Kementerian Koordinator
Bidang Infrastruktur dan Pembangunan Kewilayahan

AIFED: Leveling Up National Industrial Policies

03 Desember 2024

Indonesia Aims to Grow Its Economy by 8% – At The Same Time Driving Self-Sufficiency and Net Zero Commitment

Other aspirations as boundary condition

Self-sufficiency
(food, energy, water, and creative, green & blue economy)

Net Zero Emission 2060

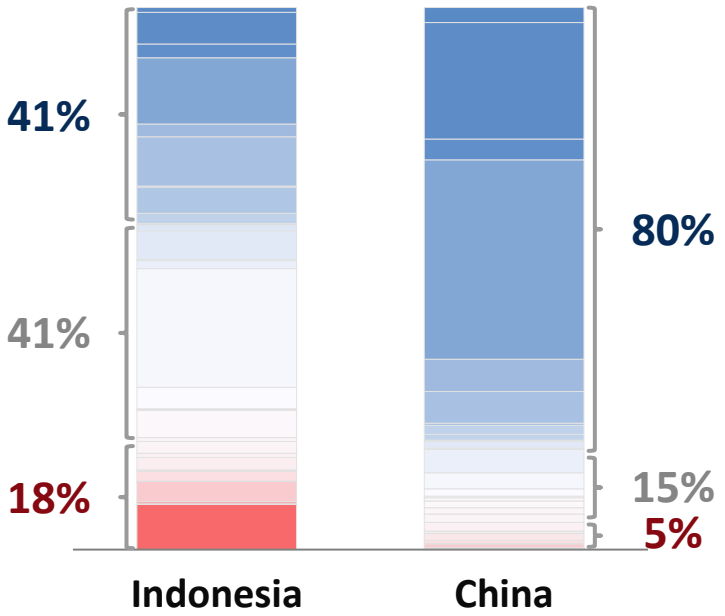
Indonesia Has Abundant Critical Minerals, But Lacks the High-Complexity, Value-Added Industries to Fully Harness Their Value

Indonesia is rich in critical mineral reserves …

- **Ni** — **The world's largest** nickel reserves
- **Co** — **The 3rd largest** cobalt reserves in the world
- **Sn** — **The 2nd largest** tin reserves in the world
- **Al** — **The 6th largest** bauxite reserve
- **Cu** — **The 7th largest** copper reserves

… but lacks value-added processing industries

Export value of green value chain products[1] by Product Complexity Index (PCI)[2], Based on 2022 export



Legend

Higher product complexity index

End products (e.g., batteries, electric motors, semiconductors)

Mid-stream products (e.g., refined copper, aluminum plates, chemical compounds)

Raw materials (e.g., metallic and non-metallic ores)

xx% % of export value on higher PCI

xx% % of export value on median PCI

xx% % of export value on lower PCI

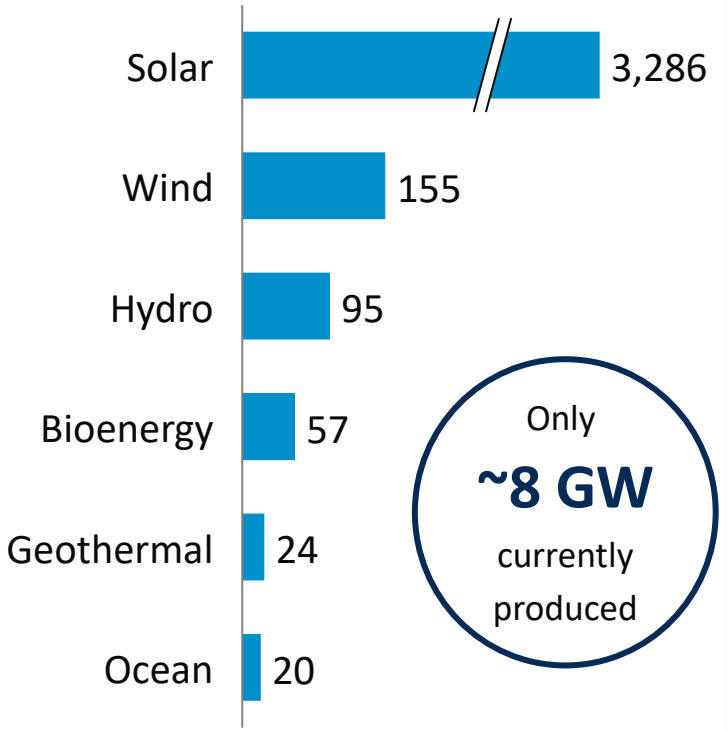
Indonesia can maximize the value of its limited critical minerals by focusing on downstream processing

