



**Research & Development Centre for Oil & Gas Technology “LEMIGAS”
Agency for Research & Development
Ministry of Energy & Mineral Resources (MEMR)**

Overview of the current status of CCS deployment in Indonesia

Ego Syahrial

**EPPM Program: Seminar on CCS Awareness & Networking of Petroleum
Geoscience Institute in the CCOP Region**

Bangkok, 16-17 November 2009

CCS as a Mitigation Option

- No single solution to limit CO₂ emissions given the rising demand for energy and our continued reliance on fossil fuels
- CCS : one of the most significant tools available with capability to account for 1/5 of total emissions reductions
- Offers a strategy that renders a viable option in large scale basis in addressing climate change
- However many silent issues need to be resolved in order to deploy CCS globally
- Indonesia look up the possibility to deploy the technology by conducting preliminary study

Indonesia's Pathway in CCS

- LEMIGAS has conducted preliminary study to estimate CO₂ Potential Storage and Incremental Oil Recovery in East Kalimantan & South Sumatra (2003 – 2005)
- MoU with
 - Sojitz - Japan (2006)
 - Total (2007)
 - Shell (2008)
- Became a founding member of Global CCS Initiatives (GCCSI) led by Australia (April 2009)
- Joint Study with UK Government (November 2009)

CCS Joint Study with UK Government

- A first comprehensive study to identify potential CCS Deployment in Indonesia
- Title: **Understanding Carbon Capture and Storage Potential In Indonesia**
- Status : Completed (November 2009)
- Study Preview:
 - To anticipate the implementation of CCS technology deployment in Indonesia in the future, this study is intended to develop an understanding of the requirements associated with deploying Carbon Capture and Geological Storage (CCS) in Indonesia by addressing technical, commercial and regulatory aspects of CCS deployment to further stimulate the ongoing dialogue on potential application of such technology



British Embassy
Jakarta



“LEMIGAS”



Kementerian Lingkungan
Hidup



PT PLN
(PERSERO)



WORLD ENERGY COUNCIL
CONSEIL MONDIAL DE L'ÉNERGIE
Komite Nasional
Indonesia

Overview of CCS Study:
Understanding Carbon Capture and
Storage (CCS) Potential
In Indonesia

