



**Ministry of Energy and Mineral Resources**  
**Directorate General of New, Renewable Energy and Energy Conservation**  
**Republic of Indonesia**

# WIND POWER DEVELOPMENT IN INDONESIA: Policy & Program

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Presented at:

China RE Invest Indonesia: Renewable Energy Investment  
Forum







An International Virtual Investment Forum to Attract Chinese  
Investment in Indonesia's Renewable Energy Sector

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# RENEWABEL ENERGY POTENTIAL VS INSTALLED CAPACITY

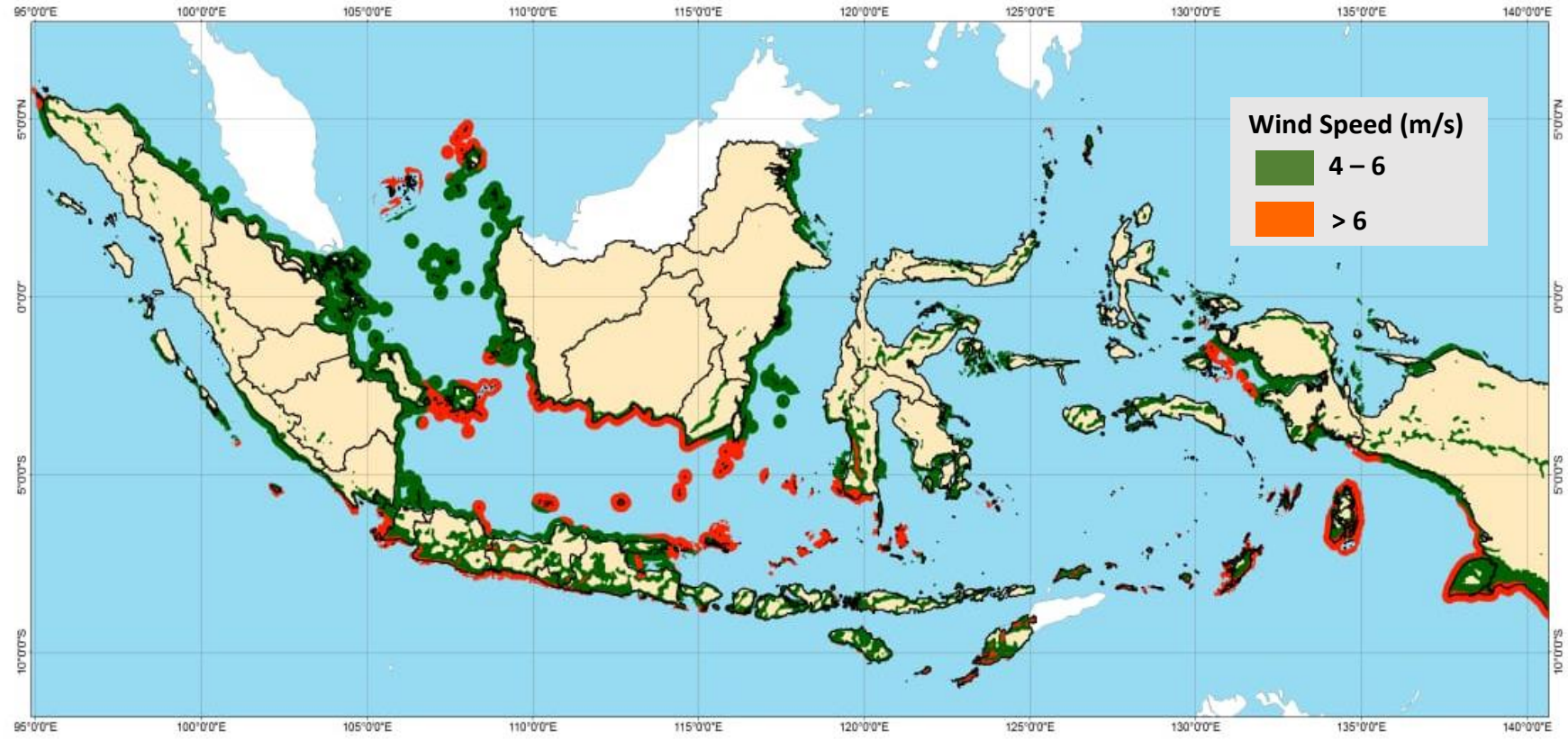


Total Potential 437.4 GW		Total Installed Capacity 10.5 GW *) (2.4%)
<b>17.9 GW</b>	 OCEAN	<b>0 MW*) (0%)</b>
<b>23.9 GW</b>	 GEOTHERMAL	<b>2,130.7 MW (8.8%)</b>
<b>32.6 GW</b>	 BIOENERGY	<b>1,903.5 MW (5.8%)</b>
<b>60.6 GW</b>	 WIND	<b>154.3 MW (0.25%)</b>
<b>94.6 GW</b>	 HYDRO	<b>6,121.0 MW (6.5%)</b>
<b>207.8 GW</b>	 SOLAR	<b>153.8 MWp (0.07%)</b> <i>MWp : Mega Watt Peak</i>

\*) Hybrid with capacity of 3.6 MW

# ONSHORE AND OFFSHORE WIND ENERGY POTENTIAL \*)

No	Province	Onshore Potential (MW)		Offshore Potential (MW)