1. Gren value chain products for EV, solar power, battery, electrical transmission, and critical minerals; 2. The Product Complexity Index (PCI) measures how sophisticated a product is, based on the knowledge and skills needed to make it and how unique it is to produce; Source: The Atlas of Economic Complexity

The High Potential of Local Renewables Presents an Opportunity for Indonesia to Reduce Its Reliance on Fossil Fuels Imports

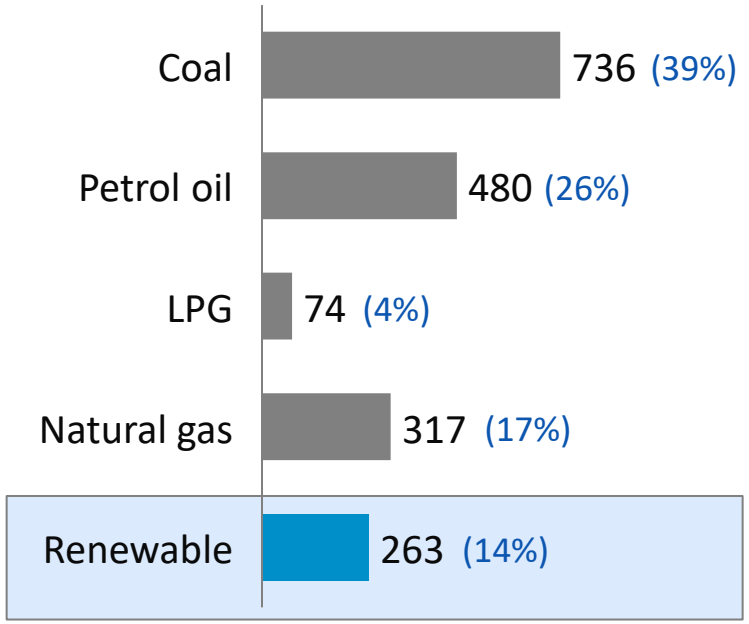
Indonesia has a huge potentials of local renewable energy generation

Renewable energy generation potential in GW



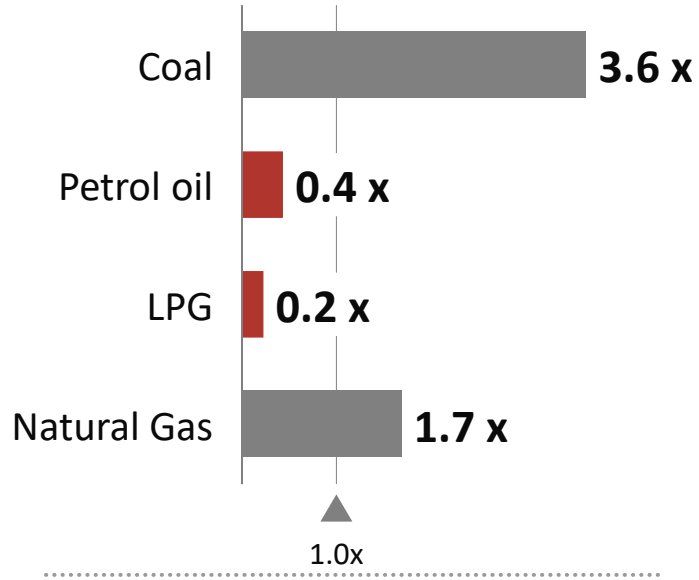
However, 86% of energy consumption comes from fossils

Primary energy consumption 2023 (Mn BoE)



Reliance on petrol and LPG creates a substantial import burden

Production vs demand of primary energy in 2023 (times)



Imports and subsidy[1] (avg. '19-'23)

