

The road towards building the largest Carbon Capture and Storage (CCS) in the world

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RESOURCE MANAGEMENT WEEK 2023

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Timor-Leste – Profile

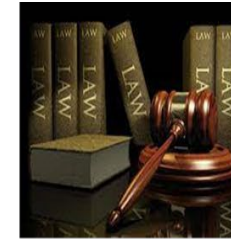
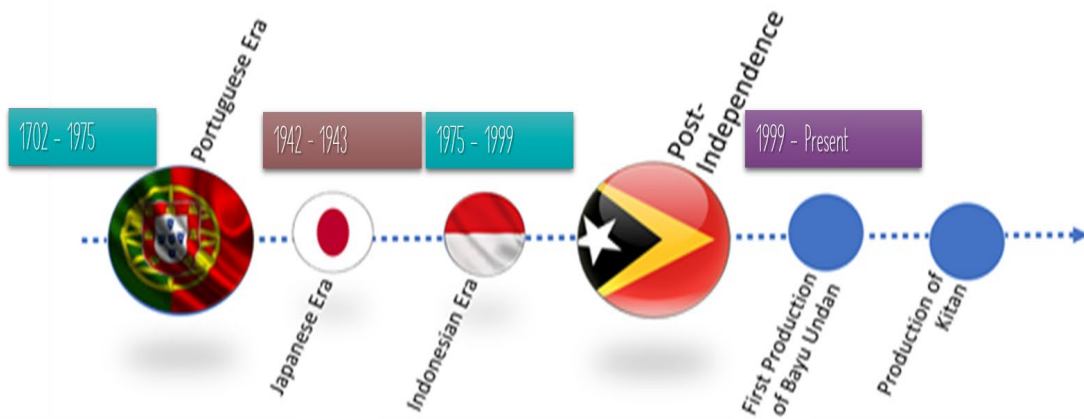


- ❑ Total Area: 15,000 Km2 (half of Belgium)
- ❑ Population: 1,388,980 (UN World Meter, 2023)
- ❑ Official Languages: Tetum, Portuguese
- ❑ Working Languages: Indonesia and English
- ❑ Economy: Oil and Gas, Tourism, Agriculture, Coffee
- ❑ Currency: USD (United States Dollars)



Connectivity: Bali (Indonesia), Singapore, Kuala-Lumpur, Darwin, (Australia), Portugal

Snapshot of Timor-Leste Oil & Gas Industry & ingredients for successful Extractive Industries



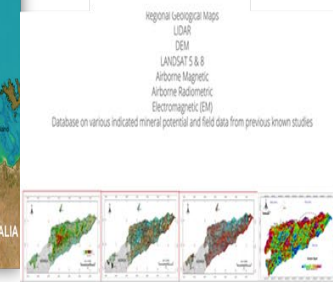
Robust Regulatory Frameworks & Fiscal Regime
A stable regulatory regime and attractive fiscal package



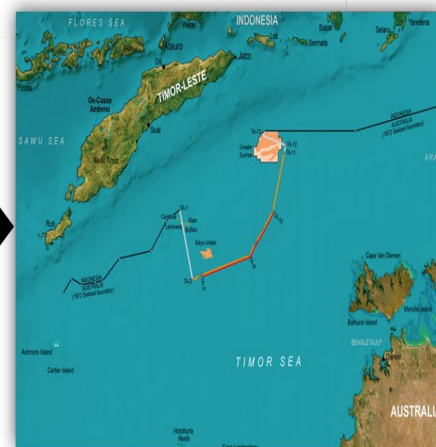
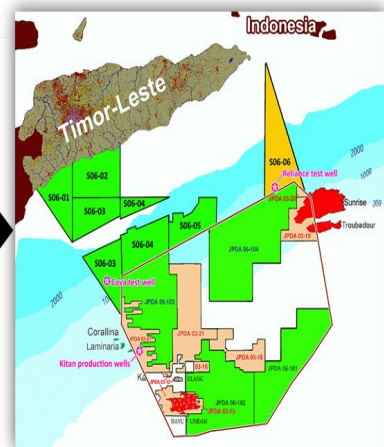
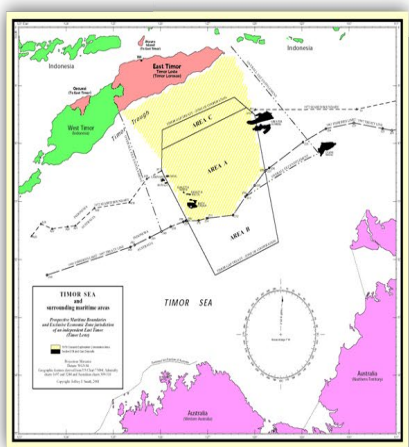
Petroleum Fund
Mimicking Norwegian Sovereign Wealth Fund