		v = 4-6 m/s	v > 6 m/s	v > 6 m/s
1	Bali	757	262	535
2	Banten	1,199	554	3744
3	Bengkulu	1,428	85	1130
4	Di Yogyakarta	560	519	979
5	DKI Jakarta	4	0	0
6	Gorontalo	137	0	0
7	Jambi	37	0	0
8	West Java	5,236	1,800	5691
9	Central Java	4,374	839	7262
10	East Java	6,450	1,457	23,489
11	West Kalimantan	464	90	6,824
12	South Kalimantan	971	35	11,905
13	Central Kalimantan	437	244	11,136
14	East Kalimantan	212	0	0
15	North Kalimantan	73	0	0
16	Bangka Belitung Islands	1,596	191	19,397
17	Riau Islands	797	125	15,220
18	Lampung	1,072	65	2,372
19	Maluku	1,573	1,615	24,899
20	North Maluku	504	0	17
21	West Nusa Tenggara	2,004	601	1,388
22	Aceh	663	231	1,467
23	East Nusa Tenggara	6,459	3,279	1,836
24	Papua	1,159	252	19,894
25	Papua Barat	425	12	9,135
26	Riau	22	0	0
27	West Sulawesi	379	135	137
28	South Sulawesi	2,569	1,624	17,304
29	Central Sulawesi	908	0	266
30	Southeast Sulawesi	1,157	257	1,371
31	North Sulawesi	925	289	1,569
32	West Sumatera	428	0	0
33	South Sumatera	301	0	0
34	North Sumatera	356	0	0
<b>TOTAL</b>		<b>45,636</b>	<b>14,561</b>	<b>188,967</b>



