perhaps a fairer – if less aspirational – benchmark would be against countries with similar per capita incomes and institutional features (e.g. India), in which case Indonesia performs more satisfactorily.

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<sup>3</sup> For general surveys of Indonesian infrastructure from a comparative East Asian perspective, see ADB (2020) and Brooks (2016). Over the past decade, McCawley (2015), Salim and Negara (2019), and Sandee (2016) have conducted state-of-the-art surveys of Indonesian infrastructure, including extensive reference to the literature on the subject.

Third, owing to the complexity of infrastructure policy – and particularly domestic institutional and political factors – Indonesia has struggled with policy formulation and development of the sector. In the words of one observer, ‘Infrastructure plans and policies in Indonesia are a bewildering kaleidoscope of promises, underfulfillment, delays, and outright cancellations. The various industries within the sector operate largely as silos ...’ (McCawley, 2015:263).

I return to these observations in the narrative that follows, which is organised around six general themes.

**Finance.** As noted, infrastructure is hugely expensive (Chapter 3). Therefore, infrastructure progress is dependent on the financial capacities of the three major funding sources: the state, domestic private firms, and foreign firms. As Salim and Negara (2019) observed, infrastructure expenditure in Indonesia fell dramatically during and after the Asian financial crisis, from as high as 9% of GDP in the early 1990s to around 2% in the late 1990s. It has since risen to about 4% of GDP, but this is well below the country’s earlier buoyant levels and those of most East Asian comparators. The government has very limited fiscal space. With a tax–GDP ratio of approximately 11%, fiscal deficit cap of 3% of GDP, fuel and other subsidies 1%–3% of GDP, and a daunting array of competing claims on public expenditures, in the absence of a major increase in public revenue, it is inevitable that the government will be unable to directly fund a significant increase in infrastructure expenditure.

**Who Provides Infrastructure?** In addition to limited public sector resources, historically, the private sector – both domestic and foreign – has played a modest role in Indonesian infrastructure provision. This appears to reflect the interplay of several factors. The first is an ideological predilection for state-owned enterprises (SOEs) to be the key players. As Sandee (2016:234) observed, ‘In Indonesia, there is a long history of [SOEs] having a virtual monopoly over the implementation of infrastructure projects.’ Second, attempts to engage the private sector has had a mixed record. Commenting on the Yudhoyono Administration’s initiatives to engage the private sector through infrastructure summits and public–private partnerships (PPPs), Salim and Negara (2019:241) concluded that the results were ‘disappointing’, owing to inadequate preparation of the proposed projects and the uncertain regulatory environment (e.g. the legislature placing price caps on infrastructure services, and the preference of infrastructure SOEs to be both regulators and providers).

A third factor has been that Indonesia’s financial system is still somewhat under-developed. It is still primarily bank-based with a small bond market and other financial products that have the longer horizons required for infrastructure projects. Fourth, for various reasons, private foreign infrastructure providers play a minor role. Perhaps this is still from the unhappy experience of private power suppliers to PLN, most of which collapsed (and the firms exited) during the Asian financial crisis. This led Wells and Ahmed (2008) to conclude that borrowed funds and state ownership – with all their problems – are preferable. In any case, foreign private infrastructure providers have to be managed with great caution.

Perhaps change is on the way. There are examples of innovative private sector initiatives (e.g. in urban planning). The World Bank (2023) pointed to examples of smart cities in its multi-country case studies, and two of these are from Indonesia – Batam and Kota Baru Maja.

**Infrastructure Evaluation and Competition Policy.** As noted, the provision of infrastructure services takes many forms, from natural monopolies to decentralised competitive markets. The public policy challenge, therefore, must be nuanced. In the case of natural monopolies (e.g. the Jakarta airport), an arms-length and trusted regulator is needed to ensure service quality and competitive pricing. This is not easy, however, as the world is replete with examples of regulatory capture. Fortunately, international benchmarks help protect the national interest. Indonesia needs to look no further than to neighbouring Singapore for an example of world-class airport and port services. Indicators, such as those provided by the Japan External Trade Organization (JETRO) and the World Bank's Logistic Performance Index, also provide useful guidance.

Where there are no natural monopoly considerations such as in civil aviation and telecommunications, the public interest is served by a competition authority (i.e. Komisi Pengawas Persaingan Usaha [KPPU]), ensuring that there is free entry into the industry and that predatory pricing and other examples of collusive behaviours are outlawed. The work of the competition regulator can be supplemented by additional policy interventions as needed (e.g. airlines may be required to service non-commercial routes). In these cases, explicit subsidy arrangements need to be introduced.

