Indonesia Supergrid : A Key to 100% Renewable

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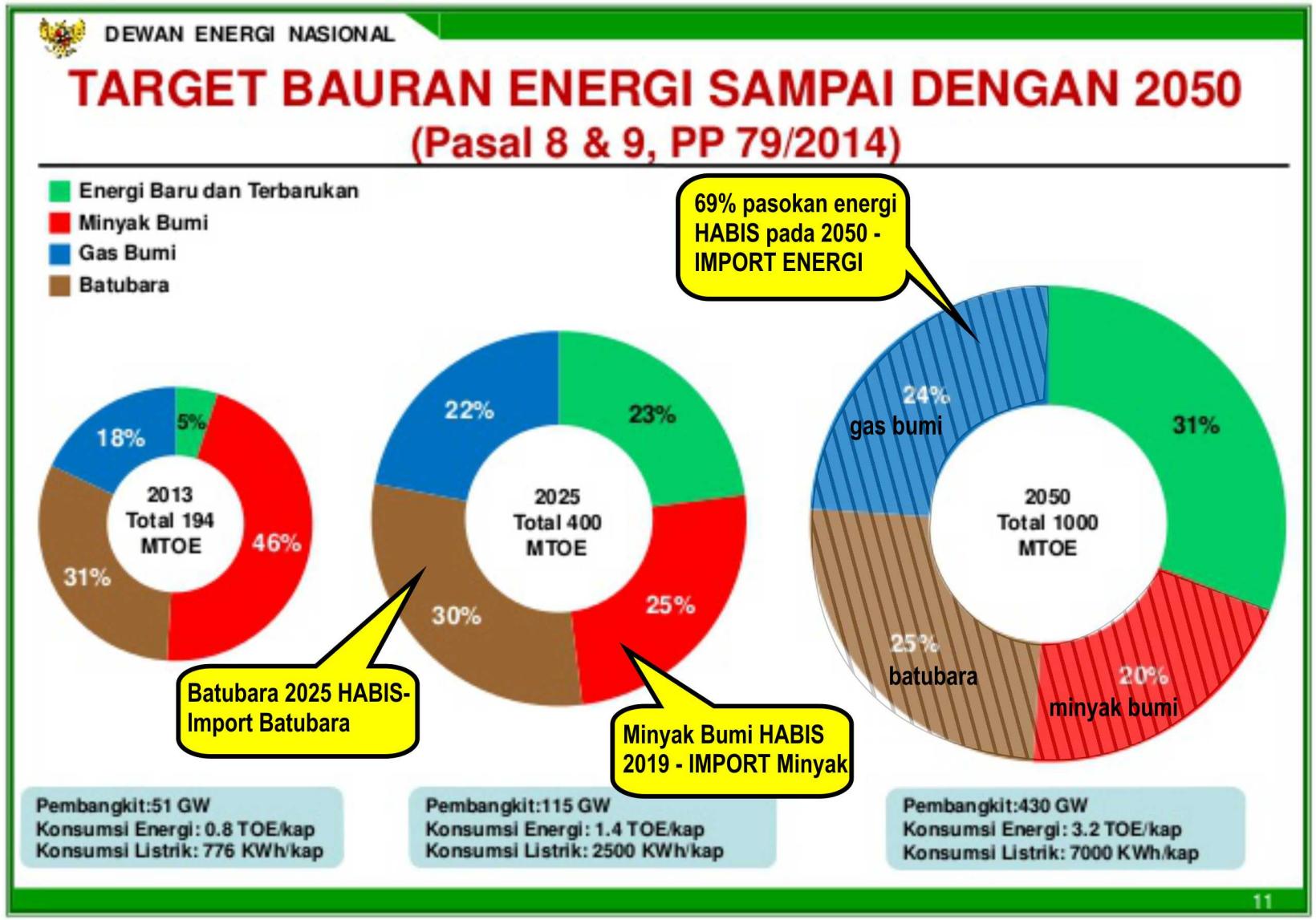
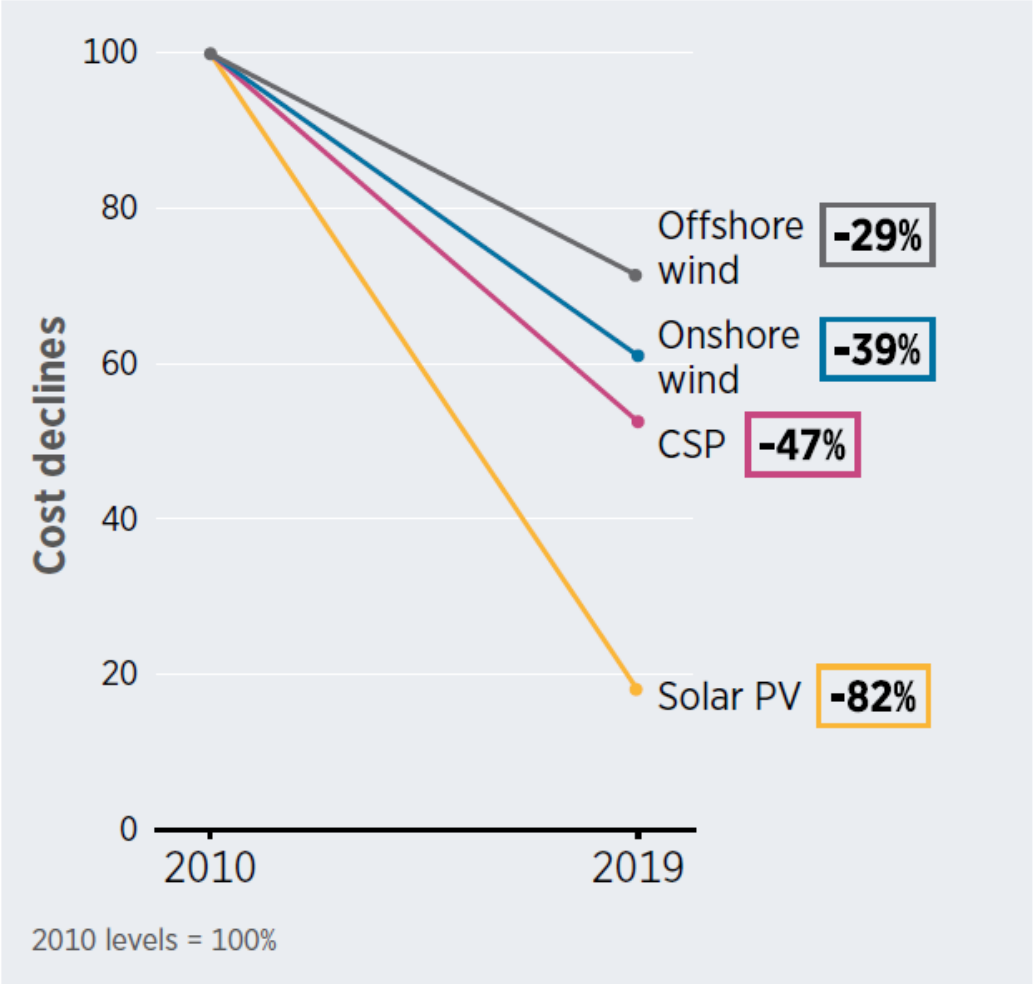
Sustainable Electricity