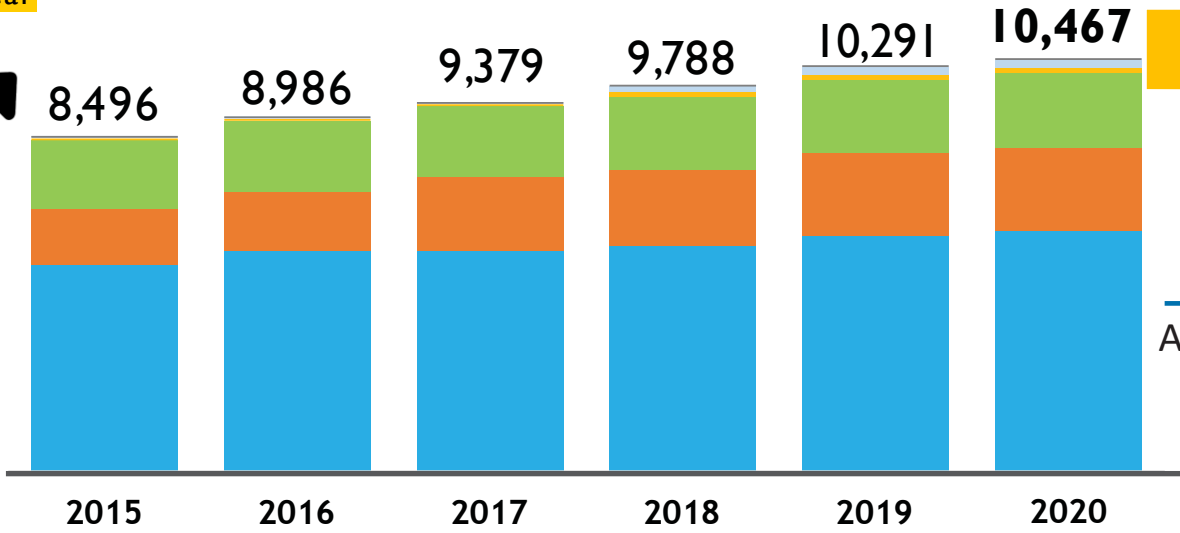
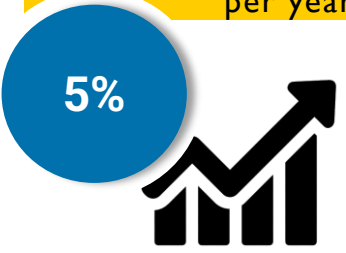
**Wind Energy Potential in Indonesia:**

- ☐ Onshore : 60.2 GW
- ☐ Offshore : 188.97 GW

\*) Research & Development Center of Electricity, New Renewable Energy & Energy Conservation, MEMR, 2014

# NRE POWER PLANTS CAPACITY IN 2020 AND TARGET FOR 2021

Average increase per year



Unit:  
Mega Watt (MW)

Hybrid	3.6	3.6	3.6	3.6	3.6	3.6
Wind	1.5	1.5	1.5	143.5	154.3	154.3
Solar	33.4	43.1	50.9	67.8	136.6	153.8
Bioenergy	1,741.7	1,783.1	1,856.8	1,882.8	1,889.8	1,903.5
Geothermal	1,438.3	1,533.3	1,808.3	1,948.3	2,130.7	2,130.7
Hydro	5,277.5	5,620.9	5,657.9	5,742.1	5,976.0	6,121

Additional Cap. in 2020:



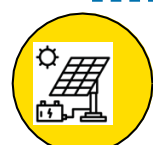
**66 MW**  
HPP Poso



**3.5 MW**  
Biomass Merauke



**12.1 MW**  
HPP Sion



**14.89 MW**  
Solar PV Rooftop

Additional capacity plan in 2021:



**440.29 MW**  
Hydro



**196 MW**  
Geothermal



**13 MW**  
Bio



**328.7 MW**  
Solar PV

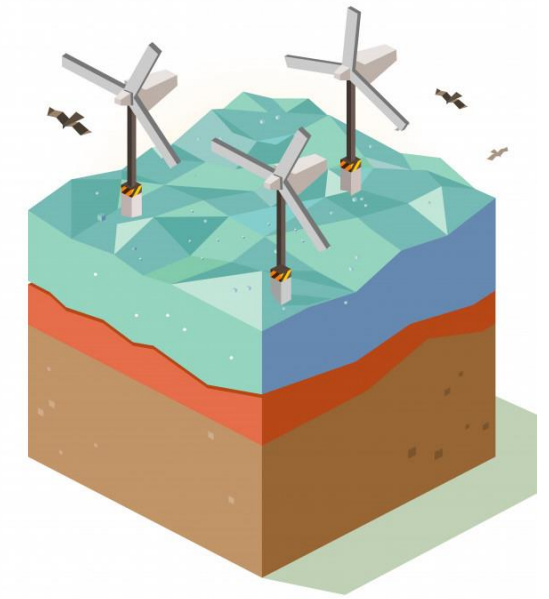
# WIND ENERGY DEVELOPMENT IN INDONESIA

01

- Currently, Indonesia has built **2 Onshore Wind Power Plants** with total capacity **147 MW**, while Offshore Wind Power Plant is still in the research and development stage.
- The Bandung Institute of Technology (ITB) has conducted **pre-feasibility study** regarding **offshore wind potential in Papua**, resulted in potential capacity 7,527 MW.

03

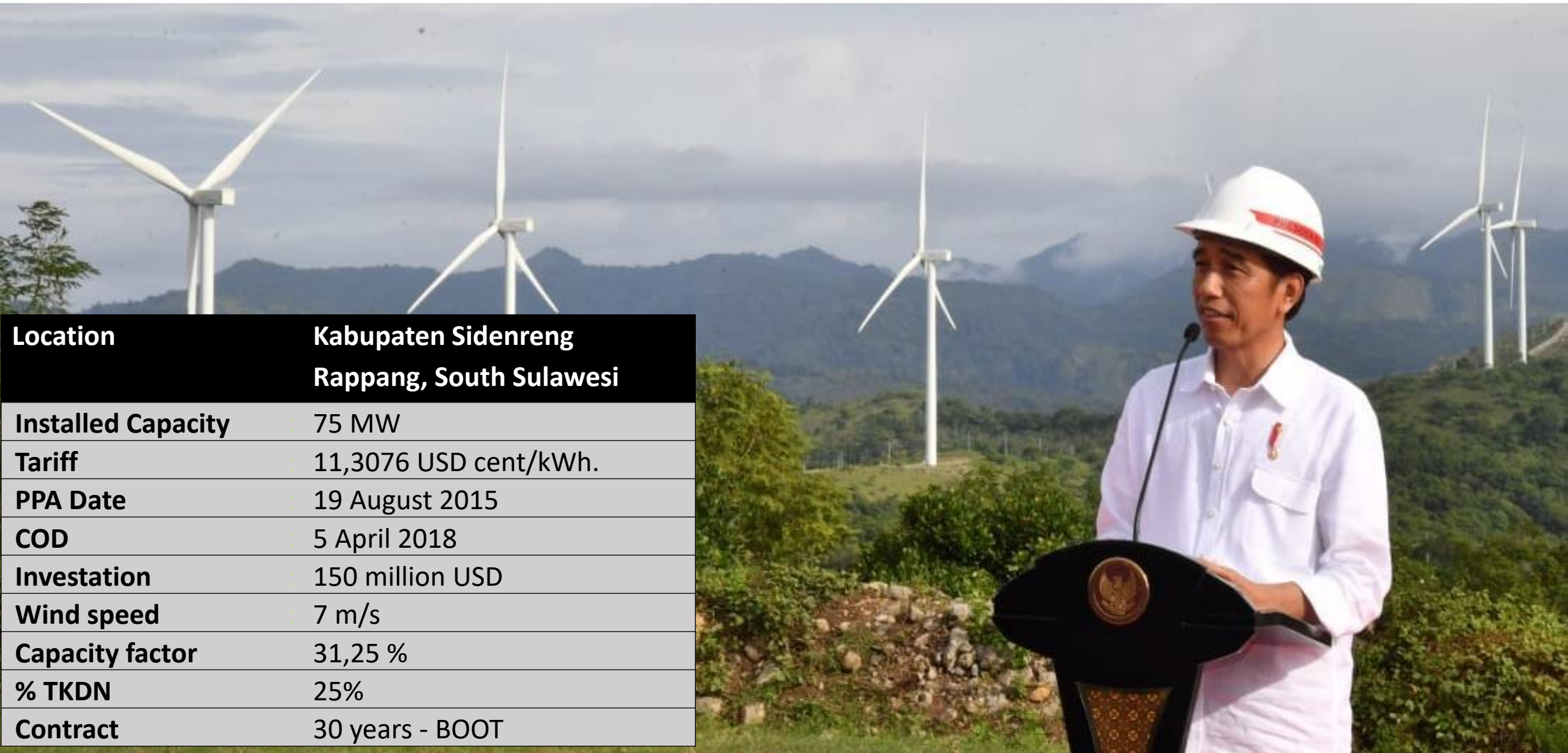
Currently, government is still proposing new presidential regulation concerning of purchasing price from renewable energy resources including wind energy (as replacement of 2017's MEMR regulation) to revise better and **more competitive prices** and **better schemes** to attract **more investments** in renewable energy development.



