



# 9M 2023 Performances

PT Pertamina Geothermal Energy Tbk.

Creating Value to Accelerate Indonesia's Geothermal Development



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# Company Profile

# **Group Structure & Portfolio Overview**

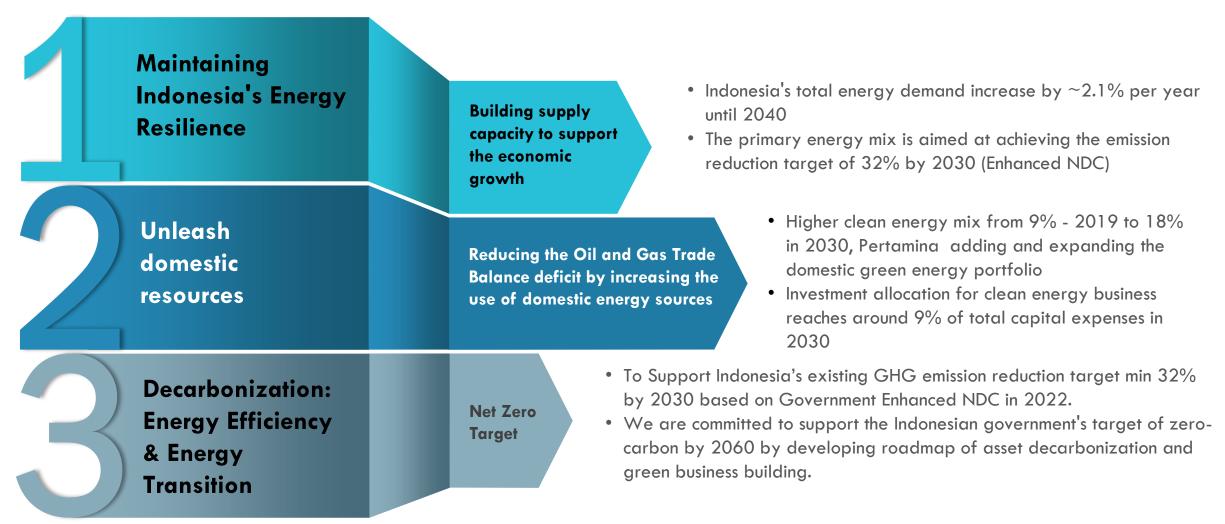


Pertamina is a fully-integrated Energy Champion, 100% owned by the Government of Indonesia, operating across the value chain of energy businesses and supported by portfolio & services companies



#### Pertamina's Role in Indonesia's Energy Landscape





#### Pertamina is moving ahead towards energy transition

#### while enabling energy security for Indonesia

Pertamina is committed to support Indonesia government commitment to achieve Net Zero by 2060 or sooner by developing roadmap of asset decarbonization and green business building and also develop carbon offset



Investment by the oil and gas industry in low-emissions sources of energy is less than 5% of its upstream investment (Source: IEA, World Energy Investment 2023 -Overview and key findings)



43.8%

41.7%

14.5%

Fossil Fuel

Petrochemical

# **Board of Directors Profiles**





Julfi Hadi President Director



Nelwin Aldriansyah Director of Finance



Ahmad Yani Director of Operation



Rachmat Hidajat Director of Exploration and Development

#### **Experience:**

- SVP Geothermal Assets, Medco Power Indonesia
- President Director, PT Medco Cahaya Geothermal
- Board of Director, PT Sarulla Operating Ltd
- VP Exploration and Subsurface, Supreme Energy Corporation



#### **Education:**

- Diploma in Geothermal Technology, University of Auckland
- Master of Science in Geology, University of Texas, El Paso, USA
- Bachelor of Science in Geology, University
   of Texas, El Paso, USA

#### Experience:

- Director Investment Banking, Bahana Securities
- Director M&A, CIMB Securities
- Indonesia Director Daht Capital mar
- Director Debt Capital market, ANZ-Panin Bank



#### **Education**:

- Master of Business Administration, University of Strathclyde
- Bachelor of Economy, Universitas Indonesia

#### Experience:

- GM Area Geothermal Lahendong, Pertamina Geothermal Energy
- Manager Drilling Planning & Support, Pertamina Geothermal Energy
- Manager Operation Area Lahendong, Pertamina Geothermal Energy



#### Education:

- Master of Science in Geothermal Exploration, Universitas Indonesia
- Bachelor of Petroleum Engineering, Universitas Islam Riau

#### **Experience**:

- VP Upstream Business Development & Portfolio, Pertamina
- VP Upstream Business Growth, Pertamina



