



INFRASTRUCTURE BRIEF

How Can Green Growth Help Indonesia Meet Its Infrastructure Needs to Boost Regional Development?

August 2017



Government of Indonesia – GGGI Green Growth Program

The Government of Indonesia and Global Green Growth Institute (GGGI) have developed a program of activity that is aligned and wholly supportive of achieving Indonesia's existing vision for economic development planning.

The aim is to show, using real examples of Indonesia's development and investment plans at national, provincial and district levels, how economic growth can be maintained while reducing poverty and social inequality, maximizing the value of ecosystem services, reducing GHG emissions, and making communities, economies, and the environment resilient to economic and climate shocks.

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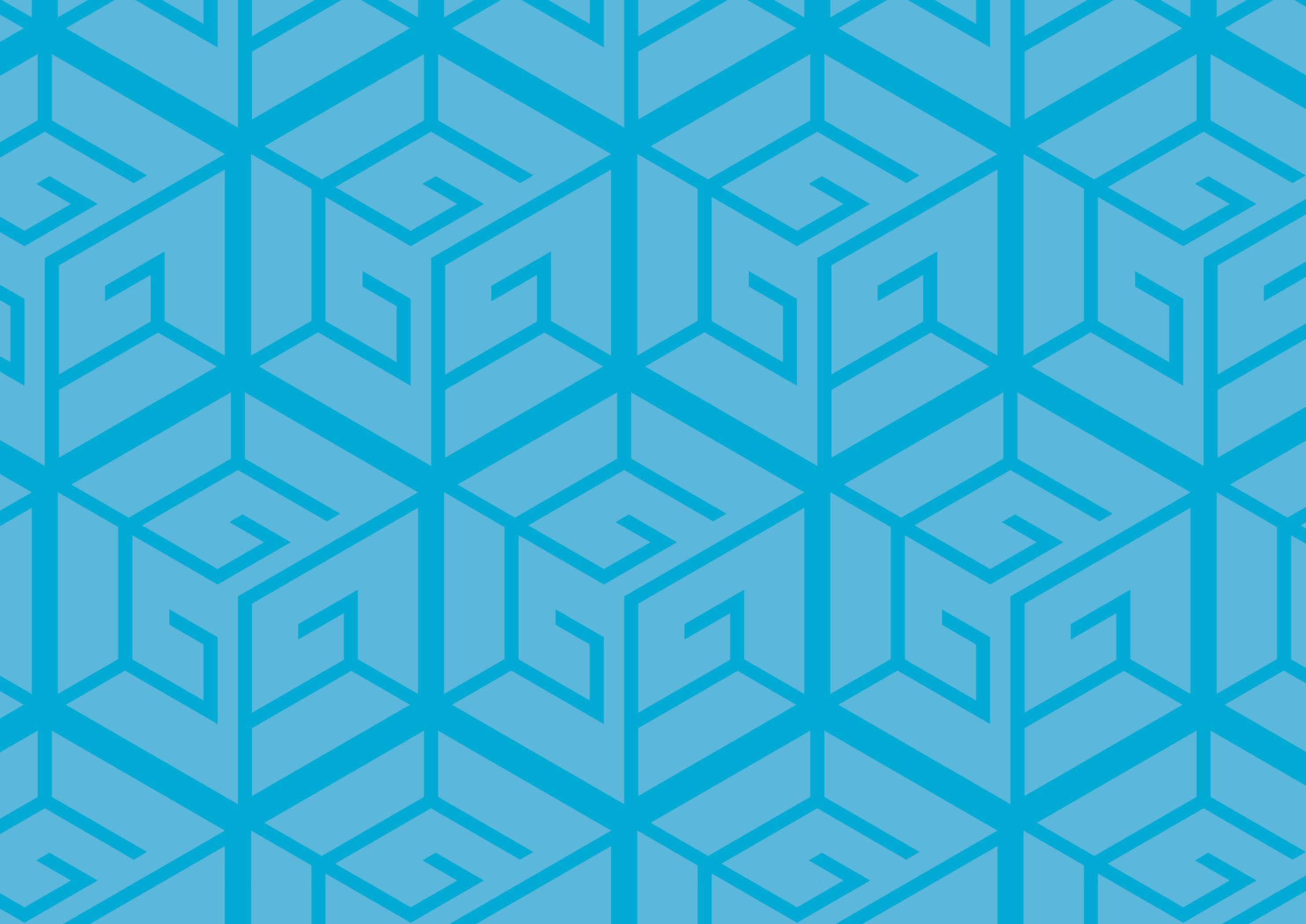
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Indonesia has enjoyed strong and consistent economic growth of around 6% per annum over the past 15 years. The nation aims to become a high-income country in the 2030s. This will require continued rapid economic growth. As President Joko Widodo has said, growth needs to be people-centered to provide a high standard of living to all citizens, in all parts of the country.

