



Progress on Thailand CCS

A perspective from local developer



Danuwas Lambasara

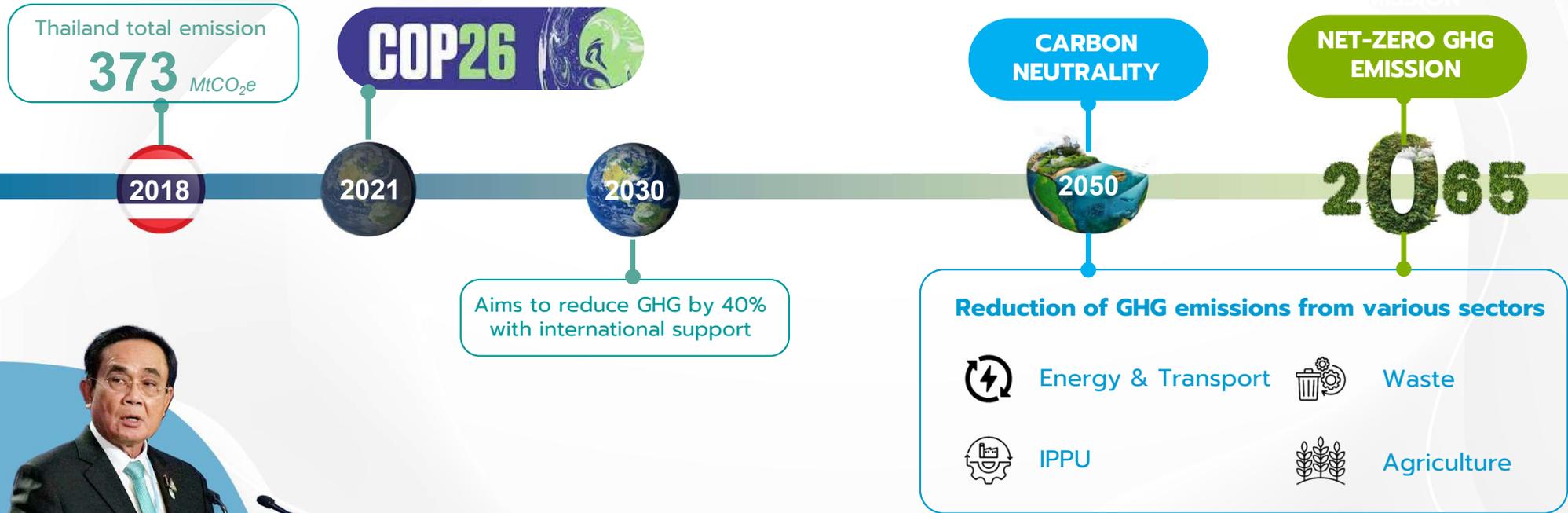
Vice President, CCS

Carbon and Energy Solutions Div.

PTT Exploration & Production PLC.