**Infrastructure and Decentralisation.** Infrastructure provision in Indonesia is complicated by the country's size and geography (Chapter 6). In addition, since 2001, all three major tiers of governance have been infrastructure providers. The smooth functioning of fiscal and administrative relations between the central and regional governments is essential. However, the assignment of responsibilities and finances is still evolving. As in all federal systems,<sup>4</sup> there is a tendency to 'pass the buck' between different tiers of government, especially when these tiers are governed by different political parties. Recent reforms have been introduced to address some of these challenges, in particular the apparent underspending of local governments on capital works, large vertical fiscal imbalances between different tiers, and consequent reluctance of local governments to strengthen their fiscal bases and to increase their tax efforts (Lewis, 2023).

Land acquisition and compensation issues have continued in major Indonesian infrastructure projects, especially roads and rail. The reasons are complex and difficult to resolve. Lembaga Manajemen Aset Negara (State Asset Management Agency, LMAN) has been tasked to address these issues, as discussed in Chapters 2 and 3. Part of the problem also appears to be weakly

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<sup>4</sup> Noting that, technically, Indonesia is a unitary state, albeit one with a considerable degree of local government fiscal and administrative autonomy.

defined property rights, especially off-Java. Salim and Negara (2019:250) pointed to another obstacle – the National Land Agency (Badan Pertanahan Nasional, BPN) is alleged to be notoriously corrupt.

**Managing the Energy Transition.** In addition to expanding infrastructure provision, Indonesia is engaged in the difficult process of energy transition and de-carbonisation (Chapter 7). This is an issue that is complicated for middle-income economies like Indonesia that are also major fossil fuel exporters (Resosudarmo et al., 2023). Therefore, there needs to be a large expansion of land transport and utilities, and they also have to be increasingly 'green'. The expansion of urban mass transit and development of an electric automotive industry is expected to assist in this transition. Political economy considerations are particularly pertinent for major coal exporters like Australia, Indonesia, and South Africa. Especially in the wake of the Russia–Ukraine war, coal is a highly profitable industry, and its producers are politically influential. There is an ongoing – and scientifically unresolved – discussion about whether carbon capture facilities are feasible. There is also concern about the possibility of stranded assets, as financial institutions appear to be increasingly wary of supporting coal projects.

The regional and international dimensions of this transition will be crucial. With its vast tropical forest reserves, Indonesia can expect some international compensation for its successful efforts towards slowing the pace of deforestation. Both the government and foreign funders can draw lessons from the mixed outcomes of the earlier REDD+<sup>5</sup> agreement with Norway. The Asian power grid – and possibly Australia's Sun Cable venture with Singapore – may create additional opportunities.

Managing the intersection of macroeconomic policy and the energy transition is essential. Low- and middle-income economies typically confront a risk premium in accessing international capital markets – even Indonesia with its excellent record of macroeconomic prudence. Indonesia has a vital interest in the development of efficient and accessible international climate finance mechanisms (Basri and Triggs, 2023; Wolf, 2023).

**Preparing for the Digital Era.** The digital revolution is permeating all aspects of economic, social, educational, cultural, and political life. Indonesian citizens are early and enthusiastic participants in the opportunities created by the rapid spread of digital technology. Several Indonesian unicorns, for example, have already become major national and regional players. During the pandemic, information and communications technology was rapidly promoted, as was its use in public services, including the government's 100 Smart Cities Movement together with e-government services (Anas and Cahyawati, 2023). The major public policy challenge is to ensure the fast,

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<sup>5</sup> Reducing emissions from deforestation and forest degradation in developing countries.

efficient, and equitable availability of internet services, consistent with a cybersecurity regulatory regime that protects citizens against web-based criminal activity. Digital innovation is occurring rapidly, and regulators everywhere are struggling to keep abreast of the latest technologies.

Moreover, access to internet services should be regarded as a public good, the provision of which is the responsibility of governments, in a manner analogous to the public provision of universal primary and secondary education. This, in turn, requires competitive market structures to ensure that internet provision equates with global best practices. To the extent that there is a shortfall, the competition problem needs to be addressed by regulators. There may also be cases where additional government intervention is needed (e.g. in remote regions and for low-income households). These interventions will typically take the form of some sort of community service provision required of telecommunications providers and/or direct government subsidies. The complementary availability of electricity is also essential for internet provision in remote regions.

Indonesia has taken historically bold initiatives in this area through its Palapa Ring project. However, access to fixed broadband remains limited and expensive; the costs of this under-provision were evident during the pandemic. As education rapidly migrated to online provision, children in poorer households with limited or no access to the internet (and sometimes electricity) suffered the greatest losses in learning.

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