



## ENERGY BRIEF

# How Can Green Growth Help Indonesia Meet Its Energy Needs?

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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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 the **energy** sector. Other briefs in this series focus on the role of green growth in infrastructure in special economic zones, 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 The Energy Sector

### INDONESIA'S NATIONAL ENERGY PRIORITIES

Significant changes are taking place in the energy sector. Priorities in the National-Medium Term Development Plan (RPJMN 2015-2019) are the following:

- Strengthening energy security;
- Expanding energy infrastructure;
- Increasing the use of biofuels and other sources of renewable energy (RE), including solar, wind, geothermal, and hydro-power;
- Reducing energy subsidies.

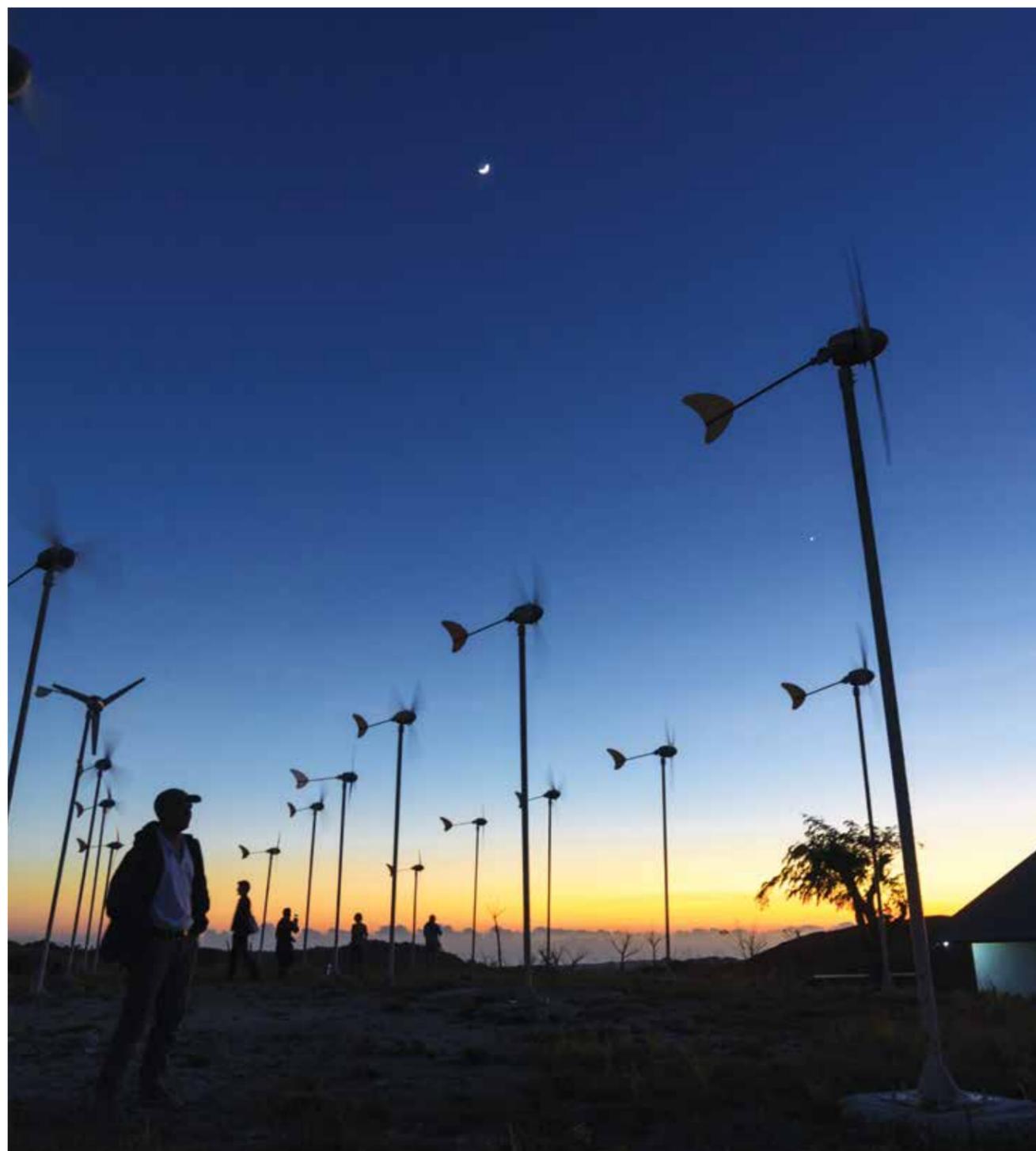
The National Energy Policy aims to draw 16% of all energy needs from renewable sources by 2019 and 23% by 2025.