- Petrol oil: $17 Bn imports; $8 Bn subsidy
- LPG: $4 Bn imports; $4 Bn subsidy

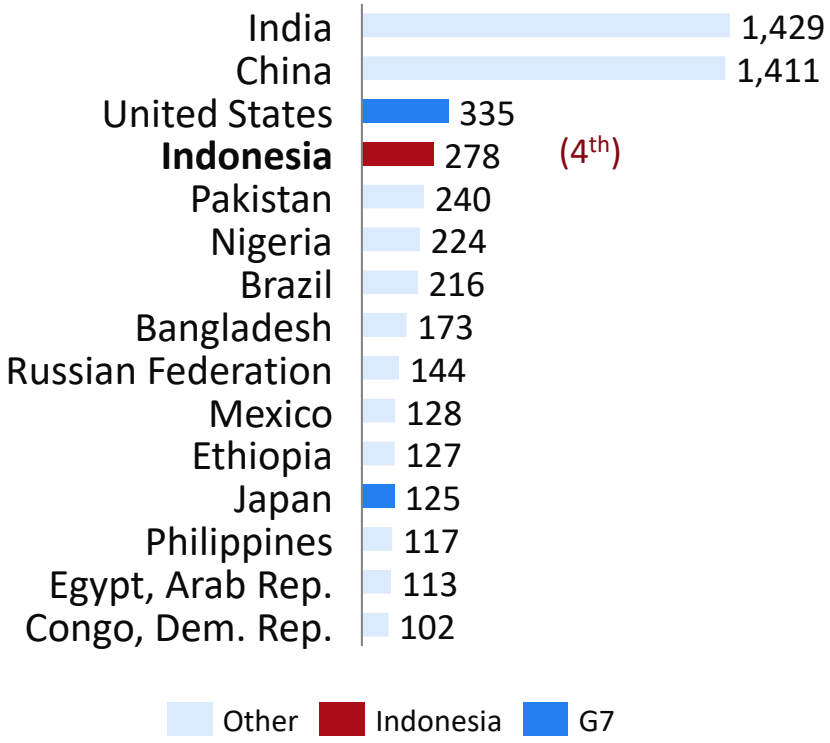
1. Assuming 1 USD = IDR 15,500

Source: RUPTL 2021-2030 PLN, BPH Migas, KESDM; LKPP-DJPB Kemenkeu 2023; SEKI BI 2023

Indonesia Has A Large Economy Supported by Substantial Population, Yet Its GDP per Capita Level Provides Rooms for Expansion

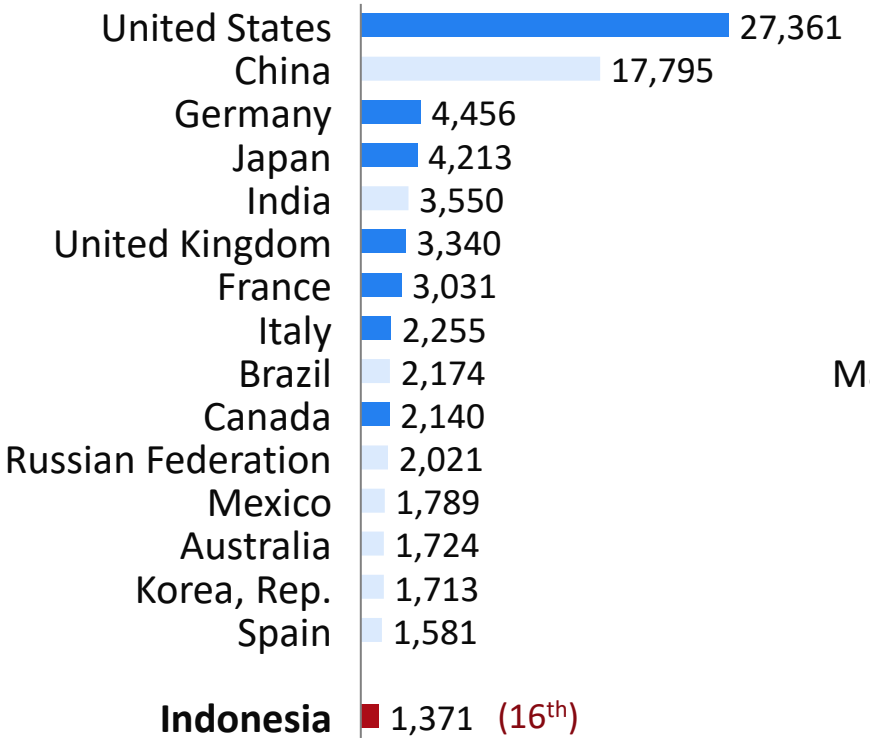
Indonesia has the 4th largest population globally…

Total Population 2023 by country
(Mn ppl.)



