PERTAMINA
NEW & RENEWABLE ENERGY

Driving Indonesia's Energy Transition through Green Investment

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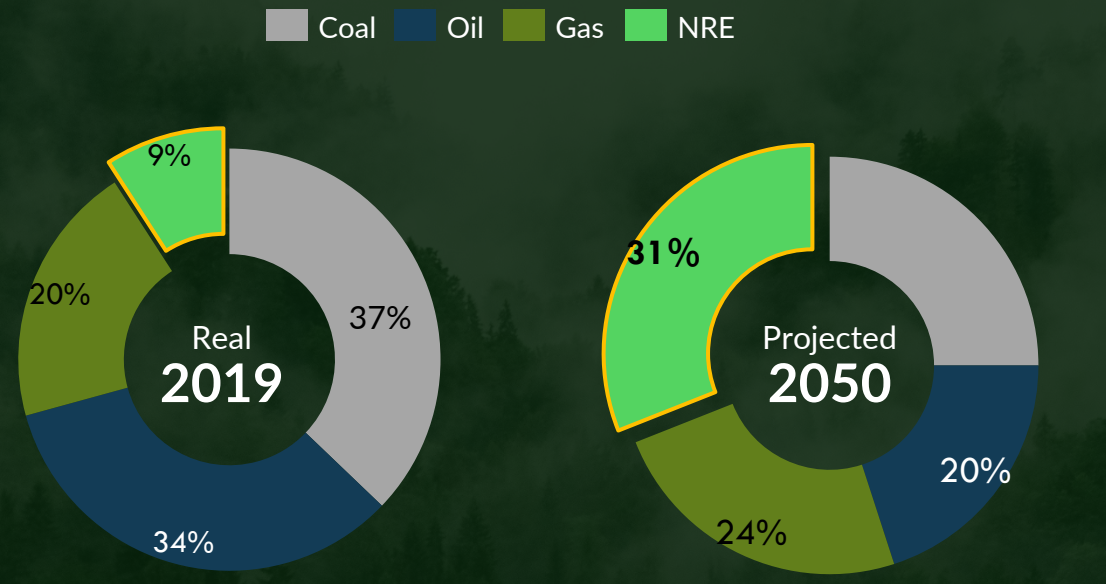
Indonesia has developed a robust strategy to embrace energy transition and sustain energy security

National Grand Energy Strategy – Current mix (2019) & Targets (2050)



Energy Consumption: 0.8 TOEcap.
Electricity Consumption: 1084 Kwhcap.

Energy Consumption: 3.2 TOEcap.
Electricity Consumption: 7000 Kwhcap.

Global & National Commitment – Current mix (2019) & Targets (2050)

United Nations
Climate Change
COP 26 UNFCCC

RPJMN 2020-2024

↓ 32-43%
National Carbon Emission Reduction Target by 2030

"Membangun lingkungan hidup, meningkatkan ketahanan bencana dan perubhan iklim"

Main Agenda of RPJMN

↓ 1240
Million Ton
CO_2e Reduction Target

75-78
Indeks Kualitas Lingkungan Hidup
IKLH Achievement Target by 2024

↓ 446
Million Ton
Energy Sector CO_2e Reduction Target

↓ 27%
National Carbon Emission Reduction Target by 2024

Source: National Energy Committee (DEN), UNFCCC, RPJMN 2022-2024

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PNRE leads the energy transition and decarbonization of Pertamina – while driving green investment through strategic cooperation

Building up a broad portfolio of Clean Energy businesses

is a key focus for PNRE moving forward, in order to support the energy transition goals of Pertamina, Indonesia and beyond

Strengthening decarbonization and presence of renewable and future energy

PNRE plays a key role in decarbonizing hard-to-abate sectors through electrification, batteries, hydrogen and carbon reduction projects

