



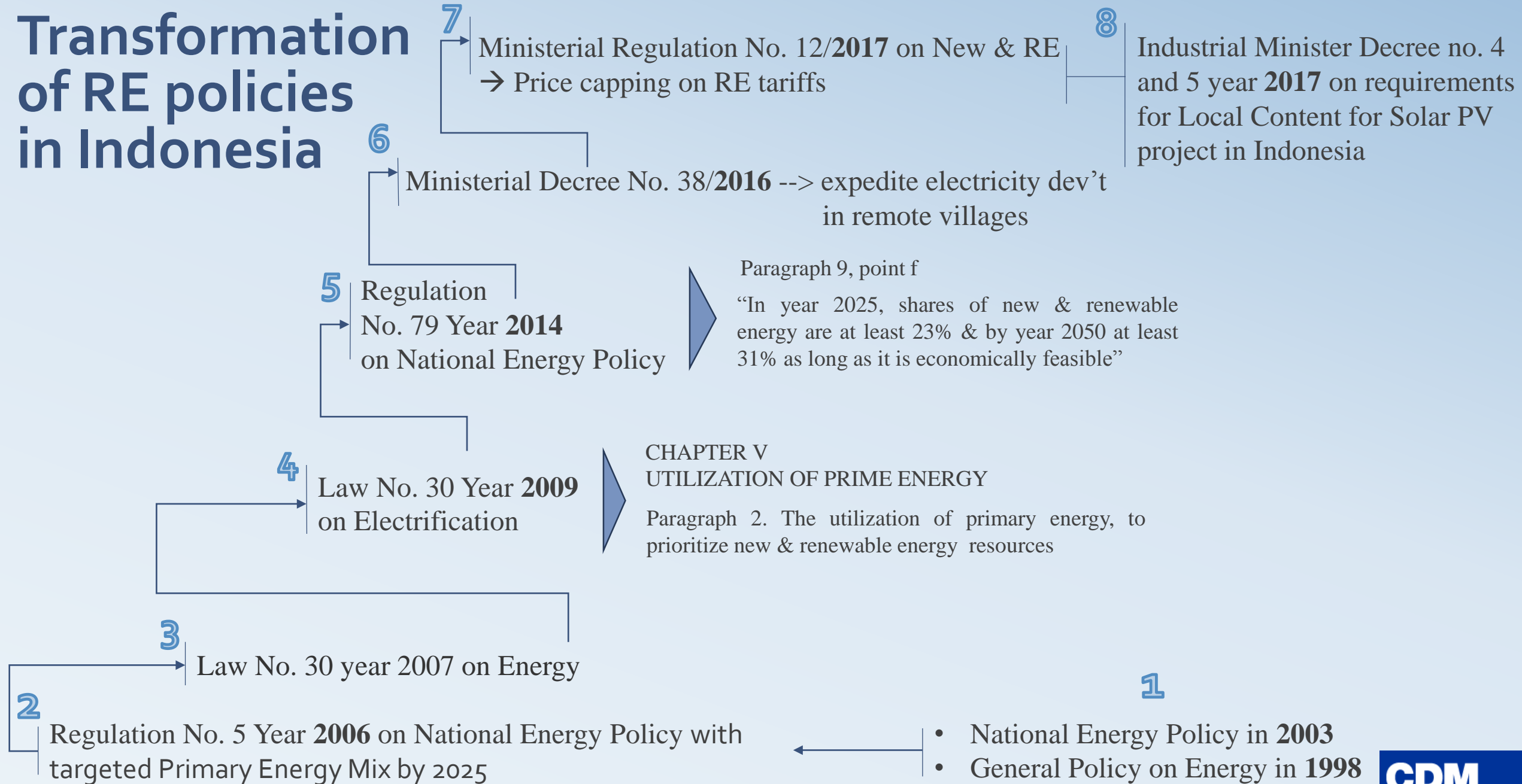
Off-Grid Renewable Energy Policies in Indonesia

