Towards net zero 2060 through early coal retirement and coal phase out strategy

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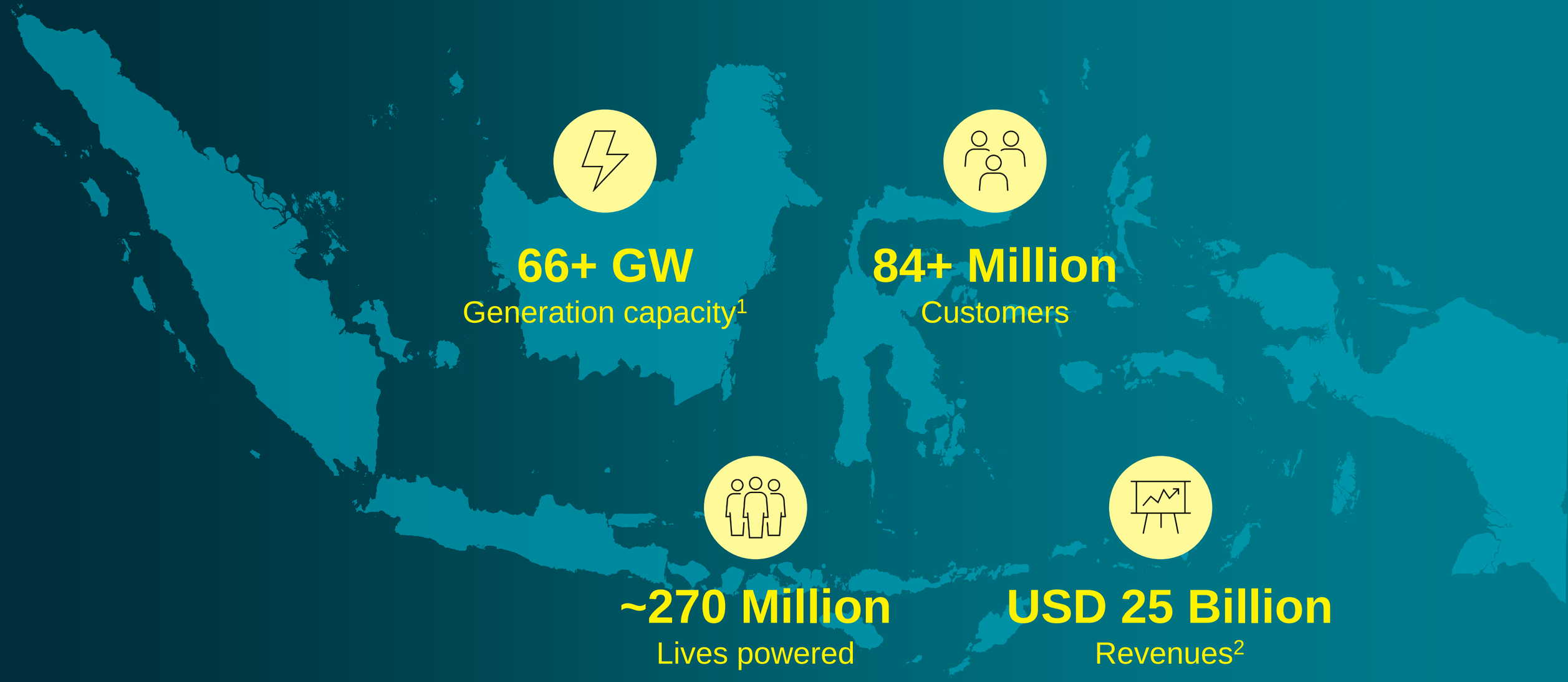
Anindita Satria Surya - PT PLN (Persero)

For 77 years, PLN has been powering millions of lives in Indonesia



66+ GW
Generation capacity[1]

84+ Million
Customers

~270 Million
Lives powered

USD 25 Billion
Revenues[2]