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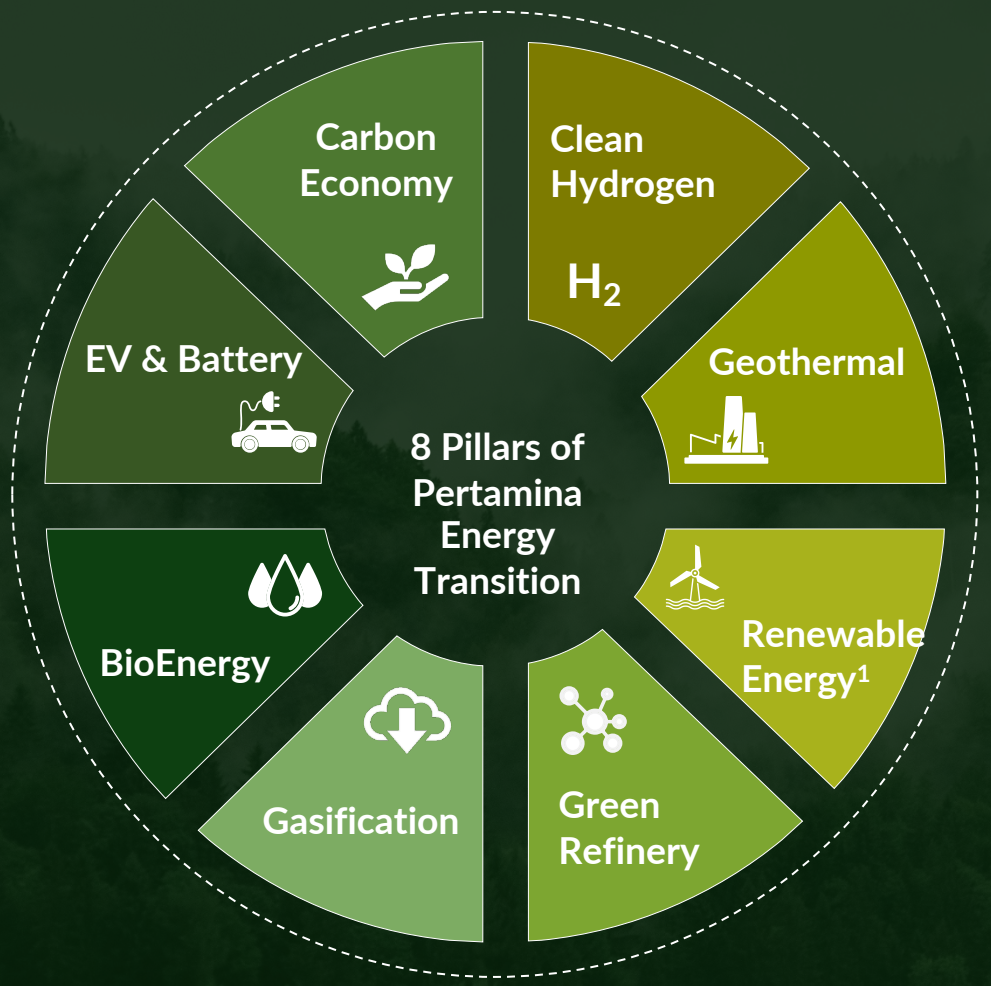
To support Net-Zero aspirations and decarbonization agenda, Pertamina has developed a holistic energy transition pillar and investment strategy



Pertamina Investment Strategy

Est. Pertamina Capex 2022-2026

Upstream
$34 Billion
45%

Downstream
$28 Billion
37%

Energy Transition[1]
$11 Billion
14%

~10% higher than average IOC investment in NRE

Other Portfolio
$2 Billion
4%

1. Gas & New Renewable Energies

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Building Nation's Carbon Economy

PNRE optimize 2nd largest tropical forest in the world for low cost NBS through strategic cooperation; accelerating climate investment for decarbonization and creating tangible impact for biodiversity and community development…