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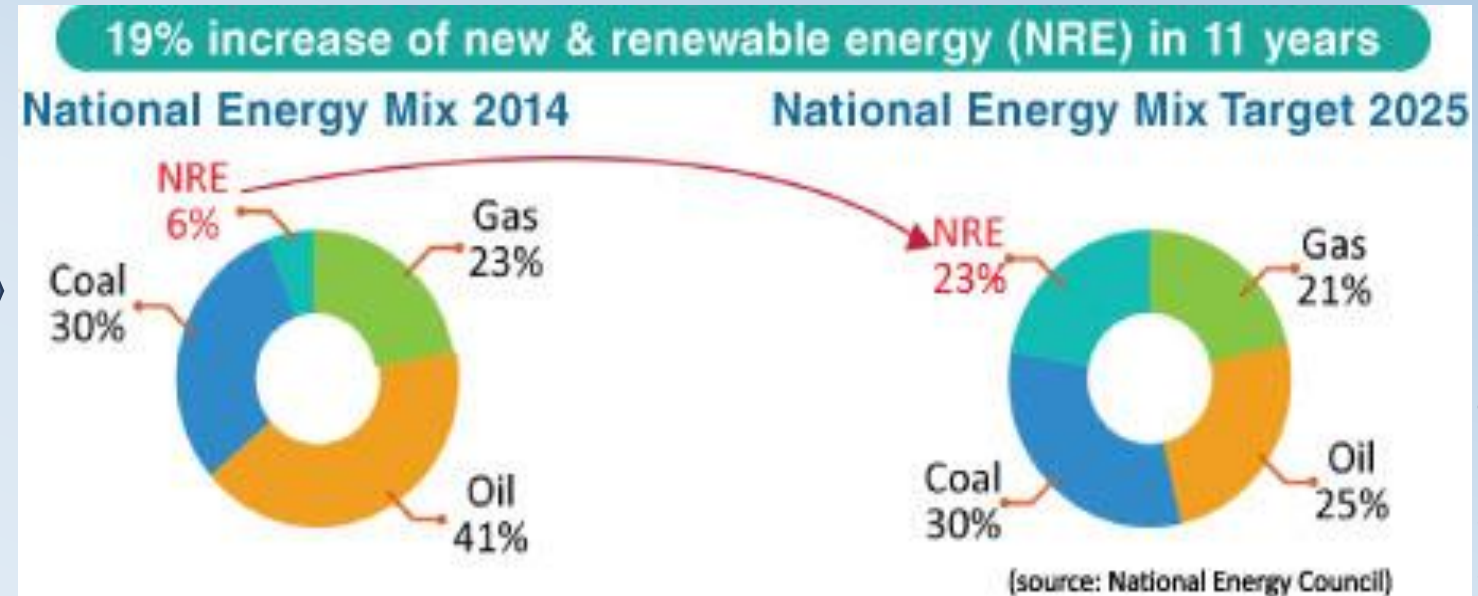
ADB Clean Energy Forum
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Transformation of RE policies in Indonesia



RE Policy vs Resolute Targets

Government Regulations no. 79 year 2014 on National Energy Policy



- Government established the 35,000 MW electricity project to 2020. RE portion: 25% ($\approx 8,750$ MW).
- Installed capacity of RE as of Dec 2016: $\pm 6,003$ MW (PLN, 2016)
- To meet 23% RE target by 2025: 45,000 MW of RE is required

Can we achieve 39,000 MW of RE within 8 years?

Recent status: RE Policies in Indonesia

Ministerial Decree No. 38/2016 on Acceleration of Electrification in Undeveloped Rural Areas, Isolated, Border, and Populated Small Islands Through Implementation of Small-Scale Electricity Supplies



To expedite electricity development in remote villages across the nation.

Ministerial Regulation No. 12/2017 on New and Renewable Energy



Price caps on RE tariffs.



Capping of RE tariffs → challenges profitability & sustainability of RE providers.