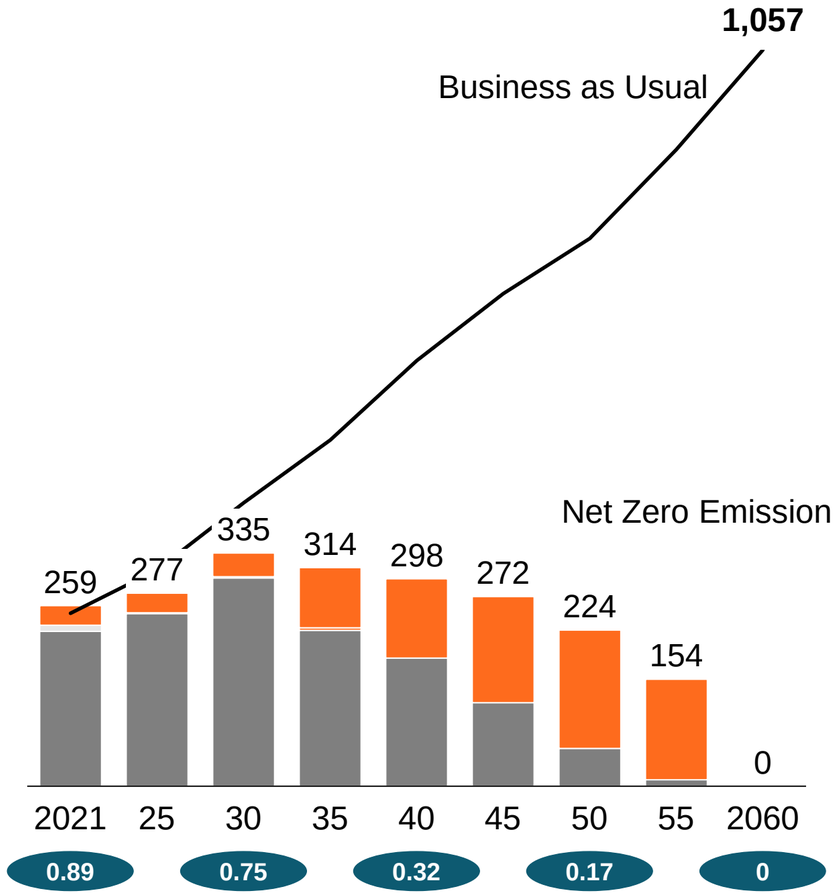
1. Including Independent Power Producers
2. 2021 Consolidated Financial Statements of PLN, equivalent to 368 Tn IDR

PLN has declared its roadmap to achieve net zero emission by 2060

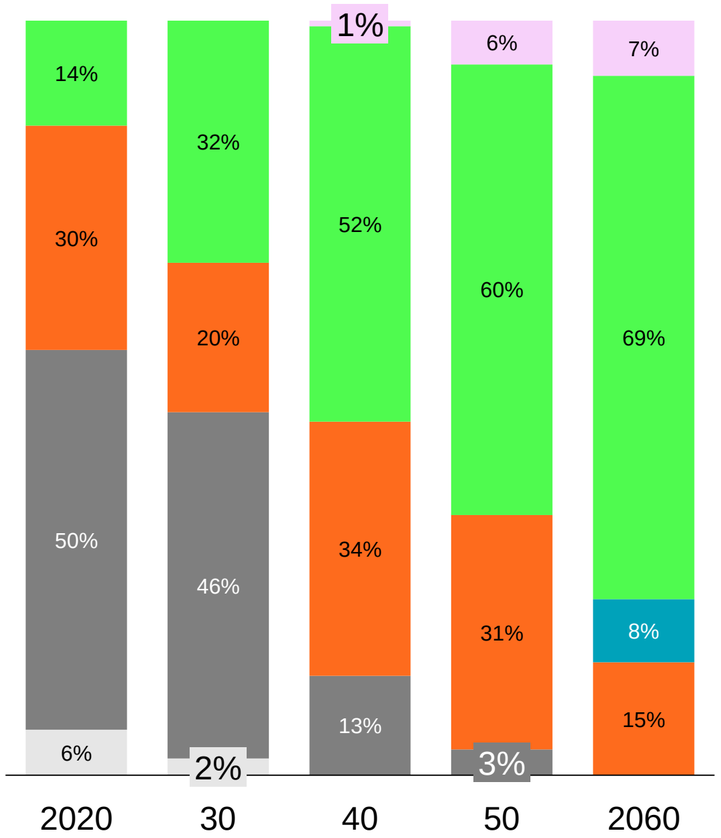
XX **Emission intensity,** tCO2/MWh

New energy | RES | Coal CCS[3] + Gas CCS | Gas[2] | Coal | Oil & other

Power sector CO2 projections, million tCO2e/yr



Capacity share by technology for net zero scenario[1], %



PLN is on a journey to become a clean power company

PLN will expand power capacity to support the growth of Indonesia's economy & power demand

PLN to focus power capacity expansion **with renewables technology**

RECAP: PLN will continue to implement all energy transition initiatives, to walk the net zero 2060 commitment

