



PTT's Portfolio Transformation to achieve Net Zero Target

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Clean energy is a key to achieve Net Zero target

Effective Energy Architecture

is timely, inclusive, sustainable, affordable and secure

Security & Access



Environmental Sustainability



Energy Triangle



Economic Development & Growth

Combination of Solutions needed

to achieve net zero & solve energy transition challenge

1 Increasing Energy Efficiency

67% of all primary energy losses due to inefficiencies in electricity generation, heavy industry & buildings



2 Developing Low Carbon Energy

Switching energy sources to renewable, but scalable solutions still being developed



3 Capturing Unavoidable Emission

Carbon capture playing a role through carbon capture and storage (CCS) facilities or with nature-based solutions



PTT's New Vision

Powering Life with **Future Energy and Beyond**

FUTURE ENERGY

Renewable

Energy Storage & System Related

EV Value Chain

Hydrogen

BEYOND

Life Science

High Value Business

Mobility & Lifestyle

Logistics & Infrastructure

AI, Robotics & Digitalization

Target by 2030:



Business Growth

LNG : 9 MTA Power (Conventional) : 8 GW
Renewable Energy : 15 GW



New Growth

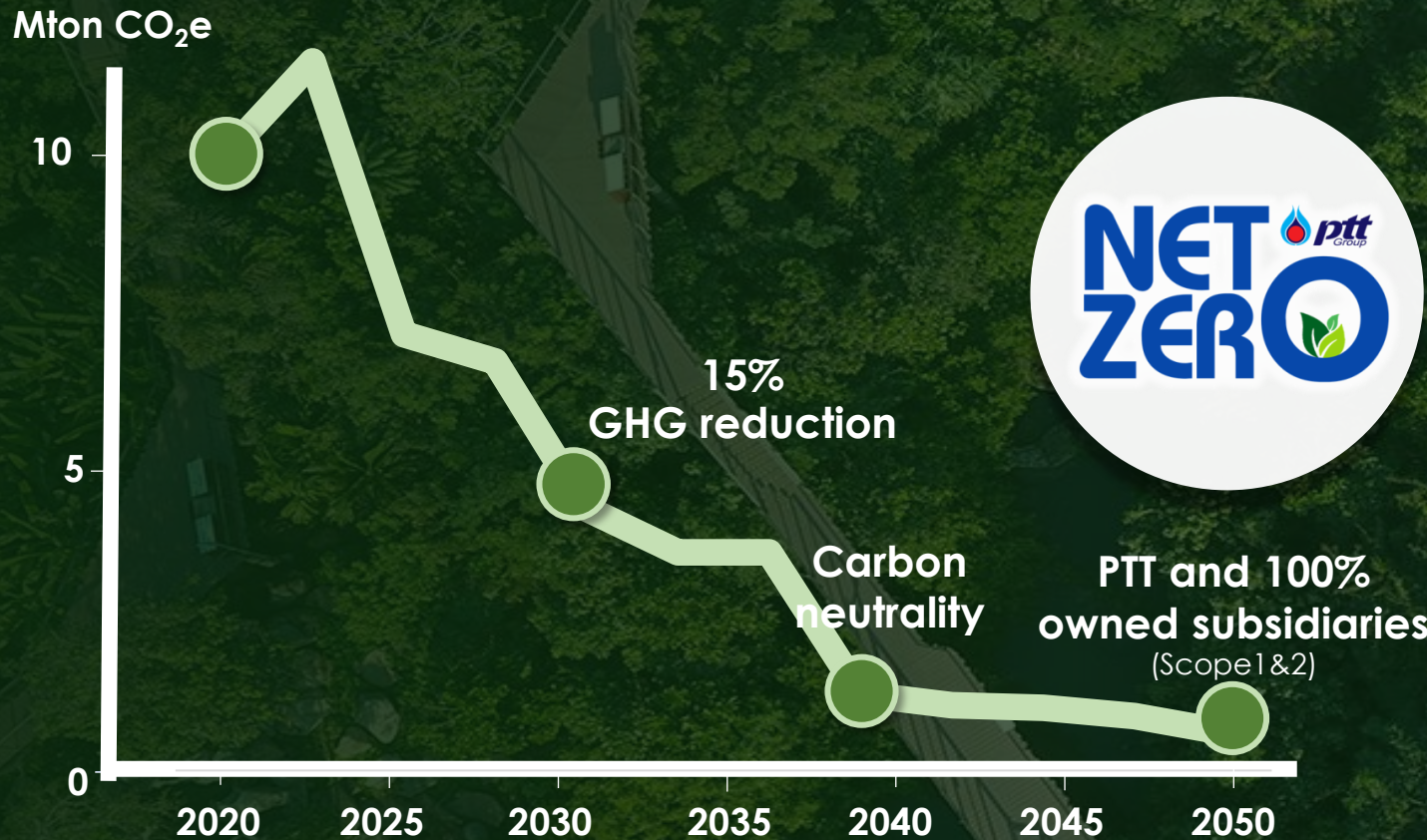
Investment & NI
Future Energy and beyond > 30%