Indonesia's rapid economic growth has outpaced investment in the energy sector, creating shortfalls, bottlenecks, and over-reliance on dirty, non-renewable resources. A priority for the government of President Joko Widodo is to increase public spending on energy and attract more private investment. The government is also focusing on strengthening energy security, improving access for the rural poor, improving outdated energy infrastructure, and increasing the use of domestically produced, renewable energy sources.

The government's goals are necessarily ambitious. Increased spending will be directed towards the construction and maintenance of power plants, processing and transmission infrastructure for new and renewable energy, oil-plants, LNG terminals, gas-piped transmission and distribution systems, gas stations, depots and smelters. The government also plans to streamline bureaucratic procedures, permitting, and land acquisition and promote innovation to accelerate energy sector development. Energy subsidies, which reached

nearly IDR 2.5 trillion in the last 10 years, will be drastically reduced so that more resources can be invested in productive programs.

Framing Indonesia's energy growth ambitions as part of a wider green growth agenda can help the government to achieve these goals. Table 1 demonstrates the key enablers needed to move towards low carbon energy sources and unlock growth opportunities that will benefit the whole population.



## How Green Growth Can Help Boost The Energy Sector

Green growth can help Indonesia meet its goals for the energy sector. Not only are renewable sources of energy cleaner than fossil fuels, they are also accessible within the country—and so reduce dependence on imports—and less subject to price fluctuations—making them more reliable and predictable in the long run. Cleaner energy also leads to better health, as damaging pollution is reduced.

**Table 1.**  
Enablers for green energy

Source: *Delivering Green Growth for a Prosperous Indonesia: A Roadmap for Policy, Planning, and Investment*

THEME	KEY ENABLERS	SUGGESTED INDICATORS
<p><i>Increase access to modern energy services in remote rural areas of Indonesia</i></p>	<ol style="list-style-type: none"> <li>1. Conduct regional assessments to determine appropriate energy solutions</li> <li>2. Provide incentives for investment in clean energy access solutions</li> <li>3. Investigate localized barriers to investment and develop knowledge transfer</li> </ol>	<ul style="list-style-type: none"> <li>• % of population with electricity connection</li> <li>• Country score on SE4ALL<sup>e</sup> multi-tier framework</li> </ul>
<p><i>Orient the energy sector towards lower carbon energy sources</i></p>	<ol style="list-style-type: none"> <li>4. Develop targeted approach to increasing value added in mineral processing</li> <li>5. Develop mineral processing industries in areas with renewable energy, water supply or other auxiliary resources</li> </ol>	<ul style="list-style-type: none"> <li>• % generation with renewables</li> <li>• % generation with gas</li> <li>• Energy Sector Carbon Intensity Index</li> </ul>

**Rural energy access.** Meeting the government's goal of raising the national electrification rate from 77% to 100% by 2020 would bring with it huge development benefits to local communities, including improved water sanitation and health services. Cleaner and more efficient energy sources will also help to reduce household air pollution and drive down costs related to health care and treatment. Green growth projects that promote renewable sources from wind, hydro, solar PV and bioenergy will make meeting this goal more cost-effective and better suited for remote parts of the archipelago.

### RENEWABLE ENERGY FOR SUMBA ISLAND

The Sumba Iconic Island project demonstrates a scalable green growth opportunity available to Indonesia. The majority of Sumba's 650,000 inhabitants currently have no access to electricity. A central diesel-fueled power plant has long been the main source of electricity on the island, and many people remain dependent upon expensive and unreliable fuel supplies. Inhabitants also use polluting and expensive kerosene for lighting along with firewood for cooking – both of which are associated with damaging health impacts.

