

Infrastructure in Indonesian Economic Development: Potentials & Issues

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The Indonesian economy has grown relatively well during the last two decades. Since the Asian Financial Crisis (AFC) in 1997/1998, the economy has grown by an average of around 5.5% per year, increasing the well-being of millions of Indonesians; while around 19% of Indonesia's population lived below the poverty line in the early 2000s, the figure is now less than 11%. The current open unemployment rate of 5.7% is also lower than the figure several years ago, indicating that the economy is managing to provide more jobs.

However, Indonesia's economic growth rate has been declining during the past few years, from 6.2% in 2011 to only around 5% currently. One of the defining factors is the end of the commodities boom, which took place in the period around 2003-2012. High global commodity prices boosted Indonesia's exports and fueled high economic growth. Now the economy cannot rely on commodity exports, but has to develop competitiveness in the manufacturing and services sectors. The development of those sectors, however, has been hampered by insufficiency of quality infrastructure in Indonesia.

Table 1 shows the quality of infrastructure in Indonesia in comparison to other countries in Asia. Even in comparison to middle-income countries in the region, infrastructure in Indonesia is still poorly developed. Infrastructure related to connectivity as well as energy is not sufficient to support economic development. Poor infrastructure is a major hindering factor for Indonesia to realize the

potential of economic growth by 6-7% every year. The recent condition of Indonesia showed a large infrastructure deficit, both in terms of availability and quality. For example, in the last 20 years only 200 kilometers of highways were constructed and the national road capacity only grew by 1-2% per year. Meeting economic needs requires construction of at least 500 km of highways per year, and a 5% increase per year in the national roads capacity. The economy also requires a 9-10% increase in electric power annually, while capacity only grew by less than 6%, resulting in electricity shortages in many areas.

Role of Infrastructure in Indonesian Economy

The availability of high quality infrastructure is very important in supporting economic development in at least two ways: it facilitates the development of new economic activities that leads to economic growth, while it also increases general quality of life and opens up opportunities to reduce inequalities and poverty incidence. Sufficient infrastructure would allow greater investment in the economy, create demand for employment and increase income that generates further economic activities. It also enables the development of human capital by providing access to healthier lifestyles and better education.

Many theoretical and empirical studies show that the availability of infrastructure improves the long-term production and income levels of an economy. Empirical studies from the World Bank, for example, have shown high rates of return on infrastructure investment, while per capita availability of major infrastructure is closely related to income levels. Studies on Indonesia also show that infrastructure, especially road conditions and electricity, significantly affect the growth of income per capita in the country.

Without infrastructure support, private sectors need to develop their own supporting facilities before starting their business operations. That increases the costs of investment and reduces economic efficiency. One indicator to examine the efficiency of investment is the Incremental Capital Output Ratio (ICOR), which measures additional capital needed to be invested in an economy in order to generate one unit of additional output. Chart 1 describes the Indonesian economy's ICOR and associated economic growth.

It is quite clear that Indonesia's ICOR has been increasing quite significantly within the last 10 years. While in the early 2000s, the economy required less than 5 rupiah in investment in order to produce 1 Rp extra output, it now requires around 6.5 Rp. This increasing

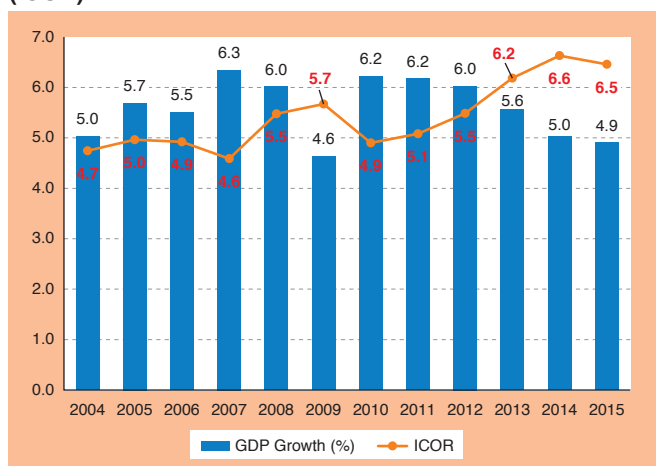
TABLE
Global Competitiveness Index of Indonesia & other Asia-Pacific countries

	Global Competitiveness	Infrastructure	Transportation Quality	Electricity Quality	Fixed Telephone
Indonesia	41	60	80	89	86
Lower Middle Income Countries					
India	39	68	51	88	114
Vietnam	60	79	85	85	99
Philippines	57	95	112	94	107
Upper Middle Income					
China	28	42	43	56	64
Malaysia	25	24	19	39	72
Thailand	34	49	72	61	91
Developed Countries					
Japan	8	5	6	15	11
Australia	22	17	33	22	24
South Korea	26	10	14	29	4