It will be a challenge for Indonesia to deliver rapid yet inclusive economic growth in support of the ambitious social and economic goals expressed in the National Medium-term Development Plan (RPJMN 2015-2019). The five-year plan sets ambitious priorities for economic growth, food and energy security, poverty reduction, and natural resource management. These priorities reflect the nation's urgent development needs as well as Indonesia's international commitments to contribute to sustainable development goals and climate change actions.



This brief tells how green growth can help Indonesia achieve the development priorities in **infrastructure** development with particular attention to special economic zones. Other briefs in this series focus on the role of green growth in energy, managing

forests and land use within sustainable landscapes, and climate change resilience. For a comprehensive guide, see *Delivering Green Growth for a Prosperous Indonesia: A Roadmap for Policy, Planning, and Investment*.

WHAT IS GREEN GROWTH

Green growth is designed to deliver a sustainable and equitable rise in GDP and living standards while, at the same time, curbing pollution, making infrastructure clean and resilient, using resources more efficiently, and valuing the often economically invisible natural assets that have underpinned economic success over the centuries and on which human wellbeing ultimately depends.

Green growth focuses on the quality of economic growth, providing economic prosperity with better social outcomes and less stress on Indonesia's environment and natural capital. While there will be short-term costs in making the transition to green growth, overall these will be more than balanced by benefits. Green growth will require new technologies, capable institutions, and effective government policies to protect the environment, and consistent involvement by private business in the shift to cleaner, more socially inclusive growth.

The Government of Indonesia and the Global Green Growth Institute (GGGI) jointly implement the Green Growth Program, now in its second phase from 2016 until 2019.



Priorities for Infrastructure Development

Indonesia is rapidly expanding its land and sea transport, telecommunications, and other infrastructure vital for sustaining economic growth and narrowing regional disparities in development. As the economy grows, there will be demand for new urban infrastructure and for both land-based and maritime transportation that benefit all Indonesians in all parts of the country.

The national development plan views the expansion and improvement of infrastructure as an engine of regional economic growth, needed to overcome constraints on connectivity and productivity, but it also recognizes the need for environmental sustainability. Spending on infrastructure currently accounts for around 17% of GDP and is vital to the sustained growth of the Indonesian economy. Government spending on infrastructure in 2015 reached IDR 209 trillion (about USD 15.5 billion), more than a 50% increase over 2014, while foreign direct investment in infrastructure exceeded USD 30 billion. Plans to increase government infrastructure spending to IDR 347 trillion in 2017 have had to be trimmed owing to a shortfall in fiscal revenue.

Improved connectivity of transportation and communications infrastructure is intended to help reduce regional disparities between urban and

rural populations, and between different regions of the country, by improving access to basic goods and services. Greater efficiency in transportation and energy-intensive manufacturing will also reduce greenhouse gas emissions and so help Indonesia meet its climate change goals. Capital investment in long-lived infrastructure should also be carefully planned to ensure resilience against the impacts of climate change.

The main development priorities related to infrastructure in the current medium-term plan are the following:

- Increasing water, food, and energy resilience through the provision of raw water, improved performance of irrigation networks, improved flood control, and more efficient water conservation;
- Supporting national connectivity to increase productivity, efficiency, and economic competitiveness by reducing travel times, increasing road services, and building roads to support regional development;
- Improving the quality of life and coverage of basic services through improved water supply, adequate housing, access to sanitation, and home financing for low income groups.

These priorities are closely linked to sustainable development goals (SDGs) and Indonesia's Nationally Determined Contribution (NDC) to mitigate and adapt to climate change.

Cities also need critical infrastructure investment, for connectivity and manufacturing as well as for basic services such as water, sanitation, and waste management. More than half of Indonesians now live in cities, making urban development a priority for the majority of the population.

Improvements in maritime connectivity can help boost economic efficiency, a hallmark of green growth. The government plans to either build or upgrade 24 seaports within five years to enhance inter-island transportation. This will include the expansion of five major ports in North Sumatra, Jakarta, East Java, South Sulawesi and Papua to serve large vessels and build feeder lines for smaller ports.