Ministerial Regulation No.
12/2017:
Top-down measure



<http://byjus.com/physics/renewable-energy/>

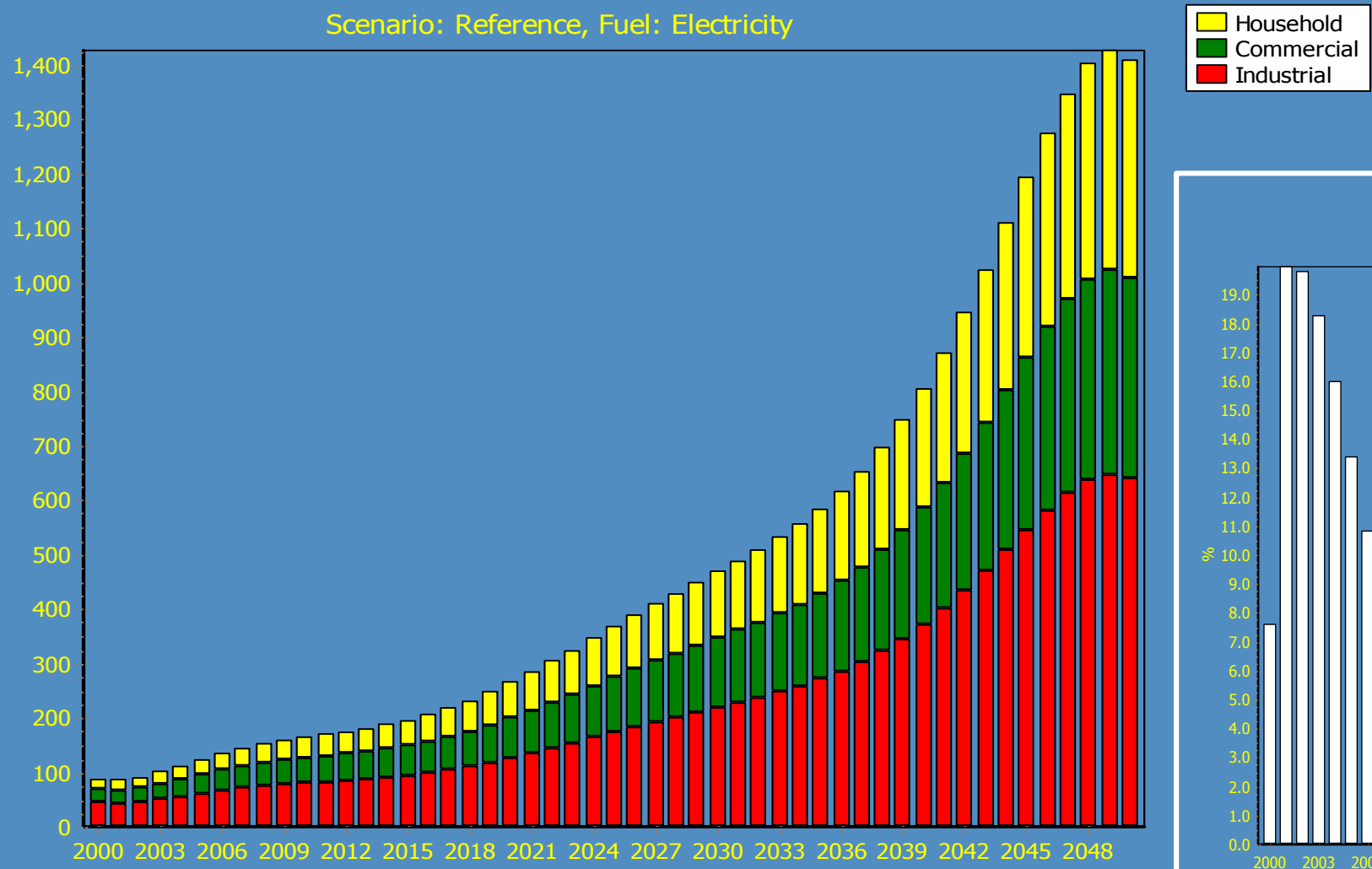
Bottom-up measures:

- Community's willingness (& ability) to pay
- Viable business plan, incl. expenses & revenues for:
 - Consumption
 - Production of goods and services.