Source: World Economic Forum, Global Competitiveness Index 2016-2017

CHART 1

Incremental Capital Output Ratio (ICOR)



Source: Author's calculation from Indonesia's Central Bureau of Statistics

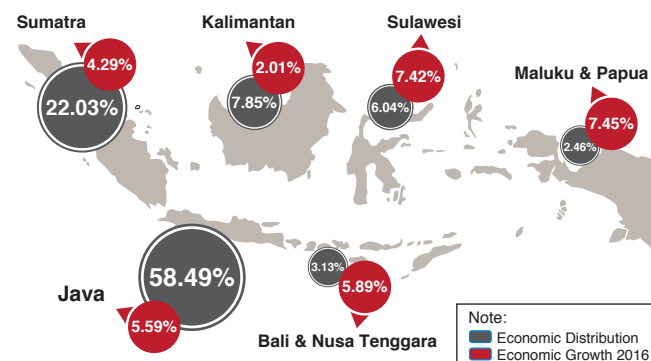
tendency is associated pretty much with the weakening of economic growth. One of the reasons behind this inefficiency is the lack of infrastructure in Indonesia. Investors often find a situation where they need to develop their own infrastructure, such as local roads, power plants, or private seaports. This hampers Indonesia's attractiveness as an investment destination.

Poor infrastructure constrains growth in a number of ways. In Indonesia it most critically restrains connectivity among economic and business actors, such as between suppliers, producers and consumers. Poor connectivity also increases the cost of doing business and reduces the competitiveness of Indonesian products both domestically and internationally. The symptoms can be observed easily throughout the country: congested roads in industrial and business areas, damaged local roads, congested seaports, high inter-island cargo costs, and very long travel times. Poor infrastructure also increases the cost of production, especially related to energy infrastructure. While Indonesia is one of the important natural gas producers, the utilization of natural gas is still very low due to inadequate infrastructure. Lack of electric power also prevents the development of business projects, especially in the outer islands of Indonesia.

Poor infrastructure has resulted in greater economic inequality in Indonesia, both geographically and at an individual level. Economic activity is concentrated mostly in the western part of the country, more specifically in the island of Java, which contributes almost 60% of the country's economic output as described in [Chart 2](#). Lack of infrastructure in the eastern part of Indonesia has inhibited investment there. Most investment coming to that area is attracted only to its abundant natural resources. Those investors in extractive sectors are more willing to spend their money in developing infrastructure for their own needs, compared to their counterparts in services and manufacturing. Since the nature of investment in extractive industries is more capital intensive, only limited numbers of employment opportunities can be created in the eastern part of Indonesia. This has

CHART 2

Geographical distribution of Indonesian economy



Source: Indonesia's Central Bureau of Statistics

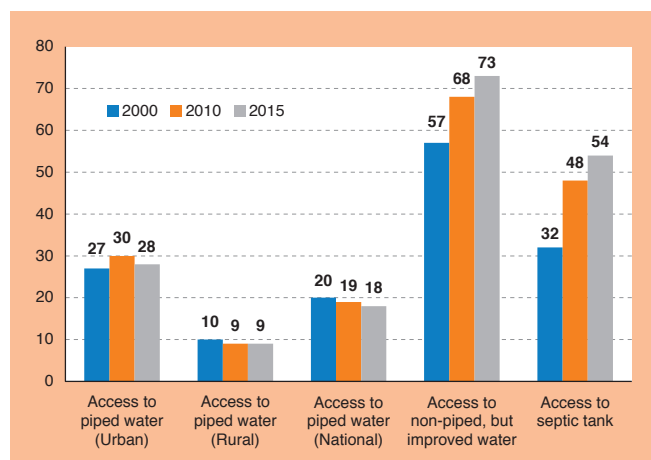
resulted in lower levels of income and welfare.

Poor infrastructure also directly reduces the general quality of life, especially for lower-income groups. This is particularly applicable to public services and social infrastructure such as infrastructure for clean water and sanitation, or education and health facilities. Lack of access to piped drinking water, or access to onsite or offsite sewerage facilities, can lead to health problems that prevent human capital development, which in turn reduce the opportunities for economic improvement. Easy access also means that the cost and time to obtain water or education can be reduced and be devoted to other more productive activities.