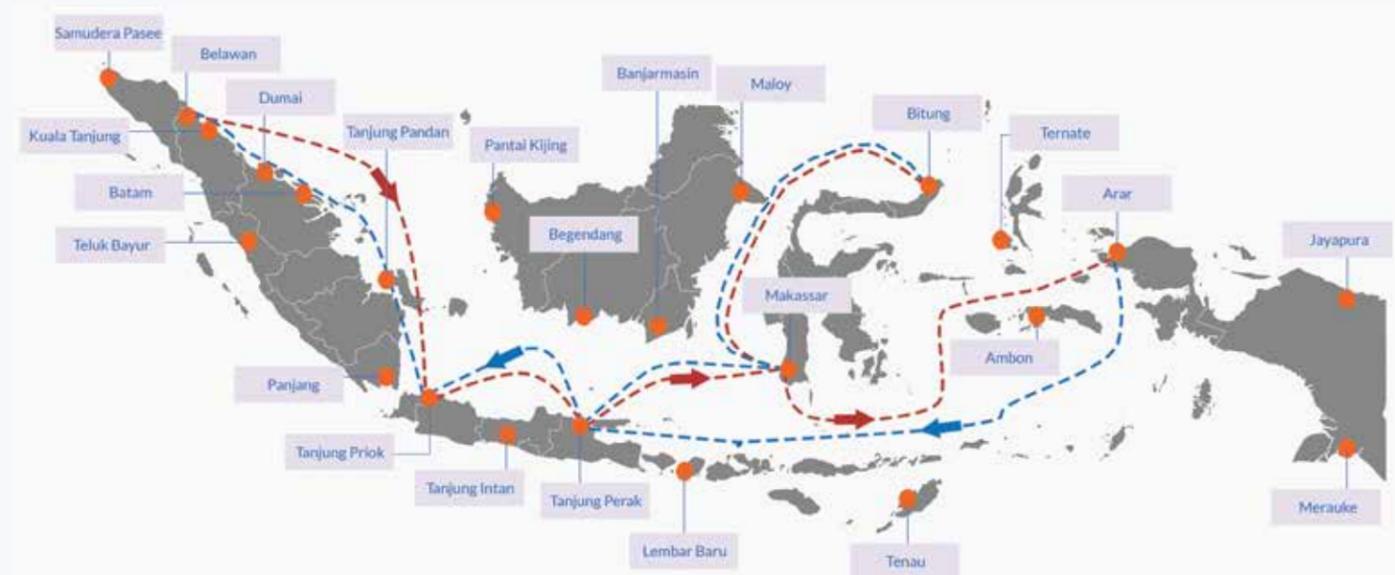
The planned investments would generate new economic opportunities for previously unconnected areas and help to better distribute national and international container traffic, which is currently concentrated mainly in the ports of Tanjung Priok and Tanjung Perak. This major undertaking has the potential to sharply increase the energy efficiency with which commodities move around the archipelago, provided the projects are well designed to maximize social, environmental, and economic benefits while reducing or mitigating the associated costs.

THE IMPORTANCE OF MARITIME CONNECTIVITY FOR NATIONAL DEVELOPMENT

Unlocking the earning potential of Indonesia's marine economy and ensuring its resilience to climate change depends on critical investments in connectivity—namely sea transport, telecommunications, and other infrastructure. These are critical to sustained growth and to narrow regional disparities in development and thus share the benefits of economic growth more inclusively among people throughout all parts of Indonesia.

Indonesia's eastern provinces have long-struggled with access to economic opportunities. As part of its infrastructure development package, the Ministry of Transport is working towards the establishment of a 'sea highway' system that facilitates the movement of people and goods across the country. Other national connectivity targets include constructing thousands of kilometers of new roads and railways, as well as investing in new airports and urban public transportation networks. These programs will connect with the national sea highway and make it easier to transport goods and products across the country.

INDONESIA'S PLANNED NATIONAL 'SEA HIGHWAY'



Special Economic Zones

An important policy instrument for accelerating regional economic growth is the establishment of special economic zones (SEZs) throughout the country. Although this is not a new policy, it has been stepped up and prioritized by the current government to help accelerate investment in new infrastructure.

SEZs are geographically and legally delimited areas, administered by a single body, that offer certain incentives to businesses to set up operations in those zones. Traditionally SEZs have offered incentives such as duty-free importing and streamlined customs procedures. SEZs are useful testing grounds for innovative, green technologies that can then be scaled up through broader reforms throughout the whole economy.