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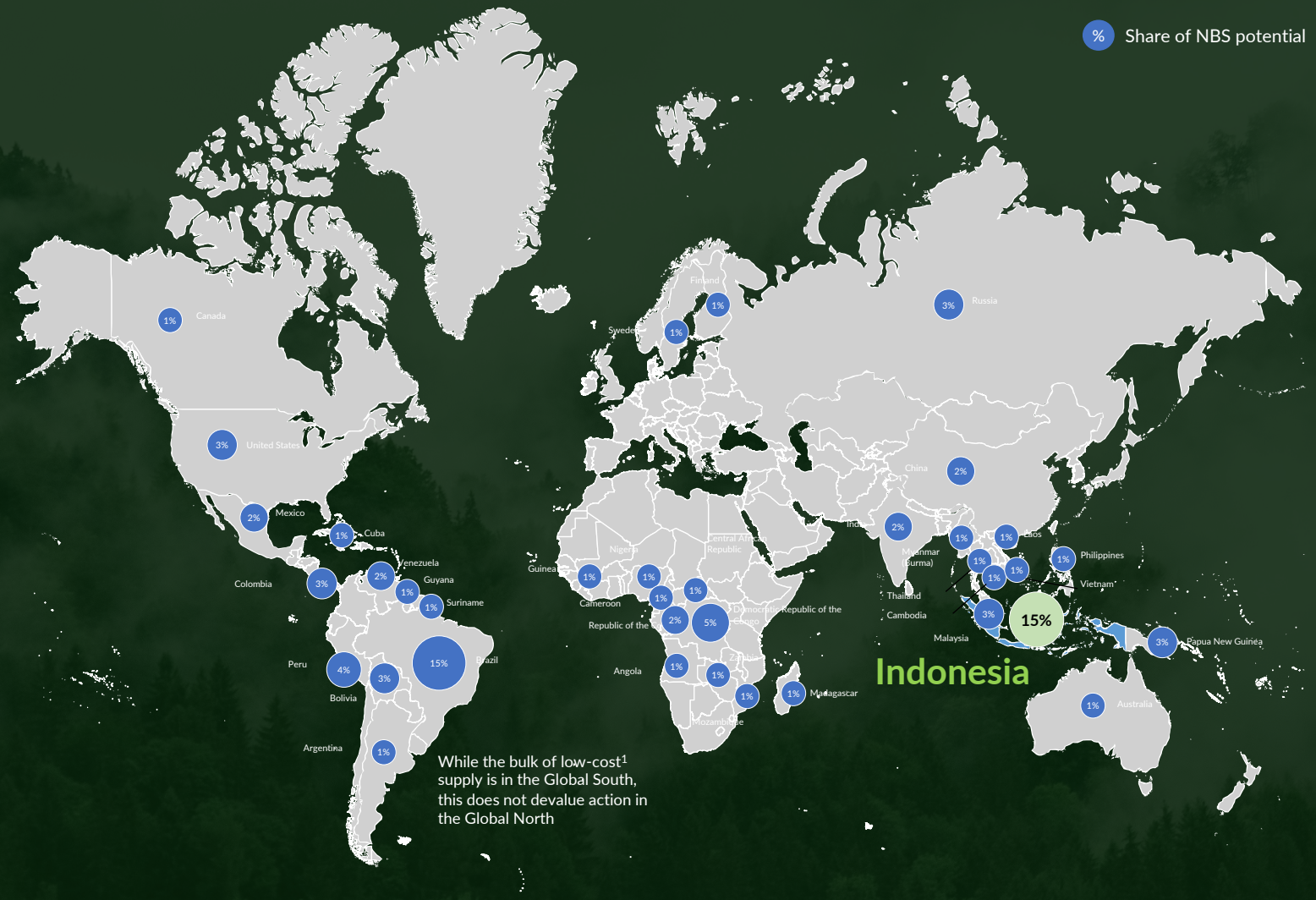
NBS can be the backbone of Indonesia's carbon economy with our 2nd largest global low cost NBS potential



While the bulk of low-cost[1] supply is in the Global South, this does not devalue action in the Global North

#1
of world fauna species

>95
Mn Ha of forest area

#2
largest mangrove cover with 4mn Ha

>500
Forest concessions

17%
largest tropical rainforest and peatland cover

15%
Contribute to supply of global NBS potential

~300
Bn tons CO_2 carbon stored in Indonesian land, up to 40x annual GHG emission from fossil fuels

3X
Growth rate compared to trees planted in non-tropical area, will increase effectivity of CO_2 storage.

Represented on the map:
Lower-cost[1] potential (high- medium feasibility NBS)
Countries with a share of NBS potential that is 1% or greater

1. Low cost refers to the "practical potential of NBS (see "About the research" box). "Practical" potential is apportion of the total NBS abatement potential in recognition of the fact that it becomes progressively more difficult to secure carbon credits as the total potential of each source is approached. It uses an economic filer (agricultural rent) to identify and remove "low-feasibility" lands. We refer to it primarily as "practical" instead of "low cost" to reflect that it is just one of a number of barriers to mobilizing NBS (e.g., social, political, etc.). However, it is most appropriate in the context of a map to highlight that is also a reflection of the low costs that help to explain the bulk of volume in the global South as represented here

PNRE has started to drive green investment through NBS cooperation with one of the largest forestry concession holder in Indonesia

HoA signed for cooperation to develop 9 concessions as NBS projects

Jan-Mar 2022

67 Concessions evaluated

~3,6 Mn Ha areas covered in high-level FS

Mar-May 2022

9 Potential concessions identified

~0,7 Mn Ha areas evaluated for Pre-FS

May-Jun 2022

~11 Mn Tons/year CO_2e potential GHG reduction

~7 Mn Tons/year potential carbon credit generated

20 June 2022

Signed Binding Agreement & Started Project Design Development

Q1 2023

Project Registration

Unlock National Clean Hydrogen Potential

Develop at-scale green hydrogen production for national industries; drive decarbonization of the hard-to-abate sectors (e.g. power, steel, chemical, transportation, etc) and bridge renewable energy supply in remote areas…..