[Chart 3](#) shows that the majority of the population in Indonesia continues to have difficulties in accessing clean water. In 2015, only 91% of the population had access to improved water, and of that only 18% were served by piped-water services. The situation in rural areas is even worse, with only 9% having access to piped water. Limited access to sanitary facilities can also be observed. Improvement in

CHART 3

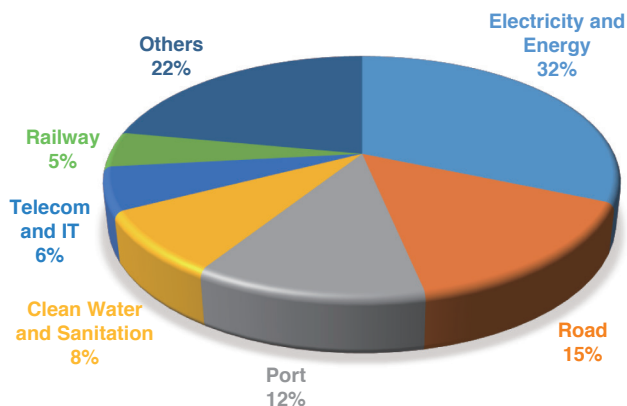
Access to clean water & sanitation



Source: Author's calculation based on WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation

CHART 4

Allocation of infrastructure spending plan 2015-2019



Source: National Mid-Term Development Plan 2015-2019

access to clean water is quite negligible, especially in the case of network piped water, which requires the development of infrastructure.

The poor infrastructure situation in Indonesia is a result of lack of investment. According to a 2013 World Bank report, infrastructure investment in Indonesia fell significantly following the AFC in 1997/98. On average, infrastructure investment is only around 3-4% of GDP, much lower than economic growth. On a constant price basis, annual infrastructure investment is about a third lower than annual investment before the AFC. Private sector participation in infrastructure development seems to be the most affected source of funding; it fell from around 2.3% before the crisis to only 0.4% in the period 2008-2011. It is then quite understandable that Indonesia is currently facing a significant setback due to the poor quality of its infrastructure.

Current Infrastructure Development Program

Aware of the situation, President Joko Widodo has made infrastructure development his administration's priority by launching various development programs. Details are described in the National Mid-Term Development Plan (*Rencana Pembangunan Jangka Menengah/ RPJMN*) for 2015-2019, launched in 2015. The plan specifies all necessary projects that need to be completed by the year 2019 in order for the Indonesian economy to grow by 7% in the future. The focus is on improving maritime connectivity, electrification, road and urban transportation, and agricultural irrigation. It is estimated that in order to achieve this goal, the country needs to invest 5,500 trillion Rp (\$460 billion) in infrastructure within this five-year period. The biggest portion of investment is expected to go to electricity and energy infrastructure (32%), followed by road development (15%), as can be seen in [Chart 4](#).

The administration has selected 245 projects as strategic projects, consisting of various infrastructure developments such as for irrigation and dams (60 projects), road development (52), and development of economic zones (25). Among these projects 37 have been selected as priorities that receive special attention. The focus of

CHART 5

Progress so far...

Toll Road

- Target 1,000 km of new toll roads by 2019
- Around 500 km of new toll roads expected to be completed in 2017

Railway

- Target 3,258 km of new railways by 2019
- Currently, around 500 km have been completed, while majority are still under construction, including MRTs in several cities

Airport

- Target 15 new airports
- So far, construction of 5 new airports has been completed

Seaport

- The development of 306 new seaports
- 56 new seaports have been completed

Electricity

- Target 35,000 MW from new power plants
- 734 MW in operation, while 13,816 MW are still under construction

Source: Coordinating Ministry of Economic Affairs and various newspaper articles

these 37 projects is to resolve high logistic costs by developing various road networks and improving sea transportation infrastructure.

After more than three years, several of these priority projects have been completed. The most visible ones are related to toll road operation. Within two years, around 260 km of new toll roads have been completed from the target of having 1,000 km of new toll roads by 2019. The target this year is to complete the construction of 500 km of new toll roads. The government also continues to develop sea transportation infrastructure by opening more seaports, in particular to increase connectivity in the remote islands of Eastern Indonesia. This is also in line with the president's program to develop Indonesia as a maritime country. Progress is also being observed in the electrification program to develop power plants producing 35,000 megawatts in total by 2019. Plants to produce about 15,000 MW are under construction and are likely to be completed by the end of the period.

[Chart 5](#) summarizes the progress of infrastructure development so far. While the target is based on the need to support faster economic development, it might seem to be too optimistic considering that there are various issues surrounding infrastructure development in Indonesia.

Issues & Problems Related to Infrastructure Development

There are at least 4 key aspects in the development of infrastructure that are still observed today despite various efforts by the government: (a) difficulties of financing and funding projects, (b) the involvement (or lack thereof) of the private sector, (c) the provision or acquisition of land, and (d) the management of infrastructure assets.