Clean Growth

15% Greenhouse Gas reduction from 2020

PTT Moving toward Carbon Neutrality by 2040 and Net Zero Emissions by 2050



3P Decarbonization Pathways



Pursuit of Lower Emissions

~30 %

(Clean growth)

15% GHG reduction from 2020 by 2030

GHG Reduction Initiatives

Carbon offset / RECs



Portfolio Transformation

~50 %

(Business growth)

RE 15 GW by 2030

(Green portfolio)

Future Energy and Beyond 32% of CAPEX 2021 - 2030



Partnership with Nature and Society

~20 %

(Reforestation) PTT: 395,000 Acre by 2030

(PTT's Existing): 440,900 Acre

Pursuit of Lower Emissions

Aiming to reduce GHG as many as possible through energy efficiency and new initiatives



3P Decarbonization Pathways

Pursuit of Lower Emissions
Portfolio Transformation
Partnership with Nature and Society

CCS

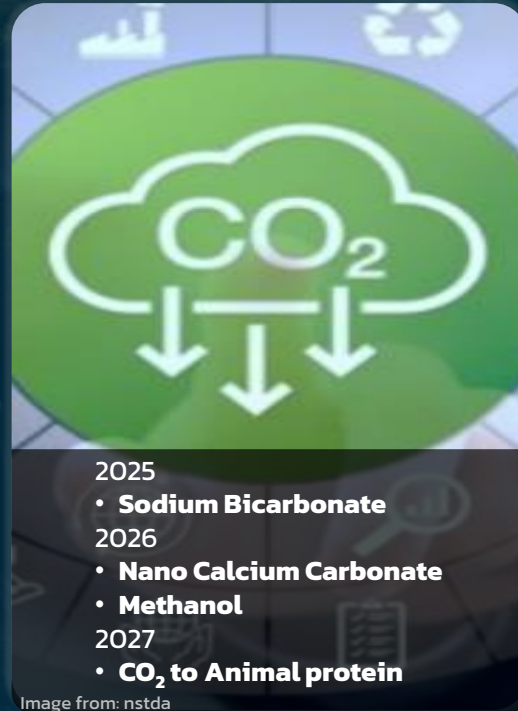


Estimated total CO₂ storage in Thailand

10,300 MtCO₂e
ARTHIT 1.0 MtCO₂e

Image from: Equinor

CCU



- 2025
 - Sodium Bicarbonate
- 2026
 - Nano Calcium Carbonate
 - Methanol
- 2027
 - CO₂ to Animal protein

Image from: nstda

Renewable Energy in Operation



Accumulated CO₂ reduction
1.0 MtonCO₂e
at 2030

Image from: PTT

Hydrogen



Hydrogen-Gas Turbine
(by product Refinery)
0.12 MtCO₂e/year

Image from :Audio und werbung/Shutterstock

Pioneering Renewable Energy Certificate (REC) Marketplace in Thailand



"We make the world better"