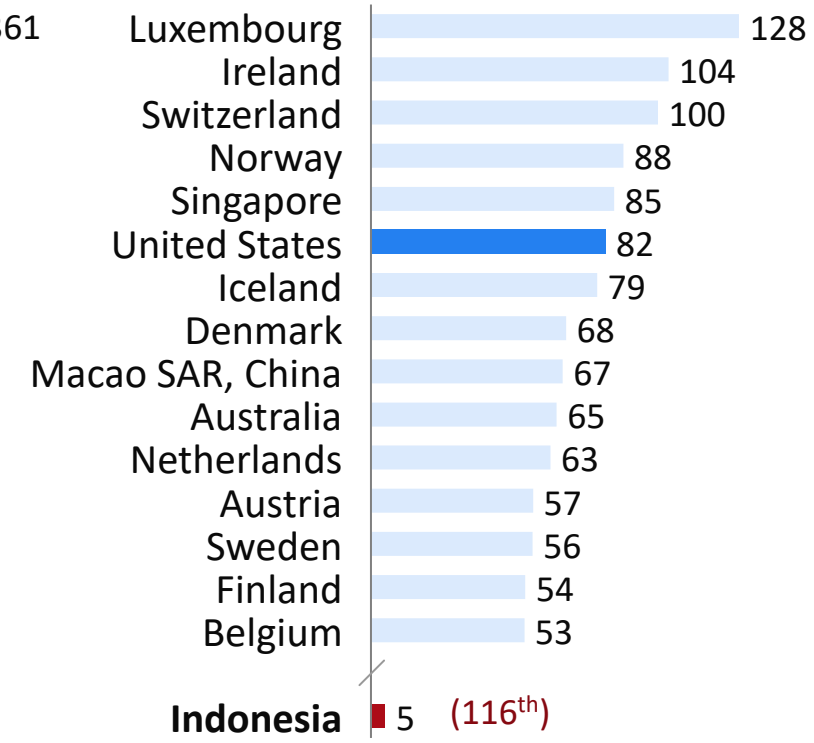
…16th economy globally…

GDP 2023 by country
(Bn USD)



…but is still developing GDP per capita wise

GDP per capita 2023 by country
(thousand USD/capita)



Source: Population, total | World Bank, GDP (current US$) | World Bank

Indonesia Needs to Address the Paradox Between Its Vast Potential and Persistent Challenges

Present

- High portion of commodity from **extractive industry** (coal, minerals)
- Significant **fuel imports**
- Majority of energy from **fossil source**
- **Developing economy** with large population