The first issue is associated with finding appropriate financing schemes, which often do not support the sustainable development of infrastructure. As mentioned above, the infrastructure development plan requires big amounts of capital. The government only manages to provide smaller portions of required funding. The RPJMN estimated that the central and local governments can only contribute up to 40%

of required amounts, with state-owned enterprises (SOEs) expected to provide 20% of the plan, and the rest coming from other sources, including the private sector.

The fuel subsidy abolition (accounting for up to \$20 billion per year) at the end of 2014 has provided fiscal room for the government to increase infrastructure spending. In the 2017 budget, the government plans to spend 380 trillion Rp (\$29 billion) on infrastructure, much higher than in the 2014 budget, which was only 165 trillion Rp. However, actual spending is still quite low at only around 80% of the budget due to various issues including disbursement processes, technical difficulties or fiscal capacities.

In addition, the sustainability of financing is another significant issue. Funding an infrastructure project consists of two main stages: the construction costs and the costs of operation and maintenance. However, construction of infrastructure projects in Indonesia often only takes into account construction costs and pays less attention to the sustainability of the project and the maintenance costs after the project is over, although both are highly related to one another. If the government does not want the ticket price of Mass Rapid Transportation (MRT) in Jakarta too high, then the construction costs can be kept lower. The government can provide assistance in financing the construction, such as with a Viability Gap Fund (VGF), to allow for such a financially less feasible but economically important project.

The second issue is related to private sector involvement. It is quite apparent that infrastructure development in Indonesia requires greater private sector participation to fill the substantial financing gap. However, the Public Private Partnership (PPP) that was introduced in 2010 did not work out well. There are two potential challenges in increasing private sector participation. The first is the lack of good profit- and risk-sharing mechanisms between the government and the private sector. Risks should be borne by the party that is potentially responsible for the generation of such risk. The government, for example, should be responsible for the political risk since it would mostly come from political and governance processes. If the government does not want to bear this responsibility then the private sector will not participate in similar projects.

The second is related to the strategy toward infrastructure development. In order to speed up the bidding process and to allow greater pressure for completion of the projects, the government decided to appoint Indonesian SOEs to build large-scale and key infrastructure projects. Infrastructure projects offered to private non-SOEs are often unattractive and require a lot of structural adjustments in order to be viable; these projects typically require rigid incentive structures to make them feasible.

The third issue is related to the high costs and length of time required for land acquisition. Many infrastructure projects have been delayed for years due to this problem. It would significantly increase the cost of the project as time goes by, as there will be a rise in prices for construction materials/inputs, disruption to supplies, overhead costs accrued without any productive activities, and the possibility of the technology used becoming obsolete because of the long delay. The government issued Law No. 2/2012 on Land Procurement for Public Utilities Construction to resolve this problem. According to the law, the

land acquisition process should take a maximum of 512 days. While it is still quite a lengthy process, at least it provides some certainty. In addition, the Presidential Regulation No. 28 of 2015, which is the implementing regulation of the Law, has delegated responsibility for land provision to the government, which is a major improvement in providing certainty. However, the challenge will lie in ensuring the speed and efficiency of its execution, given the fact that current government projects are still heavily constrained by land acquisitions.

The last issue is asset management of infrastructure. Poor management of infrastructure is reflected in the rapid rate of physical damage and high depreciation rate. One example is found in water utility infrastructure management, in which over 40% of local water companies' assets suffer from degradation every year. Another example is roads that are damaged only within 2-3 years. As a result, the additional costs of reparation are high and the total depreciation value exceeds the amount of new investment in the same period. It adds an additional burden to the government's budget, and makes infrastructure planning more difficult due to high uncertainty. Unfortunately, this issue has not been up for public discussion and still receives little attention. Better management of infrastructure not only reduces the costs of depreciation and reparation, but also increases the capacity to develop new infrastructure, while at the same time ensuring the availability and quality of infrastructure for economic activities and society.

Conclusion

The role of infrastructure in supporting economic activities and development has been well recognized. One recent estimation by Bank Mandiri says that a 1 Rp increase in investment in electricity and construction would add an additional 2.6 Rp and 1.9 Rp respectively to economic output. The government realizes the importance of this. Currently, there are 245 projects on the list of strategic projects to provide electricity, connectivity and social infrastructure to the Indonesian economy and population.

However, the development of infrastructure is not an easy task. For many years, investment in infrastructure has been relatively low compared to economic demand. Lack of quality infrastructure has hampered development and reduced the welfare of the general population. While the current administration has put infrastructure development as a priority, issues related to financing, land acquisition and low participation by the private sector remain to be solved in order to support the plan. In addition, management of infrastructure assets also needs to be refined to optimize the utilization and operation of infrastructure in the future. With better infrastructure Indonesia would be more confident in realizing its aspiration to become one of the rich economies by its 100th anniversary in 2045. **JS**

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