Aspiration
Net Zero emissions by 2060

Shift away from high carbon power generation

A

Short-term (2021-30) goal: Over-deliver on NDC

- Renewables
- De-dieselization
- Coal plant retirement
- Biomass co-firing
- Energy efficiency & grid loss improvement
- Gas expansion
- Clean coal

B

Long-term (2031-60) goal: Achieve Net Zero Emission

- Renewables + Battery Storage + Interconnections
- Hydrogen co-firing
- Carbon Capture Utilization & Storage (CCUS)
- Additional coal plant retirement

Growth powered with new technologies / businesses

C

Develop supporting technologies and ecosystem

- Electric Vehicles
- Rooftop solar
- Energy as a Service
- REC1 / Carbon credits
- Emissions trading scheme

D **Build a capable organization supported by innovative technologies, financing, and policies**

More than **USD 700 Bn** total investment cost to reach net zero emission by 2060

1.Renewable Energy Certificates

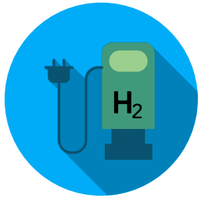
PLN has been working on eight lighthouse initiatives on energy transition towards net zero emission 2060

Lighthouse initiatives:

Decarbonize coal and gas plants

1. 
Plan and finance early retirement of coal plants

2. 
Implement biomass co-firing and enhance the biomass supply chain

3. 

Pilot hydrogen and ammonia co-firing

4. 
Initiate study on carbon capture & storage (CCUS) implementation

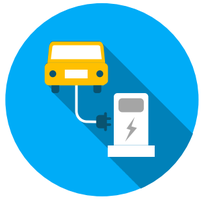
Expand renewable capacity and its supporting systems

5. 
Build more renewables plants capacity

6. 
Roll-out smart grid & control system in several islands

Develop green ecosystem

7. 
Enable renewable consumption through Green energy as a service

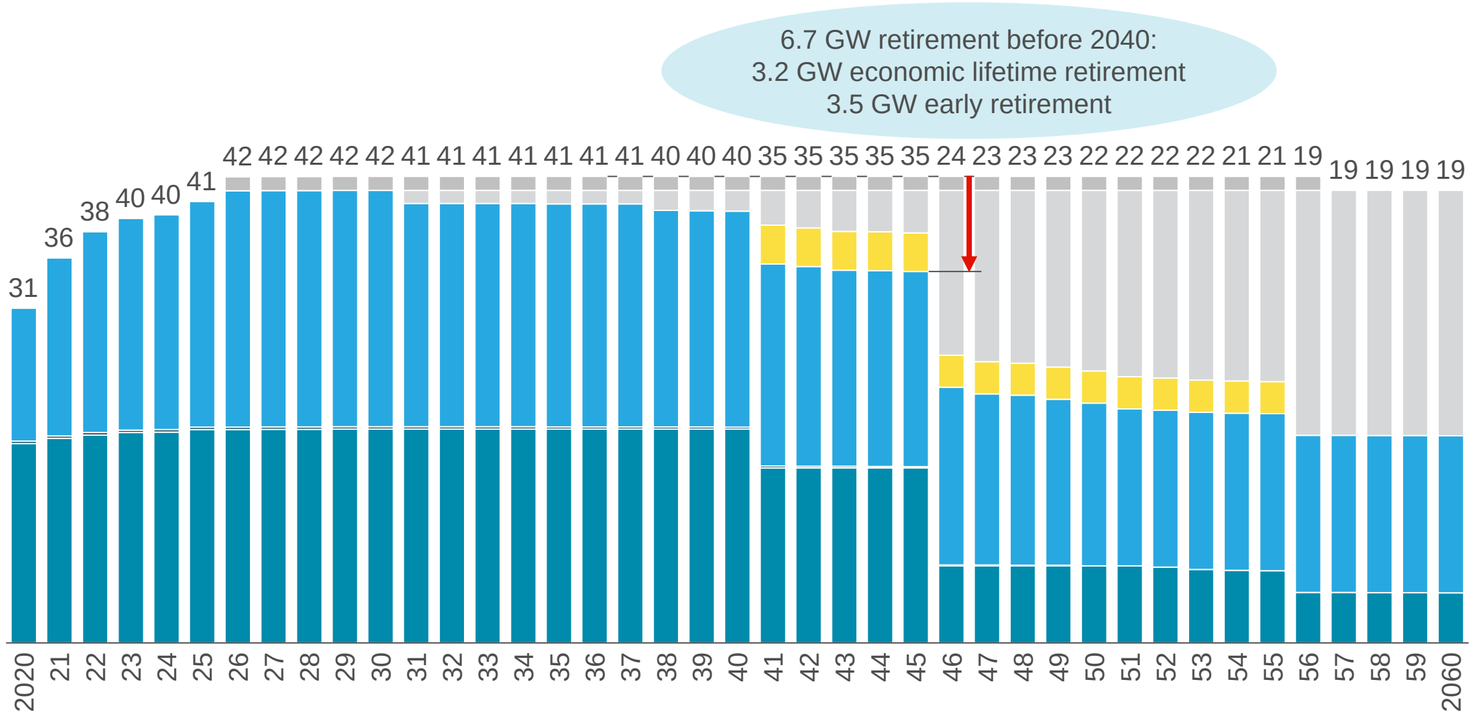
8. 
Expand the electric vehicles ecosystem