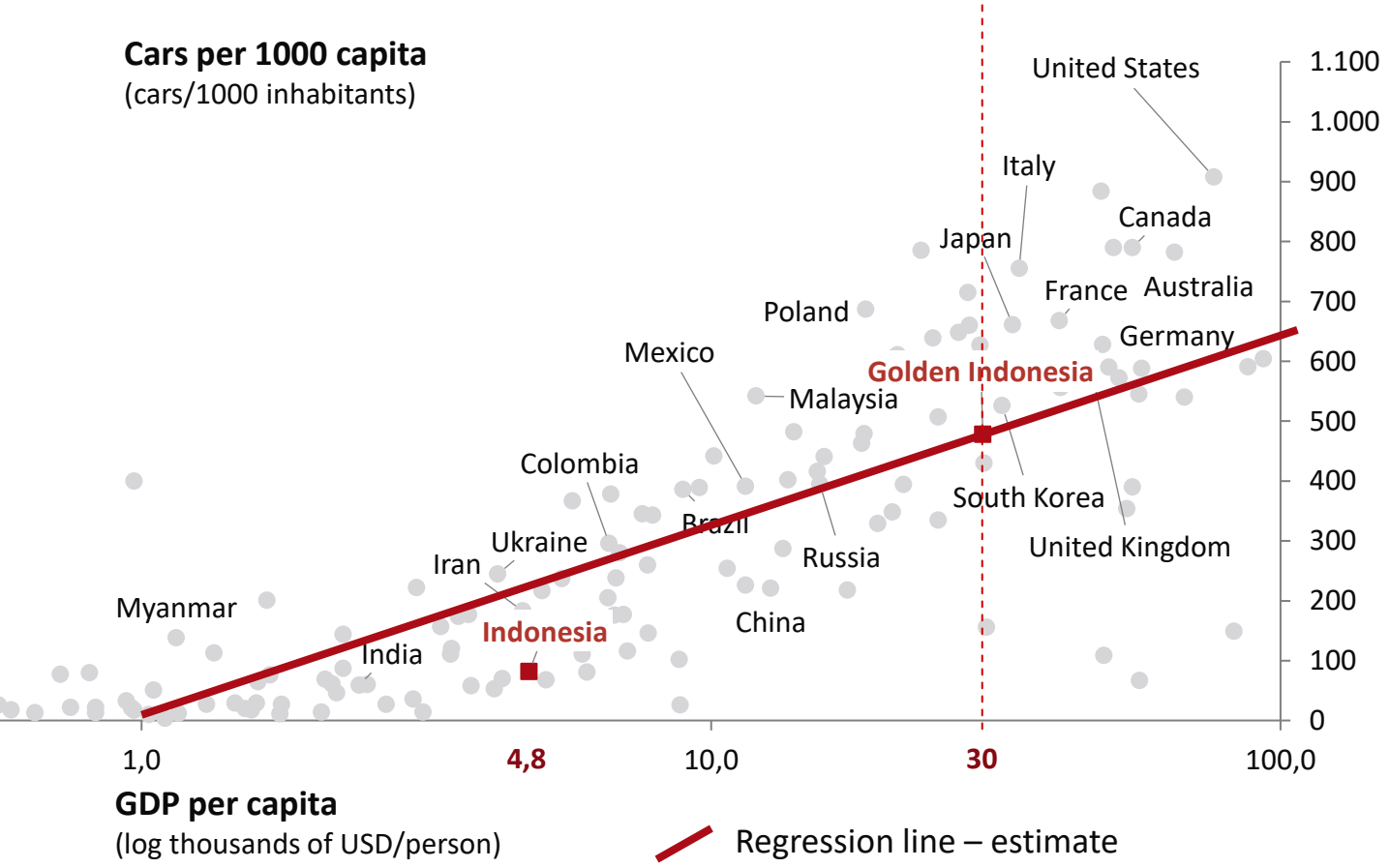
Future

- **High value-add & renewable commodity**
- **Local renewable energy**
- **High income nation** with large population

Without Energy Transition, Burden on the Environment and Fiscal Health Will Increase

Example: the importance of transition for transport sector

Car ownership tends to increase as the economy grows, car ownership can reach ~500 in 2045 Golden Indonesia



Following the trend, it is projected that car population will grow by ~6x

Projected number of car population

2024	2045
23 Mn	**~160 Mn**
Current GDP per capita (USD 4.8k)	*Golden Indonesia GDP per capita (**USD 30k** with 500 car/1000 ppl at 324 Mn population)*

Without energy transition following the increase in car ownership:

- **CO_2 emissions** will increase
- **Air pollution** will worsen
- **Fuel subsidies** will swell
- **Fuel imports** will increase

1. IEA, emission from energy;

Soure: HEESI ESDM 2022; LKPP-DJPB Kemenkeu 2023; SEKI BI 2023

Three Strategic Pillars to Achieve Indonesia's Aspirations Through Down-streaming and Green Industry Ecosystem

Existing commodity
(mostly limited/non-renewable)

Future commodity
(renewable-sustainable commodity)

Down-streaming to maximize the value-add of raw materials

Maximize value of the existing raw materials through down-streaming

Example:


Nickel ore


Tin ore


Cobalt ore

Develop renewable supply chain

Create new value through local renewable supply chain


EV


BESS


Solar PV

Develop, use, and export renewable energy

Use renewable-local energy supplies to decarbonize and export excess


Green electron

Hydrogen


Biofuel

EV Industry Has a Crucial Role for the Development of Indonesia's Down-stream Industry

Indonesia has a competitive advantage in the upstream battery value chain...

... but there is a risk of losing the battery value chain without EV car manufacturing

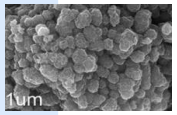
EV Battery Supply Chain

... but only contributes **~1.7% of world car production**

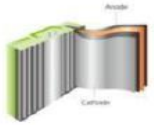
Indonesia has **40-45% of the world's nickel reserves**...