ENERGY Demands Prediction

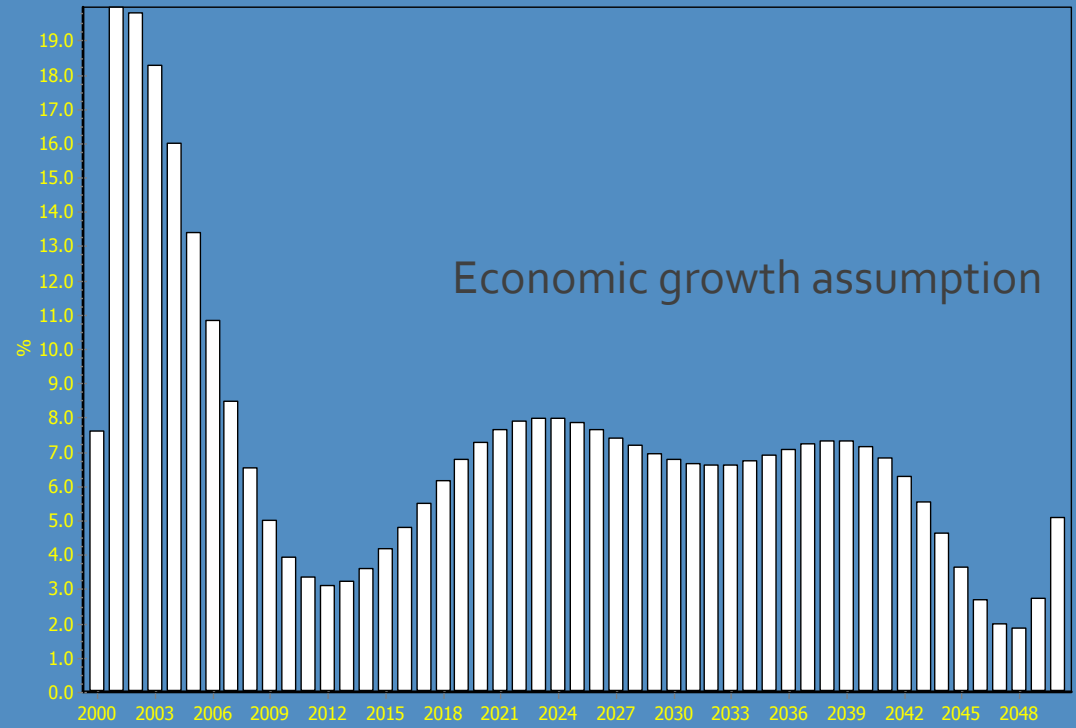
Demand Results: Energy demand final units

Scenario: Reference, Fuel: Electricity



Source:
N. Agya Utama, GCOE Energy Scenario 2050

Data Variable: Activity Level



Off-grid Rural Electrification



- Current electricity ratio of villages: 97%
- Over 2,500 villages had no electricity in 2014.
- State Electric Company (PLN) to electrify 504 villages by 2019
- More than 2,000 villages will still be unelectrified by 2019.

Tariffs & Incentives *vis-à-vis* Business

- Does **capping** of RE **tariffs** challenge the profitability & sustainability of RE?
- Should **incentives** (not) be offered?
- Can Indonesia **reduce high prices** in RE sector to encourage further development, especially in remote regions?
- Local content requirement

Reality check:

Indonesia: archipelagic country → remote regions accessibility issue.

Challenges of rural off-grid RE:

- High costs of equipment and personnel mobilization to remote sites,
- High O&M costs
- Personnel costs
- Battery replacements & major overhauls
- Lack of competence of local personnel in villages
- Readiness and quality of local RE equipment

Viable business plans: required to ensure sustainability of the off-grid community RE

Evocations for the Government

The government to incentivize by providing investments, e.g:

- Support projects that **ease access** to mobilize equipment & personnel for energy development
 - Road/sea/air infrastructures
 - Establishment of inter-ministerial & inter-sectoral coordination to prioritize villages to be electrified & the associated port, road, bridge investments
- Proper incentives to lure investors in RE sector to cover:
 - CAPEX
 - OPEX to mobilize, construct, and **sustain** the power plant.