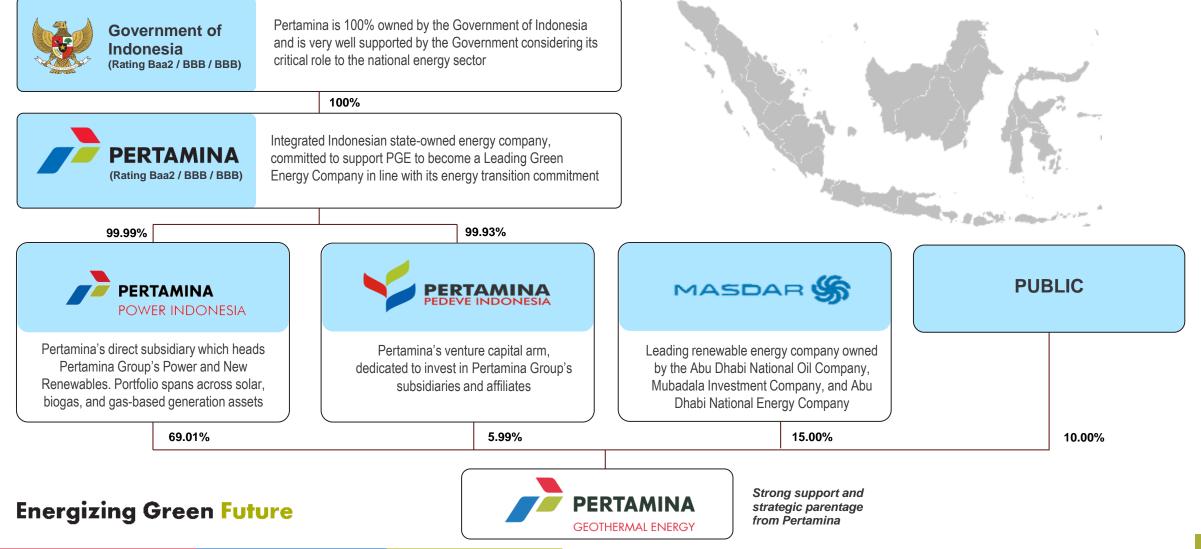
#### Education:

- Master of Business Administration, Institut Teknologi Bandung
- Bachelor of Petroleum Engineering, Institut Teknologi Bandung

## **Ownership of PT Pertamina Geothermal Energy, Tbk**



#### PGE is ultimately controlled by Pertamina and is strategically important for Pertamina's energy transition commitment