Mining

Smelting & refining



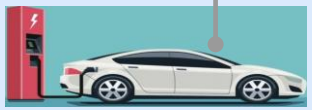
Precursor



Cathode

Currently only LFP produced in Indonesia

Battery cell & pack



Electric vehicle

Supply chain/ industry established in Indonesia

We need to continue downstreaming of our critical mineral to increase products value-add

Sumber: ESDM, Statista

Government Programs Are Expected to Boost EV Adoption and Investment To A New Heights In 2024

Several government programs have been implemented

2 wheelers EV

Incentives for EV 2W adoption

- IDR 7 Mn (USD ~450) for new purchases
- IDR 10 Mn (USD ~640) for conversion

4 wheelers EV

Incentives for EV 4W adoption

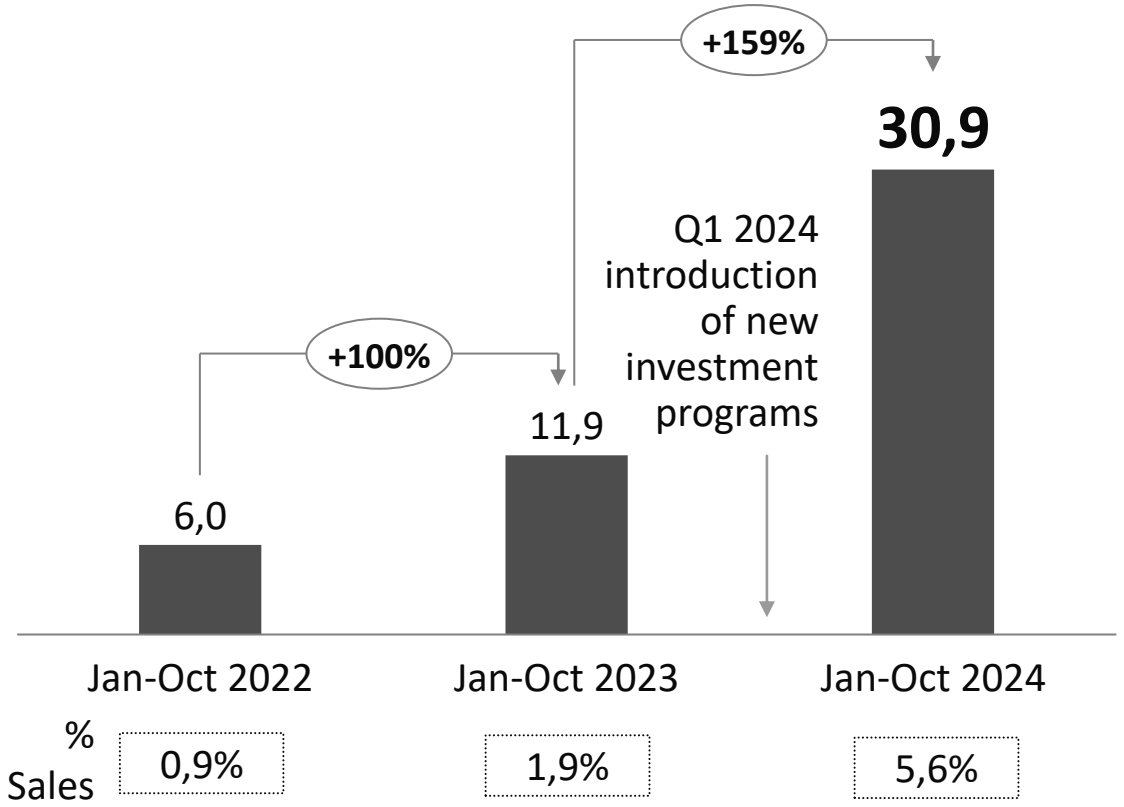
- VAT: 11% to 1%
- Zero luxury tax
- Excluded from odd-even traffic policy

Investment programs for EV 4W industry[1]

- Import & luxury tax relaxation
- Zero luxury tax
- Local content adjustment

4W BEV sales increased ~5x in the last 3 years

Comparison of sales performance of 4W BEV Indonesia
Jan – Oct (YTD) 2022-2023-2024



1. Eligible for producers with local production commitments; 2. Estimated USD 5-10 Bn investment from new EV investment program

Government Investment Program Brings New 4-Wheel EV Models Into The Market, Complementing the Current Price Spectrum

EV 4-wheel

10+ Brands (vs. 2 in 2023)

25+ Models (vs. in 2023)

55+k Population (vs. 10k in 2022)