The government has identified locations across the country for the development of new SEZs, to be finished by 2019.

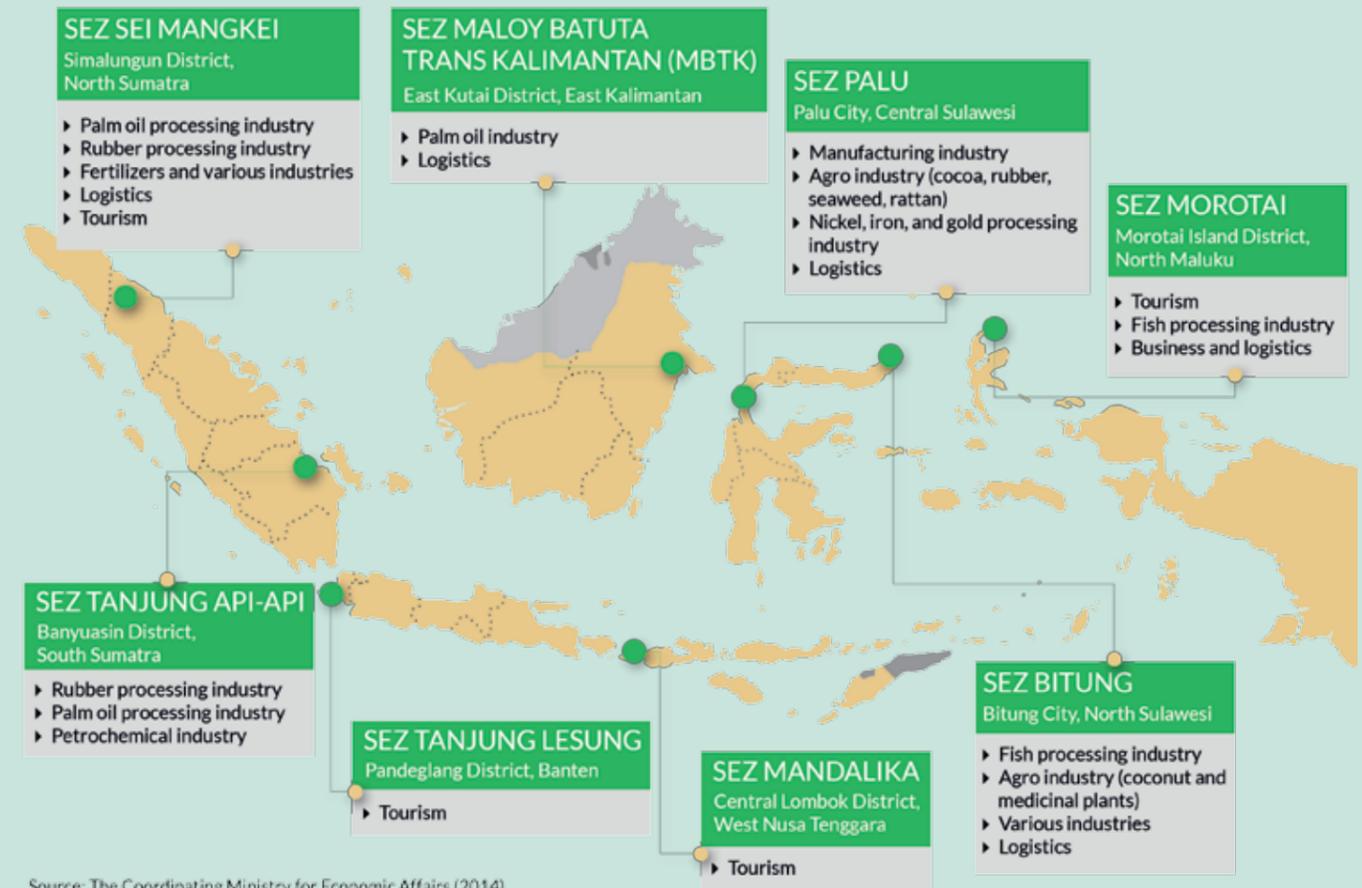
SPECIAL ECONOMIC ZONES TO REGIONAL ECONOMIC GROWTH

The national development plan views the expansion and improvement of infrastructure as an engine of regional economic growth, needed to overcome constraints on connectivity and productivity, but it also recognizes the need for environmental sustainability.