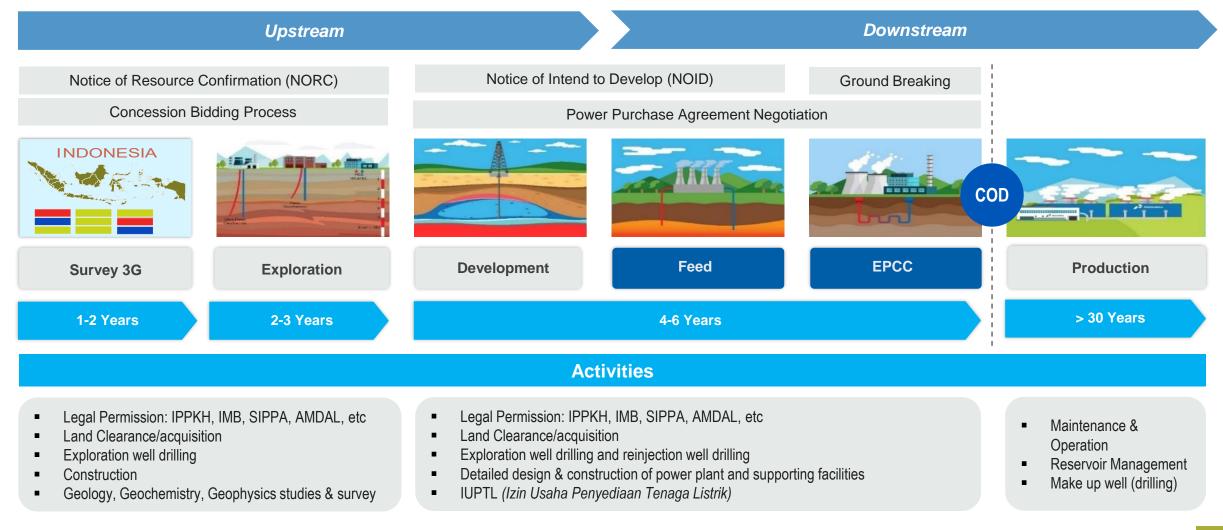




## **Geothermal Business Process**



#### PGE Commit to Create Value in Geothermal Development

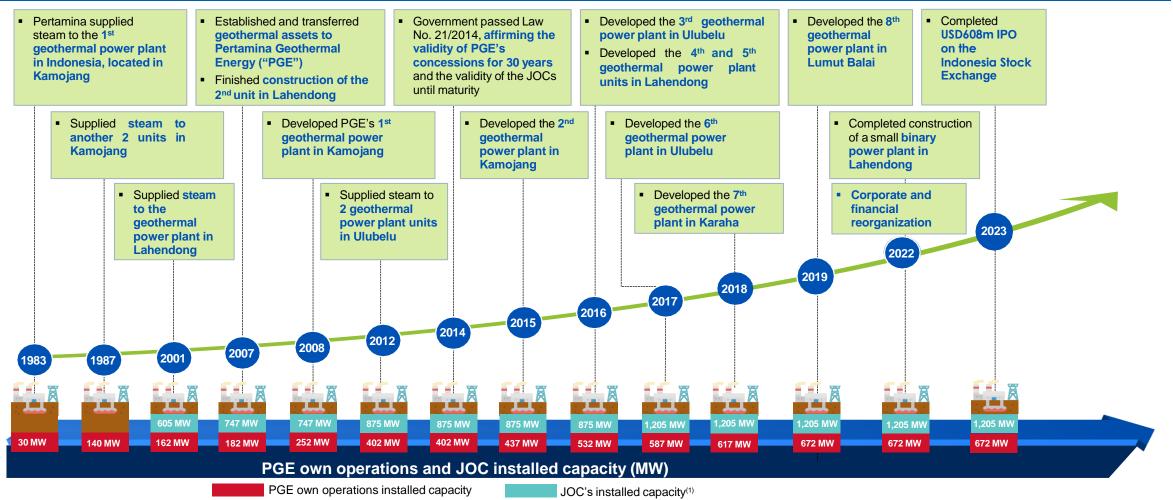




# **Key Corporate Milestones**



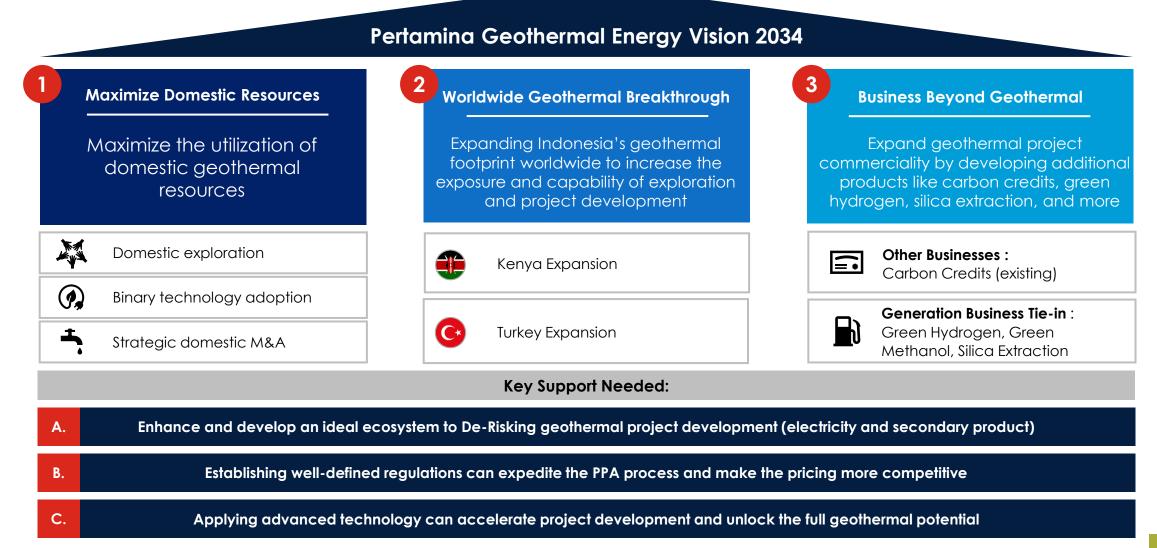
#### PGE has been a part of Pertamina for the last 29 years