Lessons Learned: Ways toward Successful Community-based RE

Sufficient funds & ability to operate & maintain RE plant

Community “sense of ownership” of power plant
(e.g. through shares / other contributions)

Avoidance of ‘elite capture’, empower the community,
women & vulnerable minorities

Assurance on preservation & safeguard of the environment

Viable business plan for profitable & sustainable business

Off-grid green energy: Revolution to evolution



Indonesia has reached a nearly 97 percent ratio of villages with electricity, in which over 2,500 villages had no electricity in 2014.

The plan of state-owned electric company PLN to build more power plants is merely to cover 504 villages up to 2019 (Central Statistics Agency [BPS], 2015), which implies that more than 2,000 villages will still not be electrified by 2019. This poses both a challenge and an opportunity.

Then comes off-grid renewable energy (RE) development. It is where developers create new supplies and micro-grid solutions that are disconnected from PLN's grid. Based on the recent statistics published by the International Renewable Energy Agency (IRENA) titled "Re-thinking Energy 2017," the RE electricity generation in Indonesia in 2014 was 33,750 gigawatts per hour (GWh).

This is diminutive compared to China's RE generation of 1,253,230 GWh, India with 185,569 GWh, and nearly half of Vietnam's generation of 66,489 GWh.

Ministerial Decree No. 38/2016 was devised to help expedite electricity development in the remote villages across the nation. Shortly after, Ministerial Regulation No. 12/2017 on new and renewable energy was introduced, which put price caps on RE rates.

As such, the capping of RE



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rates may challenge profitability and sustainability of RE providers. Some have argued that incentives should not be offered and further suggested that Indonesia should also be able to reduce the high prices in the sector to encourage further development, especially in remote regions (*The Jakarta Post*, Jan. 25).

However, despite this sentiment, the reality is that the Indonesian archipelago includes many remote regions that are not easily accessed. The challenges of rural off-grid RE are, among others, due to the high cost of equipment and personnel mobilization to remote sites, high costs for operation and maintenance personnel costs and battery replacement (particularly for solar photovoltaic). Viable business plans are required to ensure the sustainability of off-grid community renewable energy.

There have been many prior community-based projects that have failed owing to insufficient funds to operate and maintain the infrastructure. The communities must be preconditioned to have ownership of the power plant, through shares or other

types of contributions. Despite the "warm glow" of community RE projects, business is business and must be profitable; especially so if the private sector is involved.

The RE-based electricity rate price caps promoted through Ministerial Regulation No. 12/2017 is a top-down measure; which appeared to have missed the points on the significance of taking into account bottom-up measures such as the community's willingness (and ability) to pay, as well as viable business plan that takes into account the expenses to be incurred and the projected streams of revenues — not merely for consumption but also for establishing lucrative production of goods and services.

Further to the discourse on the off-grid electrification to more than 2,000 unelectrified villages, the government could help to provide investment in the following ways.

Central and provincial governments should support projects that ease access for mobilizing equipment and personnel for energy development. In this regard, road/sea/air infrastructure are of quintessential requirements.

The government would need to have sound establishment of inter-ministerial and inter-sectoral coordination in to prioritize villages to be electrified and the associated port, road, bridge investment.

This is also in sync with what

was suggested in IRENA's recent report, wherein the higher technology and financing risks associated with RE implies the widely required public support for the development. It is especially so in the developing countries, usually in the form of syndicated loans that involve multiple development banks (IRENA, 2017).

In addition to the above points, proper incentives should be prepared to lure investors in this sector. Otherwise, the business may not be able to sustain given the high capital and operation expenditures that should be incurred to mobilize, construct, and sustain the power plant.

In a similar line of statement by Ralph Nader; the shift of fossil fuel energy to green energy is not yet much-tapped, because the industry sectors do not own the sun, the wind, or the rivers. Turning from fossil fuel to green is a foreseeable future, however all stakeholders must share the same level of determination to achieve this overarching goal.

Moving beyond the green energy revolution that has already taken place, we shall move forward to evolution for further development and widespread application.

The writer is the lead of community renewable energy program — CDM Smith, Jakarta, and a doctorate alumnus of Kyoto University, Japan. The views expressed are her own.

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Thank you!