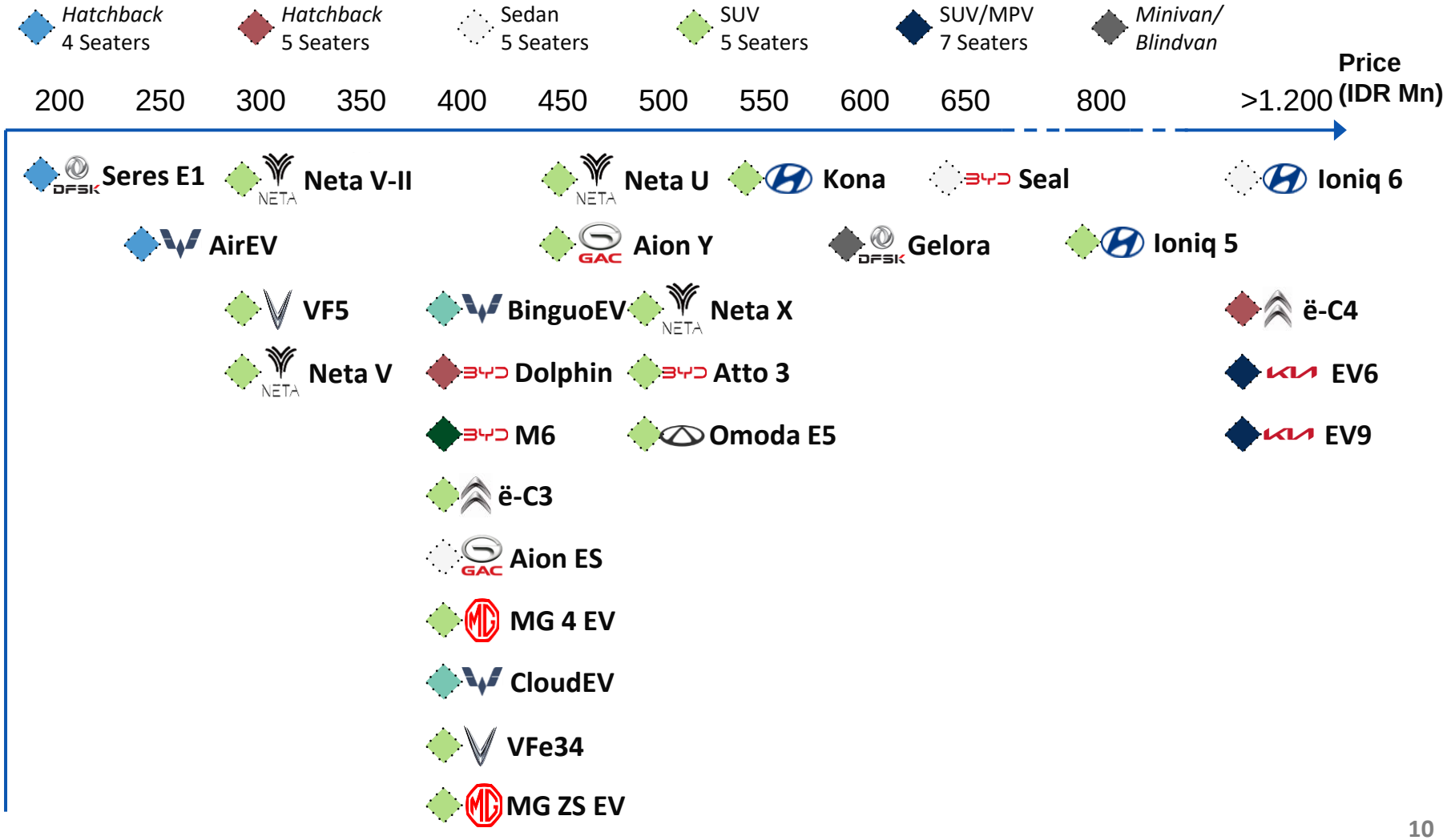
EV 2-wheel

20+ Brands

50+ Models

10+ k Population

Impact of the investment program: the 4-wheel EV model was introduced following the new investment program launch



Indonesia's Solar Potential Depends on an Adequate Renewable Energy Supply Chain - Through Meeting Domestic Needs and Regional Demand

Indonesia has abundant, unused solar energy potential

Solar Generation Potential

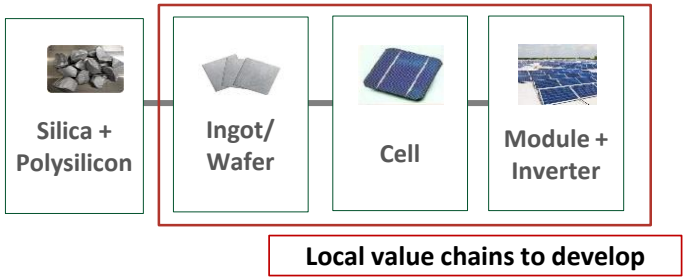
3,286 GW

Indonesia use of solar energy vs potential[1]