1 PLN seeks opportunities to early retire coal power plants

PRELIMINARY

Terminated projects
Economic lifetime retirement
Early retirement
Target IPP capacity
Target other CFPP (excess, rent, etc.) capacity
Target PLN capacity

Coal plant installed capacity plan 2020-2060, GW



Economic lifetime retirement = PLN's accounting retirement year

1. Assuming 30 years lifetime and annual emission of ~3,500 ton CO2/MW

6.7 GW retirement by 2040
with **3.2 GW** subject to **economic lifetime retirement**, and **3.5 GW** subject to **conditional early retirement**

16 GW retirement between 2040 and 2060
instead of further extending the lifetime of coal plants through refurbishment

19 GW reserved for optionality
until 2060 for **emerging technologies implementation** (e.g., biomass & ammonia co-firing, CCUS)

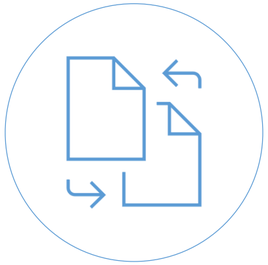
Spin-off with blended financing is considered as one of the viable early retirement financing options in Indonesia

Preliminary

Early retirement scheme options

1 Write-off/ accelerated depreciation

Early decommissioning of asset by write-off or accelerated depreciation with comp A subsidy support



2 Spin-off with blended financing

Spinning off assets to the SPV[1], with lower cost financing that allows earlier investment return and retirement afterwards

3 IPP refinancing

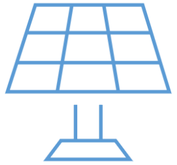
Early retirement of IPP's coal plant asset, by providing low-cost refinancing and decommission the asset earlier

1. Special Purpose Vehicle

Coal plant retirement is needed while renewable is ramping up; however, four key conditions need to be fulfilled prior to retiring

FOR DISCUSSION

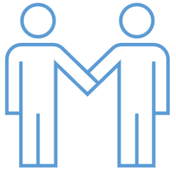
1



Only after grid substitution is built

Coal plant can only be retired earlier once grid stability is ensured, with substitution from renewable replacement and/or transmission system installation

2



Assurance of just transition

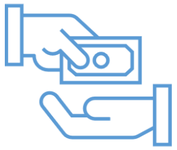
There should not be any negative social impact from coal plant early retirement

3

Minimal increase in LCOE

Higher LCOE due to early retirement with replacement should not over-burden the Indonesian govt.

4



Confirmed international financial support

Overall cost of early retirement, just transition, and replacement must be covered with financial support from the international community

PLN is working on various agenda securing sustainable financing to support its decarbonization agenda

PLN's current green financing initiatives

1 PLN issued its "**Statement of Intent on the Sustainable Financing Framework**" (Nov 2020)

2 PLN has successfully issued its first **MIGA covered green loan worth USD 500M**, (Dec 2020)

3 PLN signed **USD 600M Sustainable and Reliable Energy Access Program (SREAP) financing** from ADB[1]

4 PLN has secured **USD 610M loan** from World Bank-AIIB for 1040 MW hydropower pumped storage project

5 PLN finished its **green finance framework** and signed mandate letter for **USD 750M syndicated green loan facility** with international banks

6 PLN is working on the **ESG Framework** and **ESG Linked Financing**

1 For transmission reinforcement project, clean energy projects and for improving corporate financing management (May 2022)

https://bit.ly/2YQkRyf


PLN