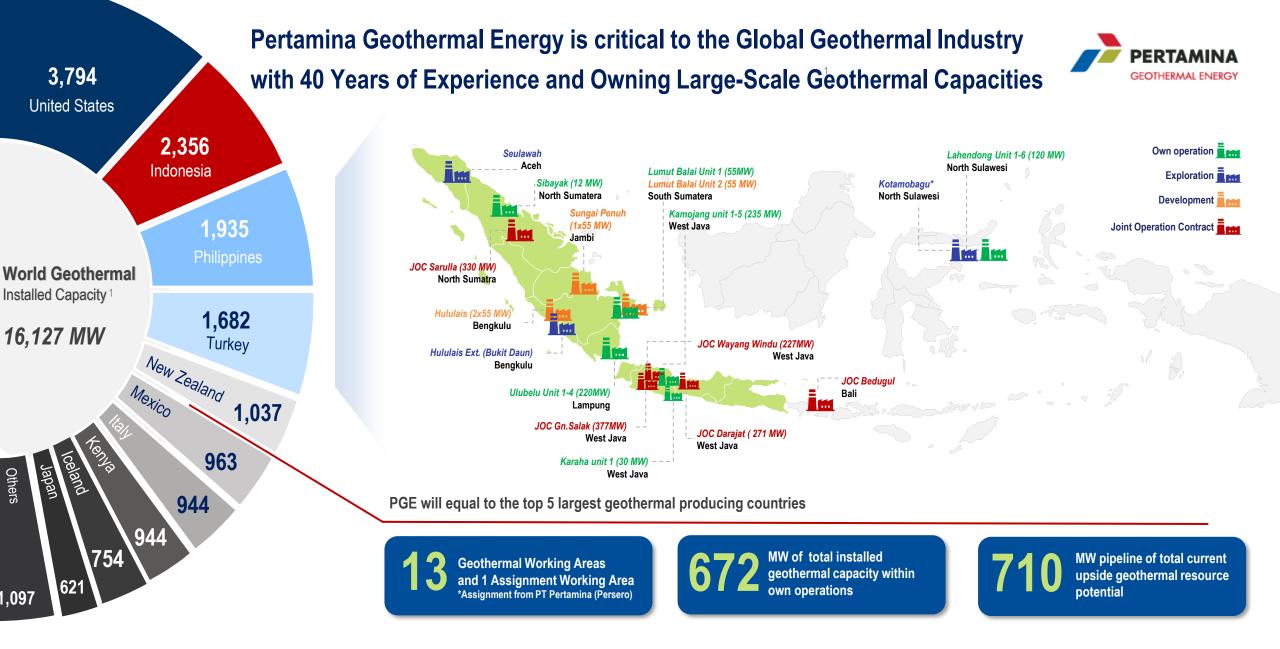


**Energizing Green Future** 

JOC started in 1994 with 165 MW of JOC's installed capacity. In the working areas where PGE has contracted with a JOC Contractor to undertake geothermal operations, the JOC Contractor is responsible for all aspects of operating the steam above ground system and power plant operations. In situations where the JOC Contractor operates the power plant themselves, PGE sells the electricity and steam produced to PLN under an energy sales contract, while the JOC Contractor delivers the steam and electricity to PLN. After PGE has been paid by PLN, PGE forward the proceeds to the JOC Contractor, net of the production allowance as a result of the JOC Contractor operating within PGE's working areas.

Key growth pillars for Geothermal – 1) develop core domestic businesses with additional installed capacities, 2) overseas expansions to establish a global presence, and 3) pursuing new products beyond energy





#### **Energizing Green Future**

1. Source: ThinkGeoEnergy2023

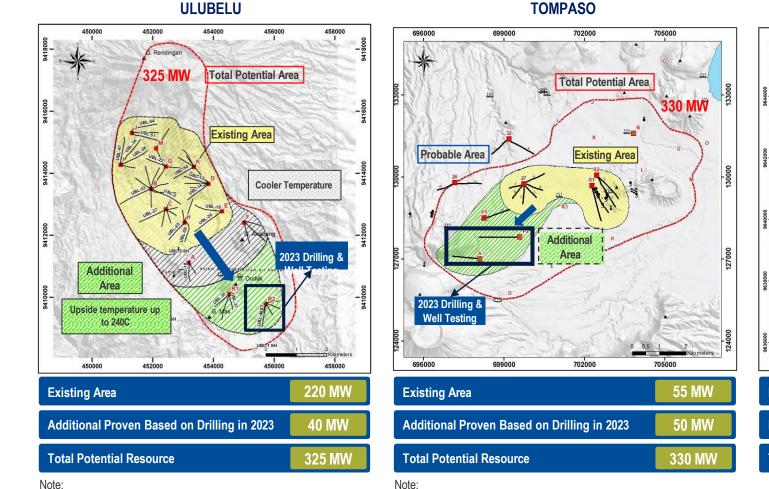
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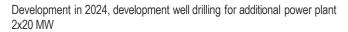
# New Resources Proven Found From 2023 Drilling and



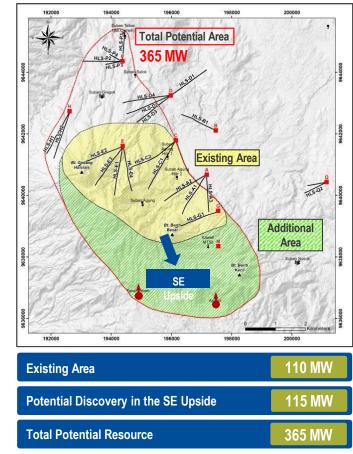
### **Potential Resource Discovery in Hululais**