The Iconic Island project plans to increase the electrification rate from 95% (the "electrification ratio target"), and increase the share of renewable energy on Sumba to 100%. Small-scale renewable energy projects will provide electricity to non-connected communities. Biogas and improved cookstoves will lead to healthier living conditions. Powerful renewable energy sources from wind, hydro, solar PV and biomass will replace solar diesel generators, while future plans will look at biofuel use for transportation.



### CEMENT PRODUCTION POWERED BY MUNICIPAL WASTE

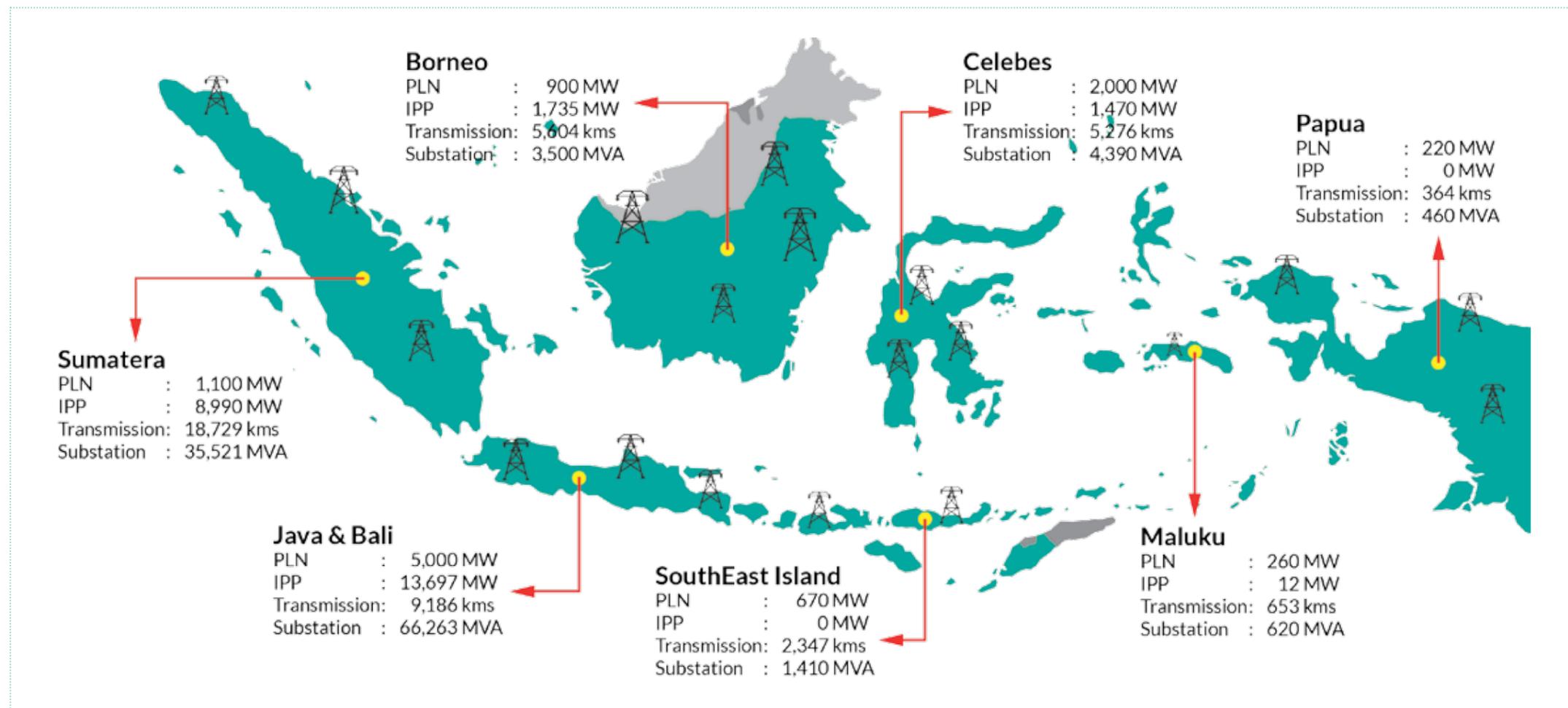
The cement manufacturer Holcim has taken an innovative approach to cement manufacturing which demonstrates the potential for clean technology in the manufacturing sector cluster. Holcim powers its plant in Jakarta by co-processing non-recyclable sorted municipal waste. Co-processing utilizes caloric (recovery energy) and mineral (recycling material) inorganic waste both as an alternative fuel and as raw materials.