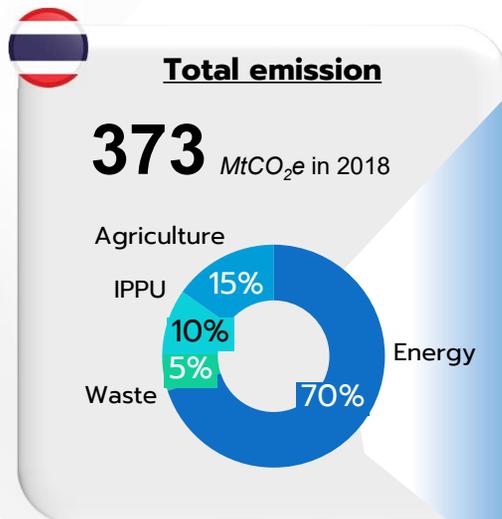
Thailand's Decarbonization Goal

Strong commitment that requires CCS contribution

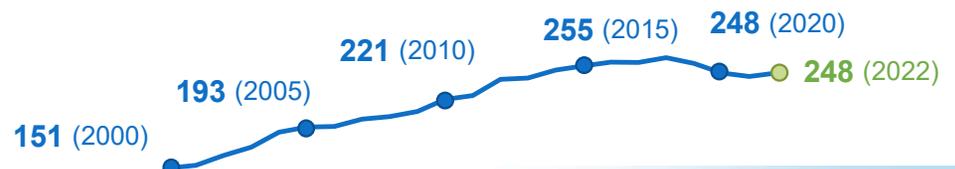


Zoom into Thailand's emission

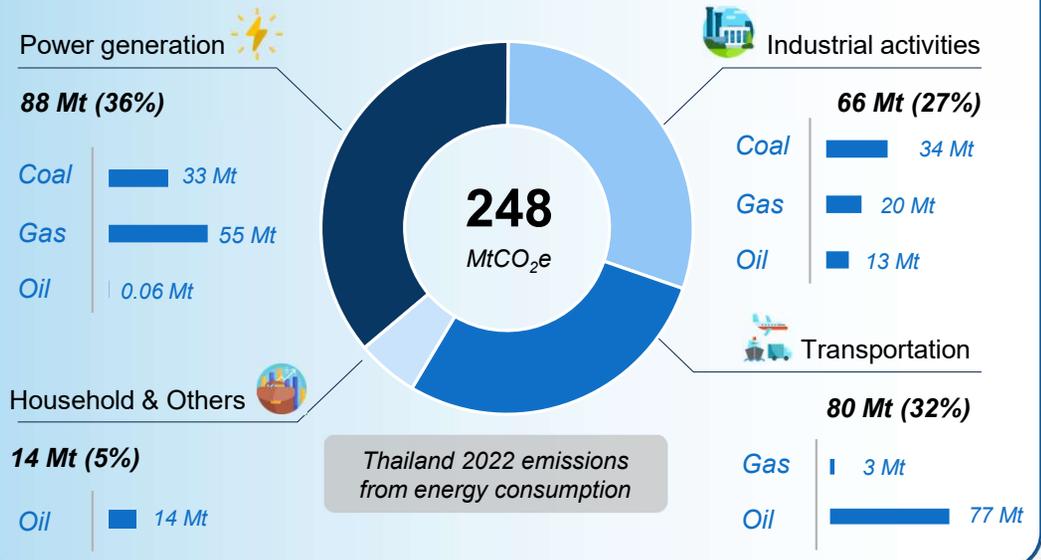
Energy sector is the primary contributor



Thailand's Historical Emissions from Energy Consumption (MtCO₂e)