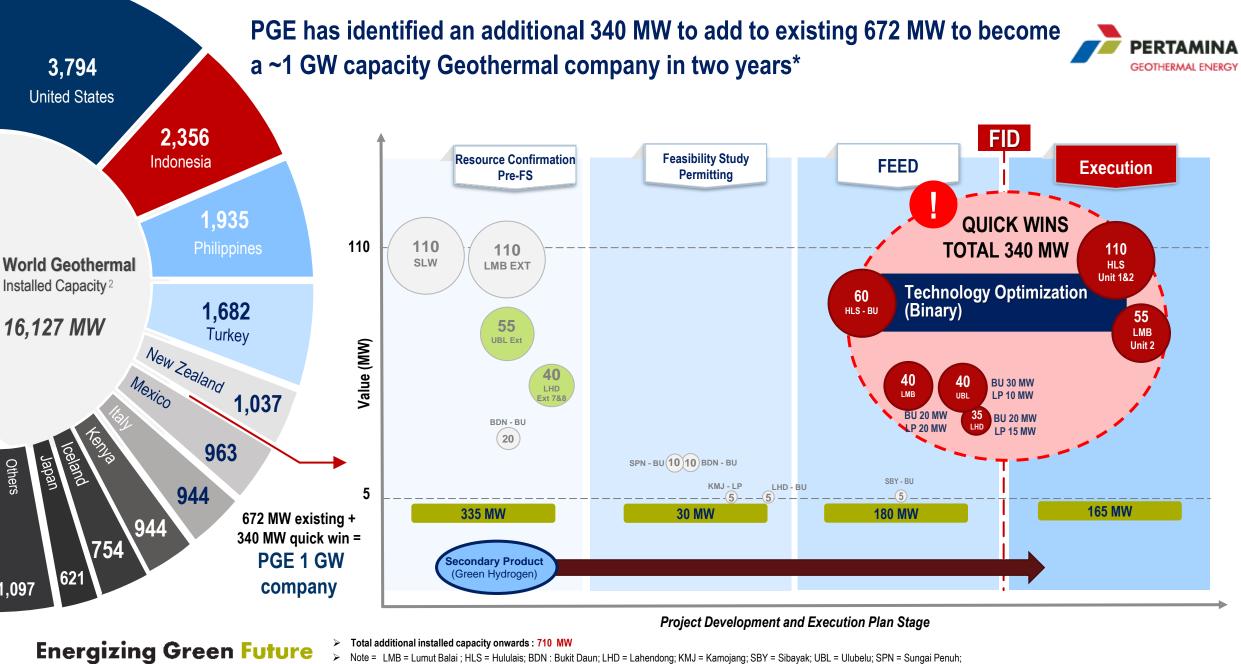


Development in 2024, exploration well drilling in the south of Ulubelu (Gunung Tiga)



HULULAIS





SLW = Seulawah; BU = Binary Unit; LP = Low Pressure

\*After PPA Signed

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# **Geothermal Working Areas**



#### 82% of Total Geothermal Installed Capacity in Indonesia are Within PGE's Geothermal Working Area



\* Assignment from PT Pertamina (Persero)

#### Growth Strategy for PGE – 1) Core Focus on Domestic Explorations and Opportunities, 2) Explore

#### **Overseas Expansions, while 3) Pursuing New Geothermal Business**



Growth Focus	Short Term (2023 – 2025) <b>1 GW</b>	Medium Term (2026 – 2029)	Long Term (2030-2034)	
	<ul> <li>Synergy with existing WKP to develop conventional &amp; initiating Co-Generation projects</li> </ul>	Operate Conventional & Co-Generation projects and continue to extract     all resources in existing fields with Co-Generation technology		
1. Domestic	<ul> <li>Develop extensional from existing fields and greenfields projects</li> </ul>	<ul> <li>Expand capacities in the green field(s) (Exploration &amp; production)</li> <li>JV partnership to develop new field(s) either with PLN or private</li> </ul>		
	<ul> <li>Explore M&amp;A options in greenfield &amp; brownfield project(s)</li> </ul>	Operate acquired brownfield project(s) in Indonesia		
2. Overseas	<ul> <li>Explore M&amp;A options in greenfield &amp; brownfield project(s)</li> </ul>	• Operate acquired brownfield project(s) and expand international presence		
	Carbon credit trading	Carbon credit market expansion national & international		
3. New Business	<ul> <li>Green hydrogen pilot &amp; commercial FS &amp; looking for JV partners</li> </ul>	<ul> <li>Operate green hydrogen pilot project</li> <li>JV partnership for green hydrogen and finalize the FS</li> </ul>	Develop green hydrogen commercial scale plant with partner	
	Green methanol Pre-FS	<ul><li>Green methanol FS</li><li>Green methanol pilot project</li></ul>	<ul> <li>JV partnership for green methanol and develop extension from green hydrogen plant project</li> </ul>	
	Silica extraction FS	<ul> <li>Looking JV partnership for silica extraction</li> </ul>	• Develop commercial scale of silica, and continue extend the market	



**Growth and Project Development** Highlights 9M 2023

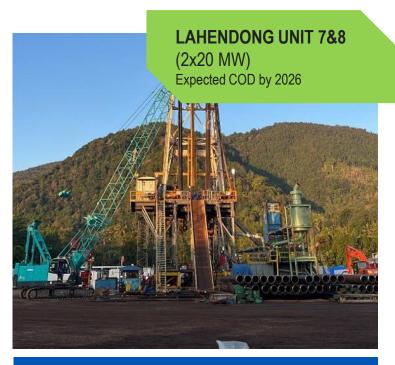


# **Project Highlight**





- Basic Design Engineering is 100% complete.
- FCRS foundation drilling has begun
- Intensive start of timber cruising preparations for transmission line
- GPP earthwork is 100% complete



- Well A1 has been drilled successfully, currently in heating up status
- Rig mobilization to Cluster P2 (2<sup>nd</sup> exploration well)



- 110 MW steam available on the wellhead
- Front End Engineering Design for steam field facilities has been completed
- Ongoing process of land acquisition for production facilities