This replaces a proportion of the main fuel and raw material used in the cement-making process. These waste materials would otherwise be sent to a hazardous waste incinerator or landfill. As such, this approach capitalizes on the green growth opportunities of promoting better waste management and improving energy efficiency. Furthermore, it contributes towards the long-term ambition of a circular economy and reduced GHG emissions.

**Improved energy security.** Indonesia's dependence on imported oil is a vulnerability that undermines energy security and national resilience. With current oil consumption at 1.36 million barrels per day (bpd) and production at only 826,000 bpd, Indonesia struggles to satisfy domestic demand for energy. Compounding this, limited refinery capacity serves only 70 percent of domestic demand. Green growth approaches focus on improving access to homegrown resources of energy like geothermal, hydro, and solar and help Indonesia reduce its vulnerability to the swings of global energy markets.

**Employment opportunities in new and emerging industries.** Many countries see green growth opportunities as the centerpieces of their industrial and innovation strategies: from the industrial production of solar and hydro technologies in China to the promotion of renewable sources for rural development in Nepal, Bangladesh and India. As a country on a similar development pathway, Indonesia has an important opportunity to become a major world player in innovative clean energy technologies.

**Environmental and climate benefits.** As a signatory to the Paris Agreement, Indonesia has pledged aggressive action to the reduction of its annual greenhouse gas emissions from domestic industry. Increasing the share of energy production from non-polluting and innovative renewable energy sources will help the country meet its international commitments, reduce air pollution that damages people's health, and improve the liveability of its cities. Private as well as public investment will be needed to achieve these ambitious goals.



### THE GREEN GROWTH PROGRAM SUPPORTS INVESTMENT IN CLEAN ENERGY

The GoI-GGGI Green Growth Program offers technical assistance, including investment services (e.g. arranging finance, match-making investors and project developers) for project development to reduce project risks and help the projects reach a bankable stage. Potential investors can be linked to projects in early stages either through independent power producer (IPP) schemes, ESCO, or other financial and legal arrangements. Currently (in 2016) the focus is on solar photovoltaic systems, the use of palm oil mill effluent (POME) for energy, and other bioenergy solutions, but activities will expand to include other renewable energy solutions based on interest and market demand for them. The Green Growth Program also explores investment opportunities in energy conservation and develops energy efficiency solutions through execution of energy audits in industry sectors.