- produce, transmit and use electrical energy in an environmental friendly,
- reduce costs by improving operating efficiency and business practices, and
- enhance the reliability and quality of power supply.



Why not 100% RE by 2050%?

Trends



Source : IRENA Report 2019

Advantages of CSP:
- Produces high short-circuit current
- Has rotating inertia
- Simple technology as steam power plants

Disadvantages:
- Not suitable for small scale
- Deployment is longer than PV

Cost of PV and wind powers do not Include the cost of battery.

Indonesia Supergrid

Indonesia Supergrid : 6 Juli 2021

Merits of Supergrid

- Power plants can be built near the primary energy source location.
- Many renewable energy sources can be utilized
- Sharing resources among regions
- Penetration of variable renewable energy sources can be maximized without using expensive energy storages
- Many new energy centers can be established
- Industry can be built near the raw material location

AC or DC Supergrid?

- DC transmission is the only feasible transmission using long submarine cable
- DC transmission can be used as a firewall between areas
- DC transmission can be used to smoothing the variation of wind and solar powers
- DC transmission can be used to stabilize the existing AC power systems

Cost Estimate

- Submarine cable cost is about US$ 1-1,5 million/km/GW
- Power converter cost is about US$ 300-400 million/GW
- Exact cost of submarine cable construction is strongly affected by the depth of the sea
- Exact cost of power converter is determined by the required features.

Financing Problem

- Supergrid construction is very expensive
- The sea in east part of Indonesia is deep.
- The funding from the country or PLN is limited.

Solution:

Crowd funding from the people.

Conclusion

- Supergrid is a key toward 100 % renewable energy.
- Supergrid is a key to evenly distribute the wealth and development.
- Supergrid is a key to increase the country income by exporting the energy.
- Technology and financing are not hurdle to construct the supergrid.
- Supergrid and microgrid are tango to achieve sustainable electricity.

Terimakasih