02

- Selling price of electricity from Wind Energy Power Plant (Onshore and Offshore) **has been regulated** in Regulation of the MEMR Number 50 Year 2017:
- If Generation Cost at region's electrification system  $>$  The National Electricity Cost (BPP) on average, maximum purchasing price would be 85% of region's generation.
  - If Generation Cost at region's electrification system  $\leq$  The National Electricity Cost (BPP) on average, maximum purchasing would be based on agreement (business to business).

# WIND POWER PLANT SIDRAP 75 MW



<b>Location</b>	<b>Kabupaten Sidenreng Rappang, South Sulawesi</b>
<b>Installed Capacity</b>	75 MW
<b>Tariff</b>	11,3076 USD cent/kWh.
<b>PPA Date</b>	19 August 2015
<b>COD</b>	5 April 2018
<b>Investation</b>	150 million USD
<b>Wind speed</b>	7 m/s
<b>Capacity factor</b>	31,25 %
<b>% TKDN</b>	25%
<b>Contract</b>	30 years - BOOT

# WIND POWER PLANT JENEPONTO 72 MW



<b>Location</b>	<b>Kabupaten Jeneponto, South Sulawesi</b>
<b>Installed Capacity</b>	: 72 MW
<b>Tariff</b>	: 11,850 USD cent/kWh.
<b>PPA Date</b>	: 14 November 2016
<b>COD</b>	: 14 Mei 2019
<b>Investation</b>	: 160,7 million USD
<b>Wind speed</b>	: 7 m/s
<b>Capacity factor</b>	42 %
<b>% TKDN</b>	25%
<b>Contract</b>	30 years - BOOT



# GRAND STRATEGY ENERGY DRAFT

## VISION

Creating national energy resilience and independence

## CHALLENGE

Energy demand is increasing, and energy supply capacity is limited:

1. Production of crude oil fell, imports of crude and gasoline increased.
2. LPG is still imported.
3. Coal exports were depressed.
4. The gas and electricity infrastructure is not yet integrated.