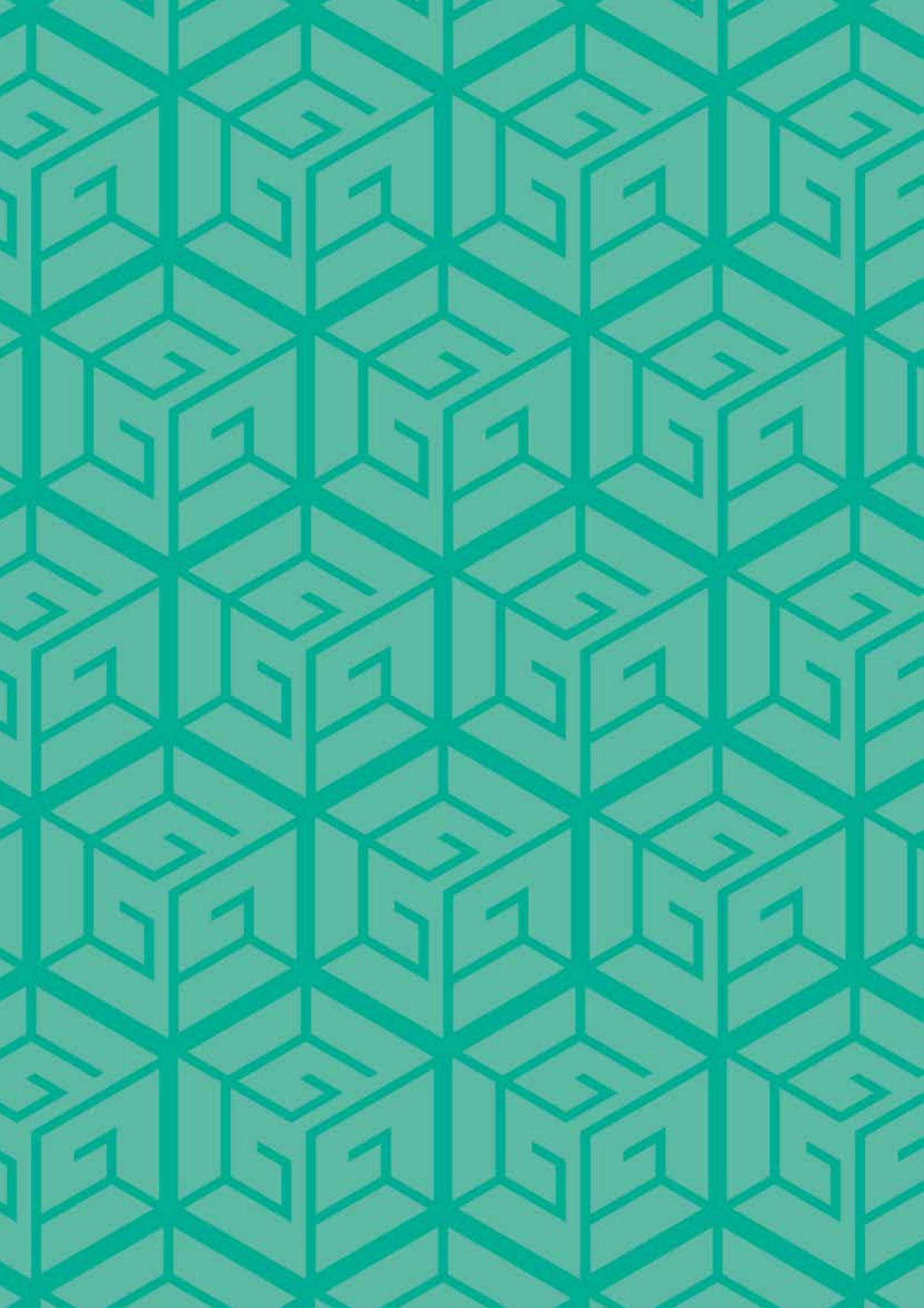
**Figure 1:**  
The 35,000 MW Power Plant Program

Source: PLN, 2015

**Financing green energy projects.** Green growth approaches can help Indonesia to apply innovative and creative funding schemes to encourage investments in renewable energy and energy efficiency projects. The State Electricity Utility (PLN) plans to build 35 GW of new power sources by 2019 capacity, of which around 25 GW will be developed by the private sector through an Independent Power Production (IPP) scheme. The remainder will be developed by PLN.

These projects are estimated to require aggregate investments of more than IDR 1,100 trillion (around USD 110 billion). The funding deficit towards meeting those targets is ominous: the 2015 State Budget allocates only IDR 2 trillion (around USD 160 million) for renewable energy development, and in order to achieve the 35 GW target, private investment in the order of IDR 16 trillion (around USD 1.2 billion) is needed. Green growth approaches will help Indonesia develop regulations that strengthen governance frameworks and improve investor confidence and lead to increased private and public investment.



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## Conclusion: How Green Growth Can Help Meet Indonesia's Energy Needs

The National Medium-Term Development Plan sets ambitious targets for strengthening energy security, expanding energy infrastructure, increasing the use of renewable energy, and reducing energy subsidies. A green growth approach to energy planning, investment, and operations can help achieve these goals.

Greater reliance on renewable energy can reduce dependence on imported fuels and vulnerability to energy price fluctuations. Exploiting locally available sources such as wind, solar, and bioenergy can improve access to energy by rural households in parts of the country. Investment in these new, clean sources of energy will stimulate employment, spur technological innovation, and attract new sources of finance for green energy projects and contribute to SDGs.

Investing now in green energy will pay long-term dividends in curbing pollution, making infrastructure clean and resilient to climate change, and using resources more efficiently. This will play an important role in building a cleaner, healthier, and more sustainable future based on people-centered growth that offers a high standard of living to all Indonesians.





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