Extractive Industry Transparency Initiative
Member of EITI (the only one in Asia and ranked 3rd in the World)



Data Availability
Technical & other associated data are critical for prospecting of the resources



The World Largest Carbon Capture & Storage (CCS)



> 12 mtpa

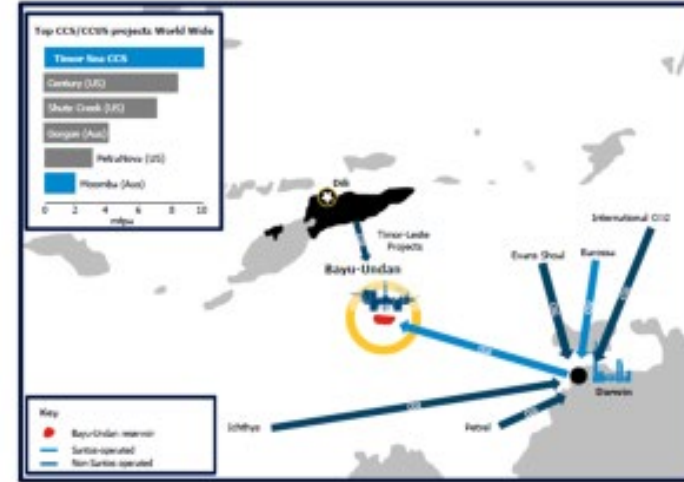
Potential market for CCS in the region

> 10 mtpa

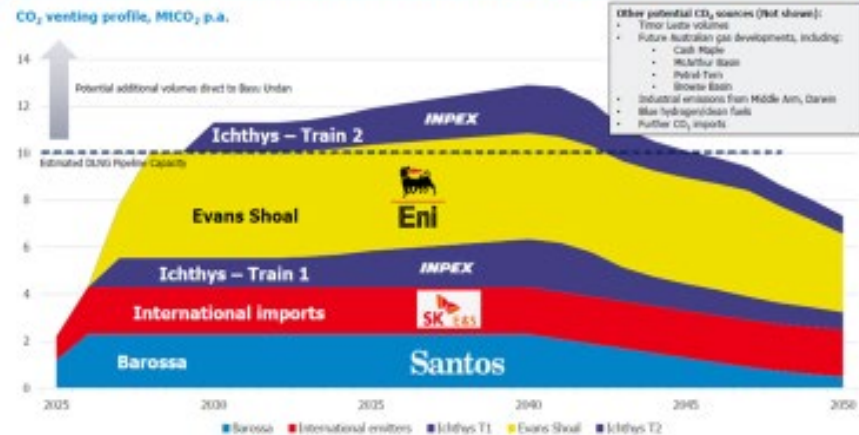
CO2 storage capacity at Bayu-Undan

2025

Targeted project start-up



> 12mtpa of potential demand for Bayu-Undan CCS **Santos**



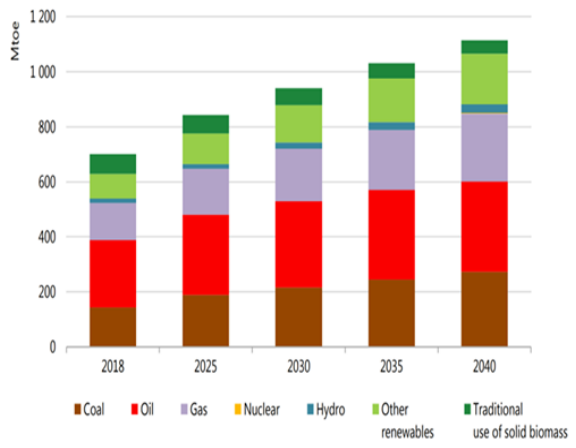
Why does a small country want to commit to net-zero carbon?