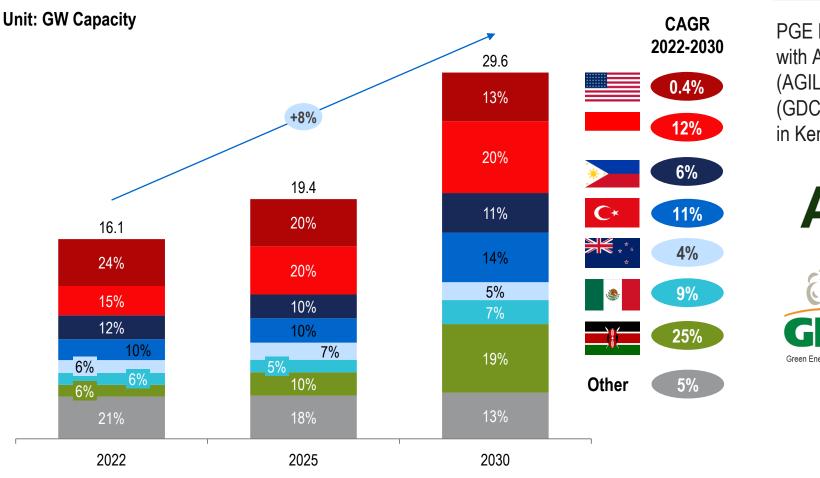


## **International Expansion**



#### Based on 35 Years of Experience in Geothermal Energy and Finely-Tuned Business Models, We are Expanding Abroad

#### We are Mapping Key Geothermal Markets for Expansion



#### Kenya as Our First Footprint Internationally

PGE has signed a Memorandum of Understanding with Africa Geothermal International No.1 Ltd (AGIL) and Geothermal Development Company (GDC) to explore developing a major geothermal in Kenya







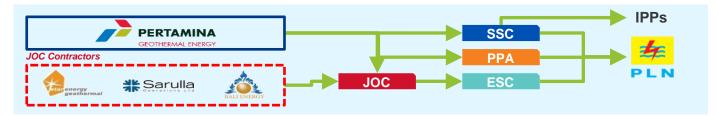
Power Plant Suswa		Size 3x100 MW		
	CAPEX (TBD)		COD (TBD)	_
貵	PPA Price not	disclose	ed	



# **Contractual Framework**



#### PGE has 100% offtake agreement with PLN



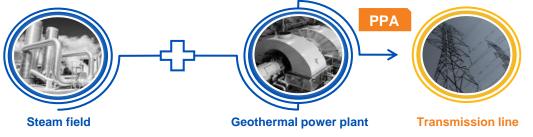
#### **Steam field development**

Steam fields are owned and managed by PGE, while power plants are owned and operated by PLN



#### Integrated development

Steam fields and power plants are owned and operated by PGE



#### **Energizing Green Future**

#### Key contracts

#### Steam Sales Contract (SSC)

The agreements that producers of steam enter into with Independent Power Producers (IPPs) and PLN which govern the sale of steam

#### **Power Purchase Agreement (PPA)**

The agreements between PLN and PGE which govern the sale of electricity PGE produces and sell to PLN for it to distribute on its grid

#### Joint Operation Contract (JOC)

- The agreement that PGE enter with independent third parties, or JOC Contractors, whom PGE has invited to conduct geothermal operations within its working areas
- JOC Contractors are responsible for all geothermal operations within their respective JOC areas and own all of the assets related to their power generation operations

#### **Energy Sales Contract (ESC)**

Tripartite agreements that the JOC Contractors, as the deliverer of electricity and/or steam, PLN, as the purchaser of electricity and/or steam, and PGE, as the holder of the working area, enter into to govern the sales of electricity and/or steam produced by the JOC contractors and sold to PLN or another off taker

#### Average years remaining in PPAs, SSCs and ESC: > 20 years



## **Business Partnership**



#### Collaboratte to accelerate Indonesian Geothermal Energy Industry



#### Way Ratai Development

7)



- PGEO and Chevron bring together differentiated capabilities in subsurface characterization, geothermal development and execution in novel geothermal and end-use technologies.
- Escrow and Joint Venture Agreement has been signed on Oct 3<sup>rd</sup> 2023
- The composition of partnership is 60% (Chevron) and 40% (PGEO)
- Exploration commitment value amounts to USD 28,85 Millions
- Indicative capital expenditure, approximately USD 220 Millions



# Key Performance Highlights



Forex Impact

# **9M2023 Performance Highlights**



Financial Position (USD mn.)	December 31, 2022	September 30, 2023	%
Total Assets	2,475	2,906	17.41
Total Liabilities	1,220	967	(20.74)
Total Equity	1,256	1,939	54.37
Cash Flow (USD mn.)	September 30, 2022	September 30, 2023	%
Beginning Balance	125	262	109.60

				Weighted Avg.
Cash Flow (USD mn.)	September 30, 2022	ber 30, 2022 September 30, 2023		
Beginning Balance	125	262	109.60	Selling Price (USD cents/KWh)
Cash flow from operations	164	192	17.07	Steam
Cash flow from investment	(11)	(39)	254.55	Electricity
Cash flow from financing	(47)	268	670.21	Weighted Avg.
Forex Impact	(1)	0	(100)	weighted Avg.
Ending Balance	230	683	196.96	

Capex (USD mn)	September 30, 2022	Target 2023
Development	24	80
Maintenance	31	83
Total	55	163

