

**CARBON CAPTURE AND STORAGE  
PHILIPPINE REPORT  
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BALI, INDONESIA**



**OUTLINE**

- ▶ STATUS OF CCS
- ▶ POTENTIAL GEOLOGICAL STORAGE
- ▶ FUTURE PLANS



## STATUS: Strategy for a Low Carbon Future.

- BioFuels Act for use of alternative fuels
- Use of CNG and LPG for sustainable transport
- Natural Gas Infrastructure Development Program
- Use of green fuels in the National Renewable Energy Program
- The Philippine Energy Efficiency Project



## CO<sub>2</sub> EMISSION

Electricity Generation	39.9%
Transport	35.6%
Industry	17.0%
Commercial, Agricultural and Residential	7.5%



## Projected CO2 Emissions

Based on the planned generation capacity installations for 2012–2030, the total CO2 emissions from the electricity generation sector would increase from 33Mt in 2010 to at least 90 Mt in 2030..



## CARBON CAPTURE

Why no carbon capture projects in industrial processes or in operating power generation facilities in the Philippines

Due to the many challenges such:

- Technical
- Cost-competitiveness
- Environmental and public health risks
- Absence of policies mandating reductions in carbon emissions or specific laws for the purpose.



## Carbon Emission Sources

- ✓ Industrial zones
- ✓ Coal-fired power plants
- ✓ Gas-fired power plant
- ✓ Cement plants
- ✓ Oil refinery



## CARBON STORAGE

Identified potential CO<sub>2</sub> storage facilities:

- ✓ Sedimentary basins (conventional storage) – oil and gas fields
- ✓ Saline aquifers
- ✓ Unconventional storage sites such as geothermal field, ophiolites, coal beds and shales.



## Geothermal Fields

Geothermal fields and prospects would need further study or pilot testing for CCS especially in areas that are within reasonable distance of identified CO<sub>2</sub> sources.



## Ophiolites

The Zambales Ophiolite, located west of the Central Luzon Basin, is the most promising among the ophiolite bodies for storage. However, substantial research on permeability and sealing is needed to assess their potential for carbon storage.



## Coal Beds and Shales

Enhanced Coal-Bed Methane (ECBM) recovery in coal mines is being conducted by the government.

Coal mines, however, are located far from CO<sub>2</sub> emission sources.



## CARBON TRANSPORT

In the absence of other viable storage options in the near- and long- term, it is logical and practical to use the existing 504-km natural gas pipeline for transporting CO<sub>2</sub>



Malampaya gas field can accommodate an annual emission of 11 Mt/year



## POLICY AND REGULATORY FRAMEWORK



## POLICY

Specific provisions of law are needed to address, among others, ownership and long term steward of injected CO<sub>2</sub> on public land; containment structures, and monitoring, measurement and verification requirements.



## FUTURE PLANS

1. There are limited opportunities for large-scale deployment of CCS in the Philippines before 2024.
2. To focus the pilot on the technical details of reversing the circulation from the Malampaya OGP in Batangas to the Malampaya carbon storage site.
3. To undertake early work to pilot and test unconventional storage options (e.g. Geothermal Fields and ophiolites) for CO<sub>2</sub> generators that may not be able to easily access conventional CCS storage such as Malampaya.





## FUTURE PLANS

Government needs to demonstrate its commitment to pursuing CCS through public statements, funding of CCS activities at a low but effective level, institution of a basic “capture ready” policy and initiation of public engagement on CCS.