The development of special economic zones (SEZs) is a priority for policymakers in Indonesia, as they are seen as a highly effective strategy for attracting foreign direct investment.

Most SEZs are planned as industrial zones to promote manufacturing activities and attract foreign investment. Eight SEZs have been established officially by government regulation and are eligible for special economic incentives. Six of these (Sei Mangkei, Tanjung Api-Api, Maloy, Palu, Bitung and Morotai) are focused on a mix of natural resource processing industries, mining and agricultural industries. Two (Tanjung Lesung, Mandalika) focus on tourism / ecotourism activities.

PLANNED SPECIAL ECONOMIC ZONES IN INDONESIA 2015-2019



Source: The Coordinating Ministry for Economic Affairs (2014)



How Green Growth Can Help Meet Indonesia's Infrastructure Needs to Boost Regional Growth

Given the long lifespan of ports, water and sanitation systems, and other major infrastructure, planning and investment decisions made in the next few years will have long-lasting impacts on the durability and climate resilience of Indonesia's basic infrastructure.

Integrating green growth approach in the design of SEZ master plans and urban development plans will help ensure that these investments will yield sustainable and socially inclusive benefits over the long term. Two examples are the application of 'smart' city technologies and the inclusion of extended costs-benefit analysis in planning. (For details, see the *Green Growth Roadmap*.)

Build 'smart' cities. 'Smart' cities apply digital technology and other means to engage citizens interactively, strengthen resilience, and improve efficiency in key sectors such as transport, energy, water and waste management. 'Smart cities' offer opportunities to use resources more efficiently and accelerate development of the service sector. Examples of smart city programs in Indonesia can be found in Palembang, South Sumatra, and the district of West Kutai in East Kalimantan. Semarang is also moving towards a 'green vision' that has many of the potential benefits of smart cities.

An important aspect of smart city planning is to take account of climate risks in plans and investment decisions—especially long-term investments in infrastructure, which can be vulnerable to the impacts of climate change. Finding ways to avoid or reduce flooding is important in low lying and coastal

areas. Climate risk assessment can be integrated in urban planning and investment targeted towards projects that avoid or mitigate climate risk.

The development of smart cities will require political commitment and local institutional capacity. Clear decision-making structures should be created within cities, incorporating cross-cutting responsibilities for urban transport, energy, water, and waste and inter-city transport links. By making the regulatory environment more attractive, Indonesia will attract more innovative and environmentally friendly private investors.

Apply extended cost-benefit analysis. The design of all kinds of infrastructure can benefit from cost-benefit analysis that weighs social and environmental impacts in addition to financial considerations. Extended cost benefit analysis (eCBA) takes into account the hidden and external costs not usually accounted for in investment decision making. A number of eCBAs undertaken by the GoI-GGGI Green Growth Program to review the impact of possible green growth interventions have demonstrated the tool's value in green growth planning and project design. Further work is being done to scale up the methodology for application in regional and sectoral planning by incorporating



SEMARANG: GREEN CITY OF THE FUTURE

The city of Semarang's spatial planning and infrastructure policy has been driven by the vision of making it a smart city resilient to climate change and other pressures. Green growth priorities have been embedded into the city's plans, including:

- Proposing 30% of the city as green open space;
- Targeting zero waste;
- Green procurement policies, including criteria relating to energy efficiency and recycled material requirements;
- Developing mass transportation solutions;
- Improving sewage management;
- Harvesting rainwater to improve sustainability;
- Upstream promotion of agroforestry and sustainable land-use to reduce the impacts of climate risks, such as landslides, flood and tidal inundation, drought and coastal erosion;
- Promoting green buildings with natural air circulation, natural lighting, water recycling, and environmentally friendly materials.

The city's ambition has been well publicized and is recognized as an example of best practice by policymakers throughout the country.

eCBA into strategic environmental assessments, or SEA (in Indonesian: *kajian lingkungan hidup strategis*, or KLHS). SEA is required by law in all major planning for regions, sectors, and strategic projects in Indonesia.

Extended cost-benefit analysis (eCBA) as part of the strategic environmental assessments of special economic zones can be used to improve their design in ways that maximize the social and environmental benefits—and limit potential harm—beyond just the financial considerations. The GoI-GGGI Green Growth Program conducted an eCBA of the KIPI Maloy special economic zone in East Kalimantan as a case study to illustrate the value of the methodology.

Using eCBA as part of the assessment and design of special economic zone master plans and the design of infrastructure generally will better enable Indonesia to attract the most innovative technologies and climate-savvy investors in these important engines of regional development.