"One stop service"

online platform that enables renewable energy certificate trading to accelerate green energy usage and reduce global warming



www.reacc.io



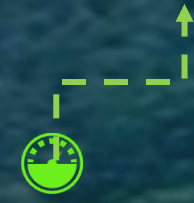
Issue i-REC



Supply



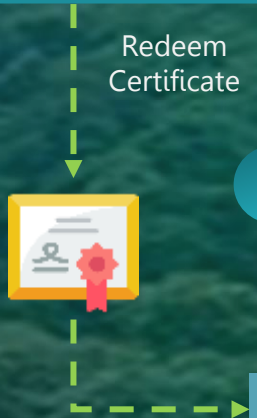
Renewable Energy Generation



Demand



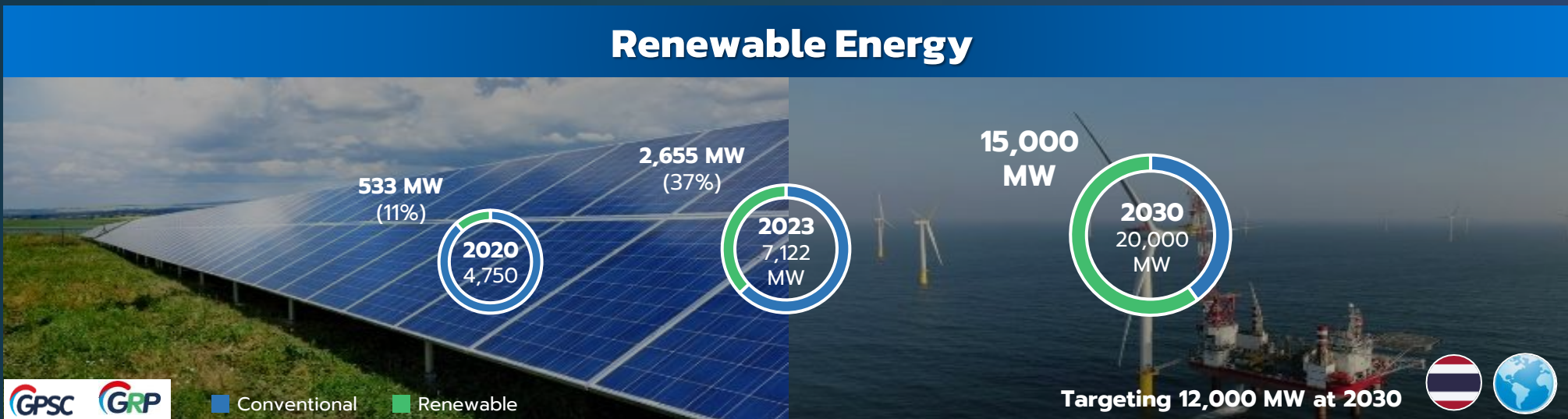
Business with REC Purchase



Portfolio Transformation to Green Energy

RENEWABLE ENERGY BUSINESS

Target
15 GW
By 2030



ENERGY STORAGE



Invest in EV Value Chain to become Automotive Hub of Asia

PTT Group EV Ecosystem

Battery Technology & Production



- o Strategic collaboration in battery business



Product Platform



- o 4W, 2W, Bus/Truck
- o With Foxconn, EV Production 50,000 units/year (Constructing)

Charging Network



- o EV Station Pluz : 705 EV charging stations
- o On-ion : over 470 parking spaces in major shopping centers across the country



Raw Material

- o Chemical formulation (licensor) - Auto Part



Go to Market Platform

Swapping Battery



After-sales Service



As of Dec 2023

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Partnership with Nature and Society

PTT Reforestation Project : adding **395,000 acres** of forest/mangroves by **2030**

To absorb **2.14** MtCO₂e/year



Thank you