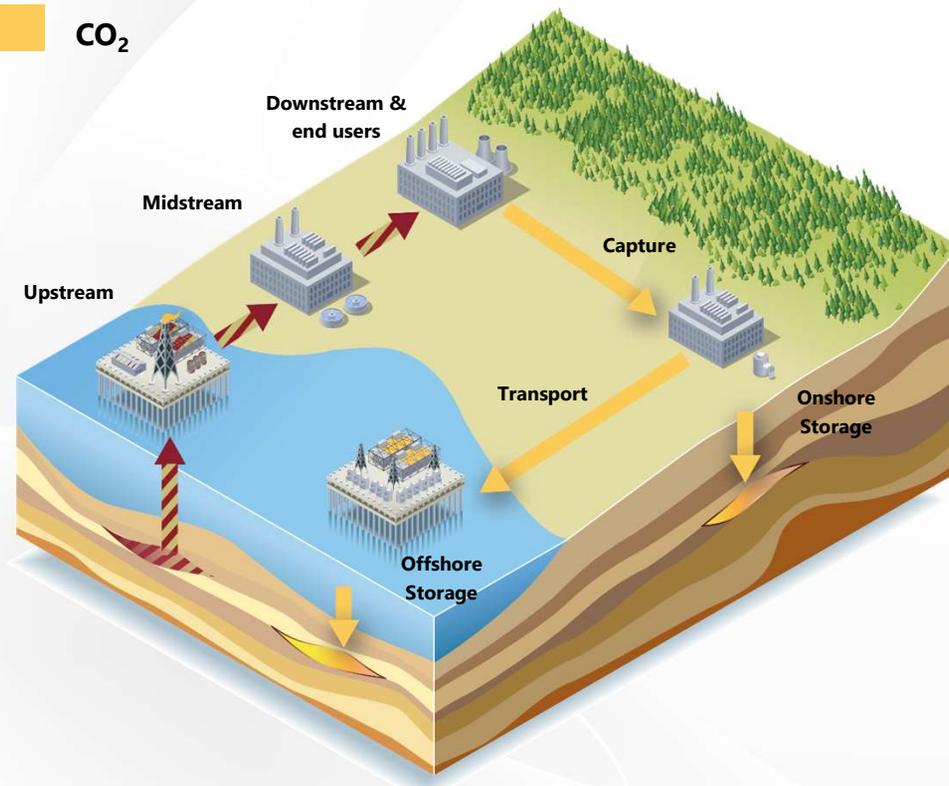
2022 Emission by sources



Thailand's CCS goals

~20% of emissions from energy sector hinge on CCS

 Petroleum with CO₂
 CO₂



CCS ≈ REVERSE E&P

Returning Carbon molecules to where they came from

Begin to contribute
 by **2040** for Energy
 & Cement industries

2050

40
 Mtpa

2065

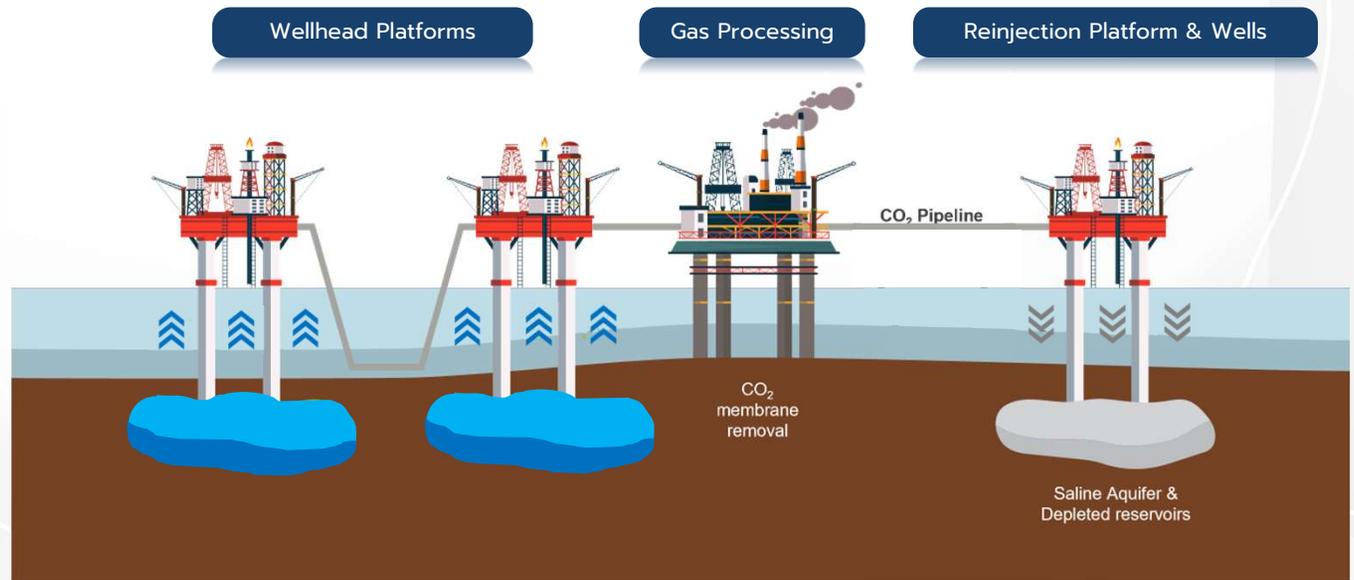
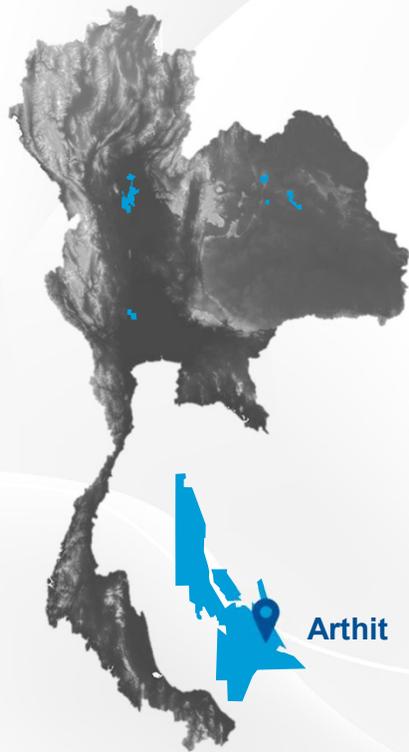
60
 Mtpa

Thailand CCS

Arthit Upstream CCS as National pilot project

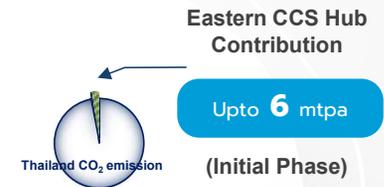


Arthit CCS project aims to capture CO₂ from the current offshore gas processing facility before being transported to a chosen platform for permanent storage in the subsurface.



Thailand CCS

As NOC, PTT Group is leading the development of Thailand's national CCS hub



Eastern CCS Hub project aims to address decarbonization demands of the Eastern Economic Corridor (EEC) and industrial clusters by leveraging potential storage in the Northern part of the Gulf of Thailand.

3 Key CCS challenges to be addressed

1



Technical

Need more subsurface data to verify domestic storage capacity

2



Commercial/Incentives

Need proper incentives to ensure the economic viability of domestic CCS

3



Regulatory

Need comprehensive regulatory framework across the entire CCS value chain

Current status on CCS regulations & policies

Ongoing development by multiple key state agencies with support from state enterprises



Regulations



Office of Natural Resources
and Environmental Planning
(ONEP)

- PTTEP and state agencies serve as the members of the **National CCUS Sub-committee** under the Minister of Energy to drive and facilitate regulatory development
- **DMF** (E&P regulator) actively supports Arthit CCS Pilot project and currently works on Petroleum Act amendment to include CCS scope (Ongoing public hearing on 1st draft)
- **ONEP** (owner of national decarbonization plan) works to strengthen CCS role in the national plan for both short (NDC) and long (LT-LEDS) terms.

Supportive policies



Revenue Department
(RD)

- **BOI** offers tax-based incentives to CCUS adopters from gas processing and petrochemical industries but looks to expand the benefits to other sectors across the CCS value chain.
- For E&P-related CCS activities, different supportive mechanisms are expected to be developed by **RD**
- PTTEP seeks to bring in **international learnings** to guide domestic policy development.

KEY TAKEAWAYS

CLEAN ENERGY



DECARBONIZATION

1 Thailand CCS is still at a nascent stage
Many scenarios are being investigated for the optimal benefits

2 CCS can utilize E&P resources & foundation
Know-how is built on E&P expertise

3 Regulation & policy are key
Main driver to unlock chicken-egg cycle

4 Collective effort is required
Common goals and business practices to be shared and adopted