Production Costs (USD cents/KWh)	September 30, 2022	September 30, 2023	%
Steam	2.38	2.56	7,56
Electricity	5.38	5.56	3,35
Weighted Avg.	3.89	4.10	5,40

Selling Price (USD cents/KWh)	September 30, 2022	September 30, 2023	%
Steam	6.22	6.35	2.09
Electricity	9.81	9.88	0.71
Weighted Avg.	8.03	8.16	1.61

Financial Ratios (%)	December 31, 2022	September 30, 2023	%
ROA	5.14	4.59	-10.70
Current Ratio	50.5	403.8	699.6
Interest Bearing Debt to Equity	74.1	36.8	-50.33

- Strong Cash Flow reflects high cash flow from operation due to higher production, proceeds from IPO and green bond, repayment of principal on bridging loan, and payment of dividends
- Higher Cost of Production primarily due to higher depreciation, interest expense, G&A, and production costs
- Higher Electricity Selling Price contributed from higher CPI & PPI index in the US.



# Operation Performance 9M 2023



# **Key Operations Highlights – 9M2023**









Activity

1,281.33 GWh Vs. 1,241.17 GWh (9M22) +3.24% YoY

 Higher electricity demand Acceleration of Unit 5 Turn **Around** implementation from plan 25 days with the actual of Highlights 11 days Acceleration of Unit 2 Simple **Inspection** implementation from plan 30 days with the

actual of 21 days

663.97 GWh Vs. 635.26 GWh (9M22) +4.52% YoY

- Higher electricity demand
- Improvement in availability factor for all Unit
- Acceleration of Unit 5 Maintenance Outage implementation from plan 8 days
- with the actual of 5 days



1,216.88 GWh Vs. 1,172.65 GWh (9M22) +3.77% YoY

- Additional generation up to 20 MW from Ulubelu Area SAGS Debottlenecking project Acceleration of Unit 4 Turn **Around** implementation from plan 21 days with the actual of 16 days
- Ongoing acceleration make up well UBL-R2.6
- On progress FEED Pilot Project Hydrogen



352.55 GWh Vs. 329.29 GWh (9M22) +7.06% YoY

#### Higher electricity demand

- Production achievement
- Implementation of House Load, Free Governor and Power System Stabilizer Operations



71.21 GWh Vs. 60.69 GWh (9M22) +17.33% YoY

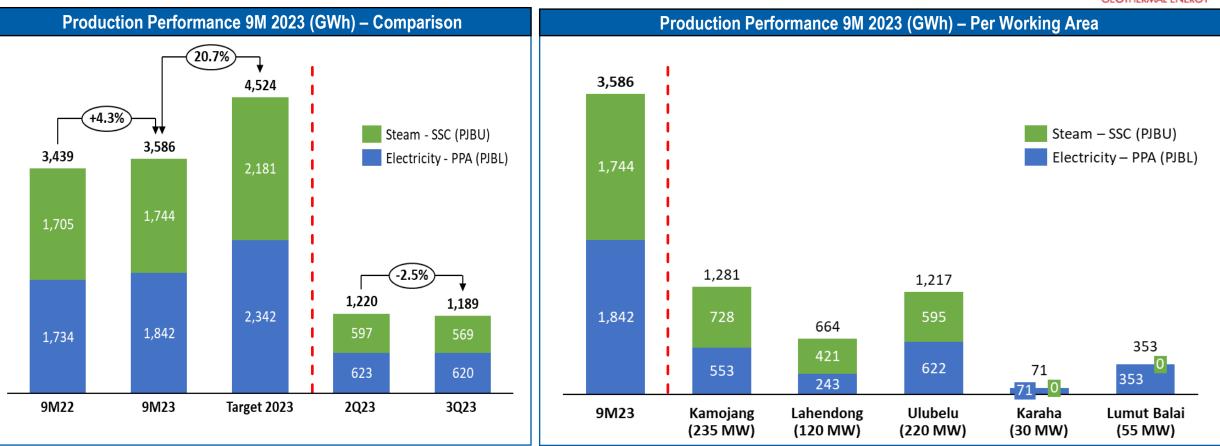
- Unplanned shutdown decreased from 2.5% (2022) to 0.7% (2023)
- The completion of landslide mitigation infrastructure in karaha

Capacity Factor 84%		84%	89%	97%	85%
Reliability	EAF : 99.12%	EAF : 99,58%	EAF : 98.61%	EAF : 97,32%	EAF : 94.53%
	EFOR : 0.40%	EFOR : 0.14%	EFOR : 0.01%	EFOR : 0.00%	EFOR : 1.42%

EAF : Equivalent Availability Factor EFOR : Equipment Forced Outage Rate

## **Production Performance (Own Operation) – 9M2023**





Production increased on a YoY basis by 4.3% in the YTD-September 2023 due to the following factors:

- 1. Completion of de-bottlenecking works of Ulubelu units 1-4 where as a result, they increased production.
- 2. Shutdown of Karaha facility from Nov. 2021 through March 2022 due to landslide incident.

3. Major overhaul of Ulubelu unit 3 (occurred in 2Q22), Lahendong units 5 & 6 (occurred in 1Q22), and first year inspection of Lumut Bali unit 1 (happened in 3Q22).