A

B

C

## SOLUTION

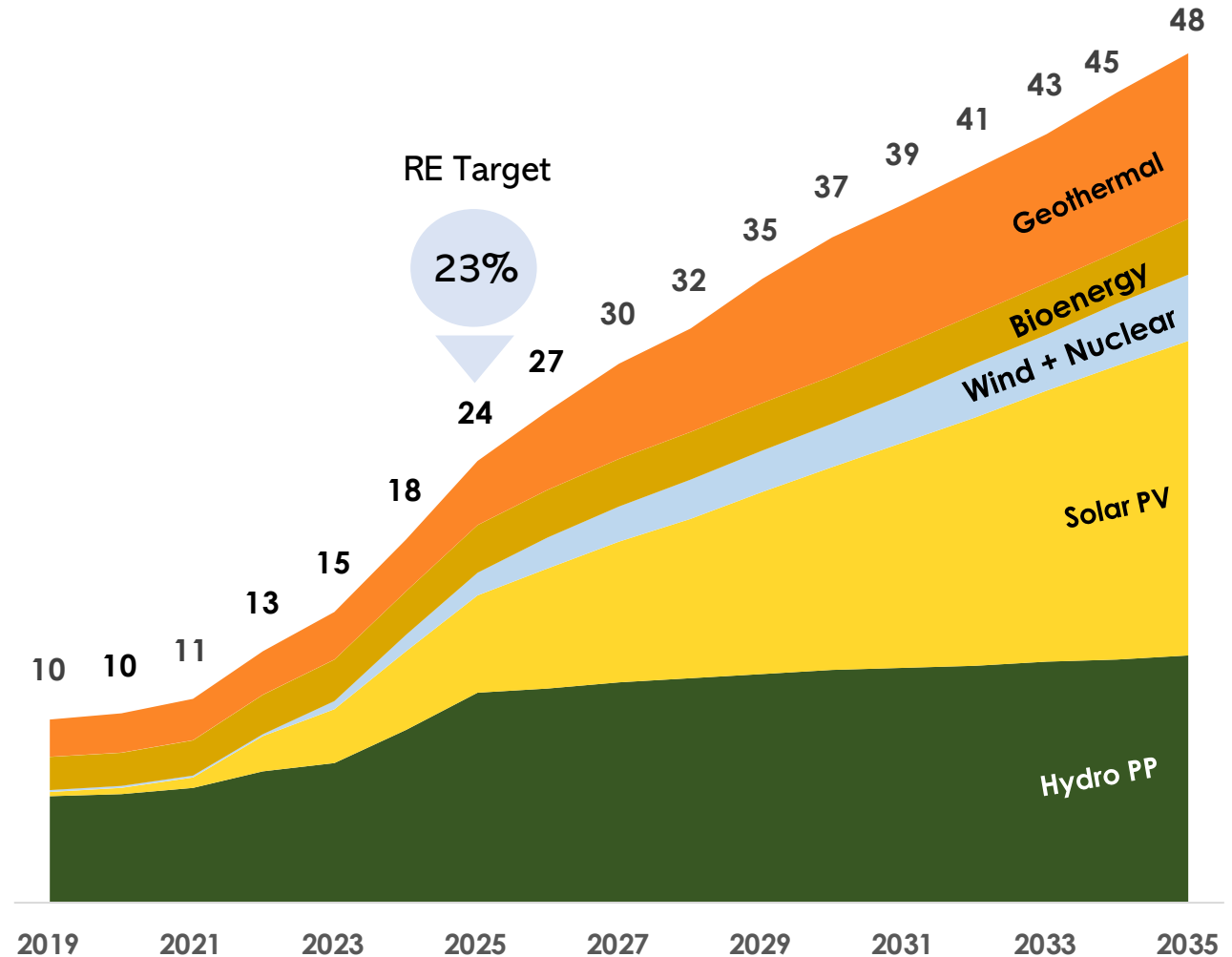
- 1: Increase crude production by 1 million bopd and acquire foreign oil fields for refinery needs.
- 2: Increase the capacity of the BBM refinery.
- 3: Optimizing the utilization of natural gas (such as BBG for transportation and gas for industry).
- 4: Increase the use of electric vehicle (KBLBB).
- 5: **Accelerate the use of renewable energy power plant (solar power plant) and optimize biofuel production (biodiesel or bio hydrocarbons).**
- 6: Increase domestic LPG production.
- 7: Increase the construction of the city gas network.
- 8: Encouraging the use of electric stoves.
- 9: Develop DME, methanol, fertilizer & syngas production.
- 10: Build a gas & LNG receiving terminal.
- 11: Build electricity transmission & distribution, smart grid, off grid power plant and build small scale nuclear power plants.