SEA Energy Demands & Timor-Leste's Contribution to the region and beyond

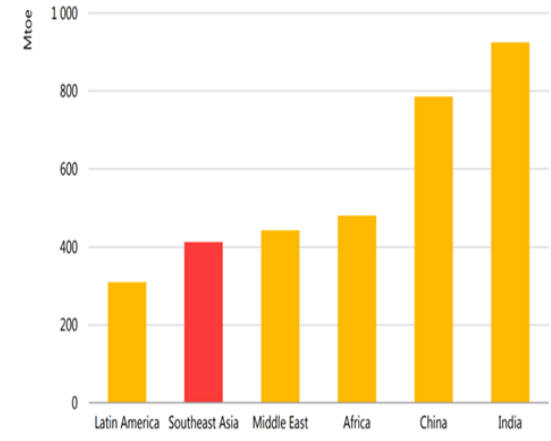


Primary energy demand in Southeast Asia in the Stated Policies Scenario



Notes: Mtoe = million tonnes of oil equivalent. Other renewables include solar PV, wind, geothermal and modern use of bioenergy.

Change in total primary energy demand in selected regions in the Stated Policies Scenario



Note: Mtoe = million tonnes of oil equivalent.



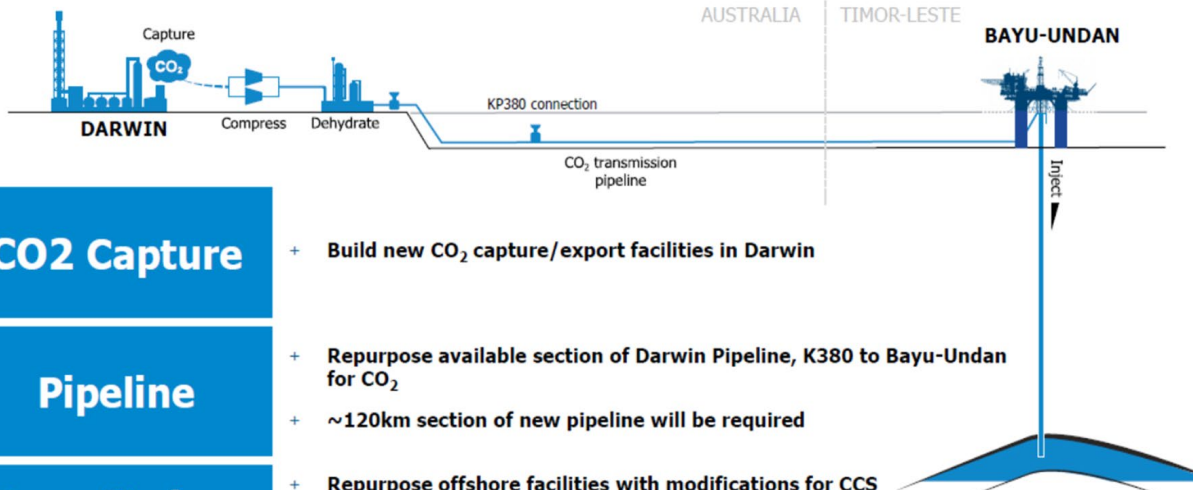
Note:

- Asia-Pacific accounts for > 60% of the world population (4.6 – 4.7 billions)
- The asean energy outlook predicted that south-east asia energy demands are expected to rise by 60% by 2040, yet over 40% of the energy are imported
- China accounts for 25% world energy demand; 67.3% of China's crude oil supply in 2019 came from imports.
- Timor-Leste + Indonesia + Australia has more than 50 TCF ready to be tapped into CCS is the best catalyst to unlocking this resources;
- We have huge potential sites for hydrogen storage and located strategically to transport the hydrogen to Asia-Pacific markets.

- First mover in the region;
- Solution to blue hydrogen emissions + securing the gas/energy supply in the region & beyond;
- solution to the industrial CO2 to the countries in the region (Japan, South Korea, Singapore and the region).