Production declined by 2.5 percent on QoQ basis mainly contributed to number of operation days and maintenance works (major overhaul of Lahendong unit 1 from 16 September through 25 October 2023, Lahendong unit 3 for 1 day in September and Lahendong unit 5 for 5 days in September).

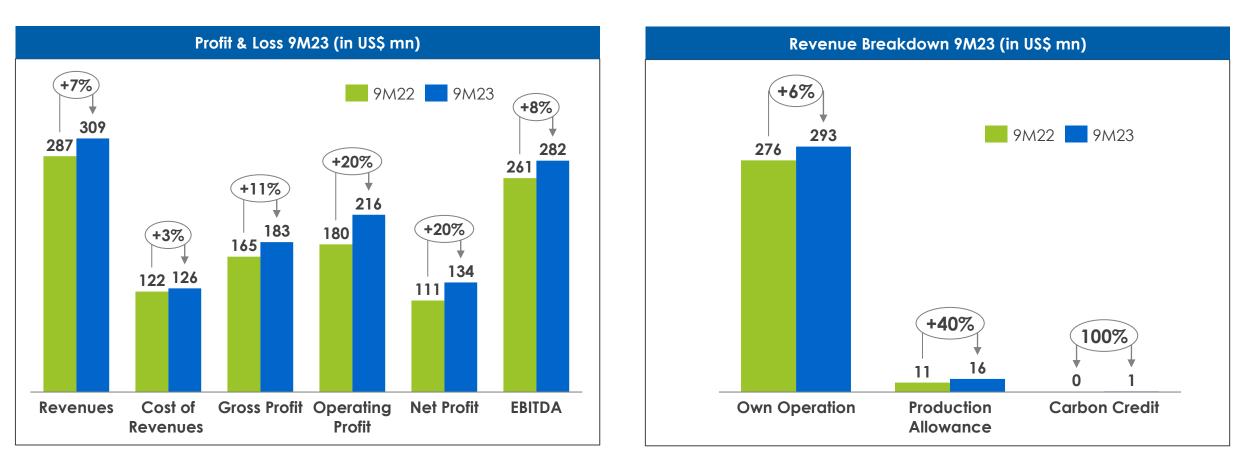


# Financial **Performance** 9M 2023



# **9M2023 Financial Highlights**





- Higher Revenue contributed from own operations, production allowance and carbon credit.
- Higher Net Income due to higher Revenue, Gross Profit, Operating Income, Interest Income, and Forex Gain.
- **Higher EBITDA** mainly contributed from higher Operating Income and Depreciation.



## **Carbon Credit Revenue**



#### Since 2011, PGE has experienced in managing Carbon Credit Projects



In 2022, PGE has successfully issued ~1,7 million Ton **CO2eq** of CERs under CDM and Gold Standard Mechanism



In September 2023, PGE also contribute in domestic carbon market, by issuing 864,209 Ton CO2eq

\*from total 864,209 tCO2eq Verified Carbon Unit (VCU), as September 2023

No	Carbon Credit Project	Commercial Operating Date (COD)	Total CERs (TCO2eq)	Period	Revenue (USD)	Realization
1	Gold Standard Lumut Balai 1-2	1 Sept 2019	i	n the verification process		
2	Gold Standard Karaha 1	6 April 2018	192.809	COD to 29 Feb 2020	80.316,52	2022
3	Gold Standard Ulubelu 3-4	26 Juli 2016	1.549.663	COD to 29 Feb 2020	667.129,92	2022
4	SRN Lahendong 5-6	15 Sept 2016	459.953*	COD to 31 Des 2020	731.863,00	2023
5	Gold Standard Kamojang 5	29 Juni 2015	i	n the verification process		

#### Geothermal power generation has



lower carbon emission footprints compared to power generation from non-renewable resource







# **Sustainability** Performance 9M 2023



# **Sustainability Performance**





Environment Friendly



Emissions Intensity 41.63 gr CO<sub>2</sub>eq/kWh Decreased 0,64% YOY Much lower compared to EU Taxonomy of 100 gr CO<sub>2</sub>eq/kWh



Emissions Avoidance 3,004,906.47 Ton CO<sub>2</sub>eq\* VS emissions from coal power plant



Scope 1-3 Emissions 149,288.53 ton CO<sub>2</sub>eq VS 3,154,195 ton CO<sub>2</sub>eq emissions from coal power plant



Upholds Corporate Social Responsibility



% Women in Management Level

12%

% Women Top Nominated Talent

**24%** 

Commitment Realization of Corporate Social Responsibility (CSR)

Billion Rupiah

9.125



Since 6 January 2022



Upholds Good Corporate Governance



GCG Assessment Score 93.15 Very Good



IT Cyber Security System & Device Availability **100%** 

\* based on ACM 002: Grid-connected electricity generation from renewable sources

Emissions Scope 1 (Fugitive Emissions, Stationary & Mobile Combustion) Emissions Scope 2 (Purchased Electricity) Emissions Scope 3 (Purchased Services, Use of Sold Product)



# Thank You

Energy give us life. Green energy gives us a better life