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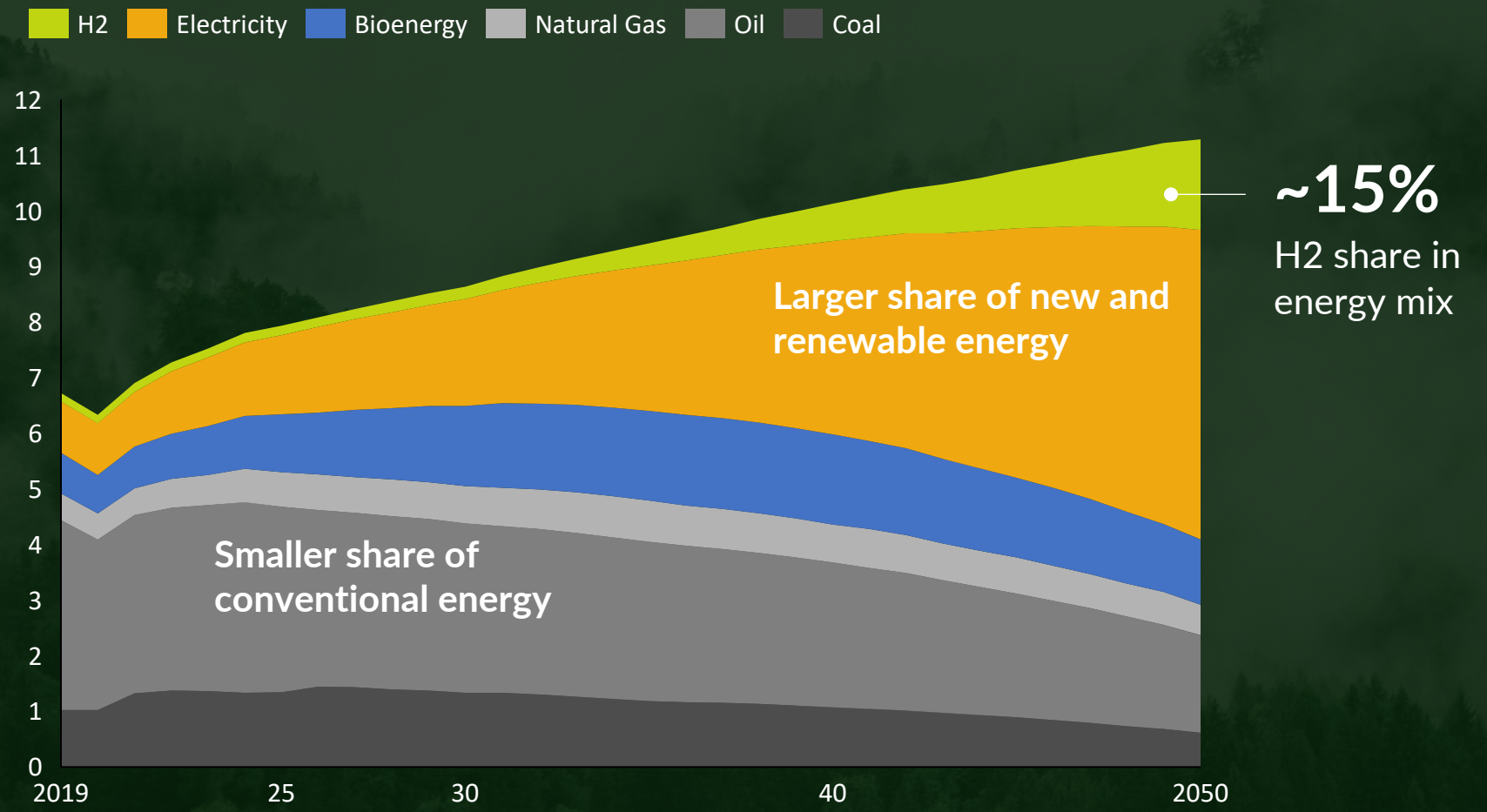
Hydrogen is one of the new energy to replace declining fossil fuel production in Indonesia

GREEN TRANSITION SCENARIO[1]

Indonesia final consumption mix (green transition scenario), mnTJ



As a result of energy transition, mix of conventional energy is expected to decline post 2025

H2 is expected to be ~5% of energy mix by 2040 and ~15% by 2050

1. TCO of hydrogen use as an alternative fuel and feedstock becomes competitive coupled with regulatory push on clean fuel uptake leads to growing hydrogen uptake

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"Greener, Faster, Together."

Pertamina aims to be a leading H2 exporter and champion of Indonesia H2 economy

	2022 - 2026	2027 - 2030	Beyond 2030
Pertamina aspiration	First mover in SE Asia, capture export market early	International market priority and cultivate domestic demand	Leading H2 exporter and champion of Indonesia H2 economy
Scale, H2e	50-200 ktpa	400-1,000 ktpa	>2,000 ktpa
Focus	• Launch pilot H2 and NH3 projects for export • Establish partnerships	• Scale up export volume for both H2 and NH3 • Cultivate domestic market	• Develop at-scale production • Build Indonesia H2 economy

Main use-cases

- Power (co-firing)
- Transportation
- Chemicals, steel & refining
- Marine

"towards cleaner and more sustainable energy for Indonesia"