Maximise repurposing of existing facilities



CO2 Capture

+ Build new CO₂ capture/export facilities in Darwin

Pipeline

+ Repurpose available section of Darwin Pipeline, K380 to Bayu-Undan for CO₂

+ ~120km section of new pipeline will be required

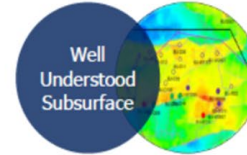
Bayu-Undan Facilities

+ Repurpose offshore facilities with modifications for CCS

+ Offshore CCS operations transitions to majority TL workforce

+ Potential for Timor Gap participation

Encouraging findings from initial feasibility assessment, but need to act quickly to position BU CCS project as the major CCS hub for this region



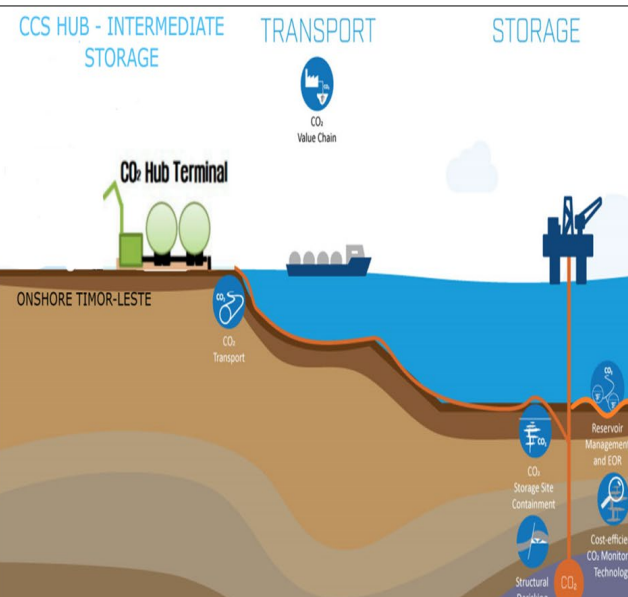
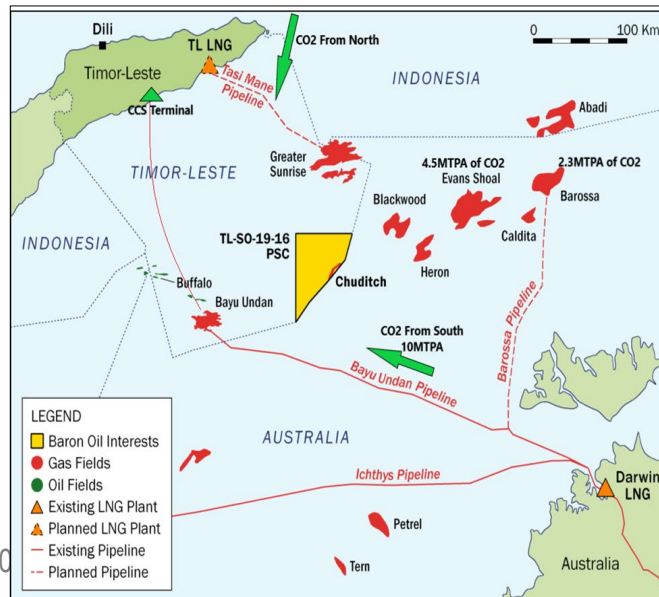
- + Estimated storage capacity of >250 Mt CO₂, with potential for >10mtpa
- + 20 years storage modelled, with potential for additional upside
- + Proven reservoir seal and high injectivity



- + Opportunity to re-purpose existing wells and platforms with modifications
- + Provides strong competitive advantage vs. other greenfield projects in region



- + New pipeline, CO₂ separation, dehydration and compression facilities will be required in Australia to deliver CCS at Bayu-Undan
- + CCS injection could commence in early 2025, but only if the new pipeline is sanctioned in Q1, 2022
- + Delay will substantially increase project costs and project may lose first mover advantage





Where are we today?

- Established CCS Core team to oversee the works on CCS
- Signed a Cooperation Agreement with IFC in developing the regulatory & fiscal frameworks for Bayu-Undan TL CCS Hub together with legal firms from Norway
- Signed a Joint Study With SK E&S in South Korea to explore the CCS terminal hubs in onshore and offshore Timor-Leste
- Actively participating in conferences, trainings and summer schools of CCS worldwide to obtain knowledge and skills on CCS
- Actively talking to potential CO2 suppliers in the region

Acknowledgement

Santos  **IFC**

International
Finance
Corporation
WORLD BANK GROUP

SK  **E&S**



ashurst | Leading
international
law firm

*“Reaching net zero will
be virtually impossible
without CCUS”*

IEA 2020 Energy Technology Perspectives

Thank you!

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