Policies to establish green SEZs can contribute to economy-wide green growth outcomes in three main ways:

- *Incentivize green products to enter the SEZ:* This would help regulate and incentivize good practices outside of the zone, including imported and exported manufacturing products.
- *Design green growth policies for the entire SEZ in the earliest planning stage:* These would aim to improve the overall environmental performance of an entire zone by ensuring all investments contribute to green growth outcomes.
- *Provide incentives and regulate economic activities to attract green technologies and innovation within the SEZ.* These would aim to de-risk green investment by reducing operating costs for the investor.

Recent trends in Asia show that highly specialized and integrated SEZs are being established in other Asean

countries, including low carbon or green SEZs—with an emphasis on generating value-added, high-end economic activities, promoting linkages to local economies and operating based on integrated environmental management approaches. Indonesian SEZ planners have so far not yet paid sufficient attention to environmental and social sustainability factors, which are becoming increasingly important ‘pull’ factors attracting foreign investors.

APPLYING ECBA TO A SPECIAL ECONOMIC ZONE IN EAST KALIMANTAN

The extended cost benefit analysis (eCBA) of the KIPI Maloy Special Economic Zone in East Kalimantan evaluated the full range of costs and benefits likely to be generated by proposed green growth interventions. The zone aims to build up a competitive industry cluster by generating increased value-added economic activities from natural resource-based industries.

First, the current, baseline performance of the zone was identified with the help of local stakeholders and experts, and options were identified to improve the zone’s green growth performance. Impact pathways were then mapped linking design changes to anticipated impacts. The assumptions and results were validated with the stakeholders.

From a green growth perspective, the baseline plan for the SEZ is not optimal. Even with strong environmental regulations there are many factors that would lead to high social and environmental costs as well as economic inefficiencies.

The eCBA assessment considered nine green growth interventions, including gasification of coal for power generation, rerouting of a planned rail line, and extension of a road to help develop tourism. The aggregate net benefits of the nine interventions come to USD 3.8 billion—or more than 10% of East Kalimantan’s GDP in 2012—and represent a benefit-cost ratio of over 1.9.



Conclusion: How Green Growth Can Help Meet Indonesia's Infrastructure Needs to Boost Regional Growth

The National Medium-Term Development Plan aims to rapidly expand infrastructure for energy, water, connectivity, and manufacturing to meet demands for basic services, boost regional development, and sustain national economic growth. Investments in long-lasting infrastructure will have long-term impacts and should be protected from the risks of climate change and other external shocks.

Infrastructure must be made resilient and in such a way as to provide social and economic benefits with the least possible harm to people and the environment. Such investments, if planned and implemented with proper environmental and social safeguards, will go far towards meeting sustainable development goals (SDGs) and Indonesia's climate change commitments under the NDC.

A green growth approach will guide planning and investment in infrastructure towards the desired outcomes of green economic growth, social inclusion, and protection of valuable natural capital. Strategic environmental assessments (KLHS) can help mainstream green growth into development plans. Special economic zones offer opportunities for innovative policy measures and technological or knowledge-based solutions while, at the same time, boosting regional growth in key sectors and regions. Smart cities apply similar principles, policies, and incentives across entire urban areas. Using extended cost-benefit analysis can help guide planners and investment decision-makers to take account of the full range of social, environmental, and economic impacts.

THE GREEN GROWTH PROGRAM SUPPORTS INVESTMENT IN SPECIAL ECONOMIC ZONES

The GoI-GGGI Green Growth Program offers both financial and technical assistance for project development to reduce project risks and help the projects reach a bankable stage. The Program supports national and provincial government agencies in developing bankable green growth projects within SEZs, including applying the eCBA tool as part of the project's feasibility study. Use of the eCBA will help ensure that the identified projects can attract funding from a growing pool of climate-related investment funds that make environmental performance a key evaluation criteria.

The program is already providing strategic advice to the East Kalimantan government in drafting a *Master Plan Green Economy in East Kalimantan* (MPEH). Under this plan, eight Provincial Strategic Zones (*Kawasan Strategis Propinsi*, KSP) are being developed across East Kalimantan. These KSPs have the potential to be developed further to SEZs in the future.





For more information, contact:

Joint Secretariat Gol-GGGI Green Growth Program

Wisma Bakrie 2 Fl. 5

Jalan H.R. Rasuna Said Kav. B-2, Jakarta 12920

Indonesia