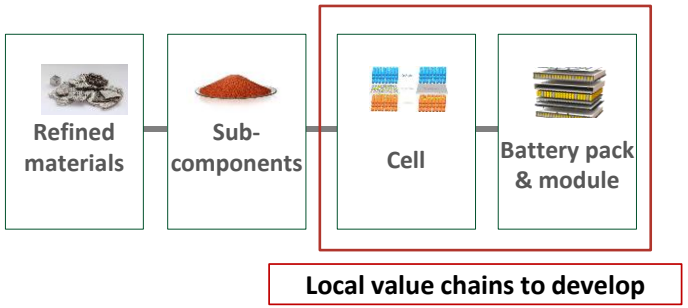
- 2023: 0.3 GW (0.01% potential)
- 2060: 462 GW (13% potential)

Strong supply chain is needed to drive solar energy usage

Solar PV



BESS (Battery Energi Storage System)



Substantial demand is needed to develop local supply chain

Short-term demand

NRE demands obtained from Singapore electricity-export project (18,7 GWp in 2027-2035)

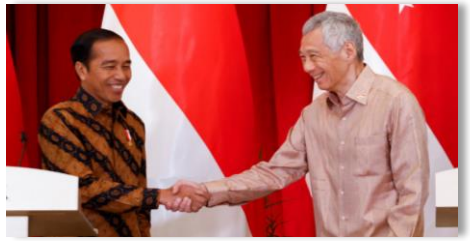
Long-term demand

PLN's plan for 28 GW of variable NRE by 2040, especially solar power

1. 2040 - PLN ARED; 2060 RUKN; ESDM

The Indonesia-Singapore NRE Cooperation Has Secured Heads of State's Agreement and Industry Support

Cooperation initiated by Indonesia and Singapore Government…



Leadership Retreat:
President Joko Widodo and PM Lee H Loong

***MoU* G2G**:
Coordinating Minister Luhut Pandjaitan and Senior Minister Teo C Hean

***MoU* Green Hydrogen:**
Deputy Coordinating Minister Rachmat Kaimuddin, PLN, and Sembcorp.

…followed by strong private investment in Indonesia

Solar PV

SUNTECH · SERAPHIM · Trinasolar · JA SOLAR 晶澳太阳能 · JinKO Solar · LONGi

BESS

SUNGROW · Gotion · ENERGY STORAGE INDUSTRIES ASIA PACIFIC · POWIN · REPT BATTERO · HUAWEI

Solar Farm

MEDCOENERGI Power · gurīn ENERGY · gentari · Keppel Infrastructure · edp Renewables · adaro

1. Load factor 75%; 2. Estimated based on 2 GWac capacity, capacity factor 75%; 3. Based on tariff 20-25 cent/kWh; 4. Solar panel price USD 0.22/Watt, BESS USD 160/kWh
Source: PLN, Kemenkomarves Analysis, EMA, PVXCHANGE

Electricity Exports and Supply Chain Development Have A Significant Impact On Indonesia's Economy

Capacity to be built in 2035:
3.4 GWac = 18.7 GWp of panels + 35.7 GWh of batteries

+

Green jobs to replace the decline from the fossil industry transition

Investment

30-50 billion USD — Solar power plant project investment

1,7 billion USD — Solar PV manufacturing investment

1 billion USD — BESS manufacturing investment

Electricity export transactions

4-6 billion USD — Foreign exchange from electricity exports

- Installed capacity 3.4 GWac1
- Production volume 22 TWh/year
- Export tariff USD 20-25 cents/kWh

Manufacturing transactions

(Commitment OEM until 2027)

~3 billion USD — Market potential of PLTS2

- Production 16.4 GWp/yr

5-6 billion USD — BESS[3] market potential

- Production 31.4 GWh/yr

1. Load factor 75%; 2. Solar panel priceUSD 0.15-0.20/Watt; Jinko's Plan(5 GWp), Longi (4,6 GWp), Trina (4,3G Wp), Seraphim (2 GWp), Wuxi Suntech (0,5 GWp); 3. BESS PricingUSD 140-180/kWh; The needs of BESS follow the capacity of solar panels according to the formula2GWac = 11 GWp (solar PV) + 21 GWh (BESS)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Thank You