# GOVERNMENT PROGRAM FOR RE DEVELOPMENT

- The Indonesian government is targeting an additional 38 GW of NRE Installed capacity by 2035
- Accelerating the use of renewable energy power plant, where solar power plant will be prioritized because of its relatively cheaper investment costs and short installation duration.
- NRE Acceleration Efforts:
  - **Primary Final Energy Substitution**, by utilizing the existing technology; B30-B50, co-firing, RDF utilization.
  - **Fossil Primary Energy Conversion**, converting Diesel PP or Coal Powered PP into NRE PP, biogas, and pellet for cooking.
  - **Increasing NRE Capacity**, to meet the new demand; focus on the development of Solar PP
  - **Utilization of Non-Electric NRE / Non-Biofuel** such as briquettes and drying of biogas agricultural products
- In addition, developments for off-grid and Rooftop Solar PV for households and industries are also under way.

RE Total Capacity (GW)



Source: Draft of Grand Strategy Energy National



# WIND POWER DEVELOPMENT PROGRAM BY 2021 - 2035



Target  
**3,63 GW**

- Wind power in Sumatera: 1.301 MW
- Wind power in Java: 1669,9 MW
- Wind power in Bali: 34,5 MW
- Wind power in Sulawesi: 251,68 MW
- Wind power in Kalimantan: 70 MW
- Wind power in NTT: 83 MW
- Wind power in NTB: 165 MW
- Wind power in Maluku: 57 MW



# DRAFT PRESIDENTIAL REGULATION ON RE POWER PURCHASING BY PLN

## PRICE

- 1 FiT staging 2 no escalation phase, location factor is valid for Staging 1:**
  - Hydro PP (including Hydro PP reservoir) for capacity up to 5 MW
  - Solar PV and Wind PP for capacity up to 5 MW
  - Biomass PP and Biogas PP for capacity up to 5 MW
  - Solar PV and Wind PP expansion for capacity up to 5 MW
  - Biomass PP and Biogas PP expansion for capacity up to 5 MW
- 2 Ceiling price (HPT) staging 2 no escalation phase, location factor is valid for staging 1:**
  - Geothermal PP for all capacity
  - Hydro Power Plant (including Hydro Power Plant reservoir) for capacity >5 MW
  - PV and Wind PP >5 MW
  - Biomass PP and Biogas PP for capacity >5 MW
  - PV and Wind PP expansion >5 MW
  - Biomass PP and Biogas PP expansion >5 MW
  - excess power Geothermal, Hydro, Biomass, Biogas PP all capacity.
- 3 Agreement Price:**
  - Hydro Power Plant Peaker for all capacity
  - Waste PP, Biofuel PP, Sea Energy PP for all capacity

## MECHANISM OF PURCHASING ELECTRIC POWER

- 1 Direct Appointment:**
  - Hydro PP for all capacity;
  - Solar PV and Wind PP for capacity up to 5 MW
  - Biomass PP and Biogas PP for capacity up to 5 MW
  - Expansion of hydro PP, geothermal, Solar PV, wind PP, Biomass PP, Biogas for all capacity.
  - Excess power of dari hydro PP, geothermal, Biomass PP, Biogas for all capacity.
- 2 Direct Appointment : assignment for Hydro PP reservoir & Geothermal**
- 3 Direct selection: Solar PV, Wind PP, Biomass PP and Biogas PP for capacity up to 5 MW**
- 4 BOOT mekanisme: B to B.**
- 5 Period of contract: 30 years for hydro PP, geothermal, Solar PV, wind PP; 20 years for PLTBg and 25 years for Bimass PP.**
- 6 Transaction using Rupiah.**
- 7 The agreement price requires the approval from the MEMR**
- 8 The provision of electricity purchase price is evaluated 3 years at the most.**

# CLOSING

1

Indonesia has committed to achieve the 23% new and renewable energy target by 2025 as mandated by the national energy policy as well as Paris Agreement.

2

Wind power can become the promising options to provide electricity. However, the wind power tariff in Indonesia is still relatively high because most of the components are still imported, even though the tariff at the global level shows a decrease

3

Supports from other countries with more advanced wind power technology, is needed to develop Indonesia's domestic capabilities through transfer of technology



# Thank You

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