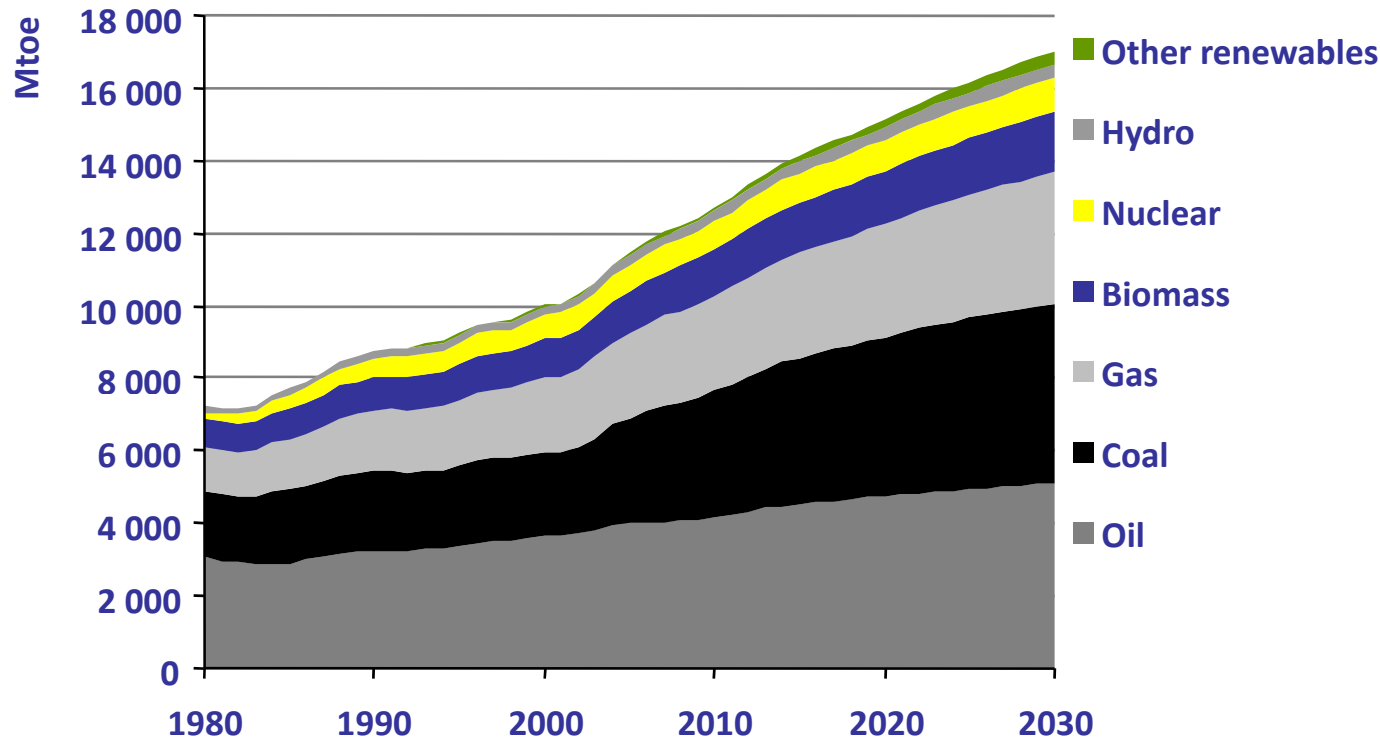
Ego Syahrial

CCS Study Working Group

Launching Indonesia CCS Study
Jakarta, 10 November 2009

Background

- World primary energy demand in the Reference Scenario: an unsustainable path

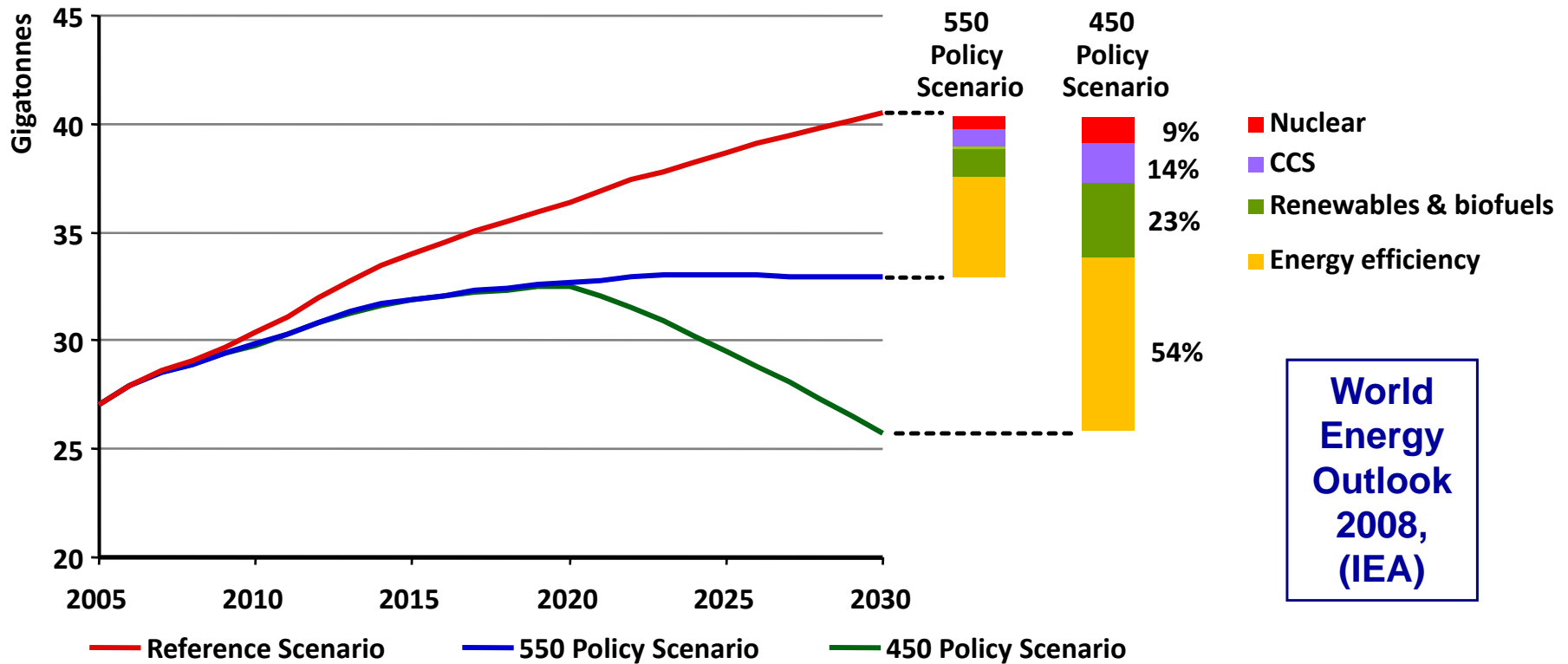


World Energy Outlook 2008, (IEA)

World energy demand expands by 45% between now and 2030 – an average rate of increase of 1.6% per year – with coal accounting for more than a third of the overall rise

Background (cont'd)

- Reductions in energy-related CO₂ emissions in the climate-policy scenarios



While technological progress is needed to achieve some emissions reductions, efficiency gains and deployment of existing low-carbon energy accounts for most of the savings

Background (cont'd)

- Structure of the report:

CAPTURE

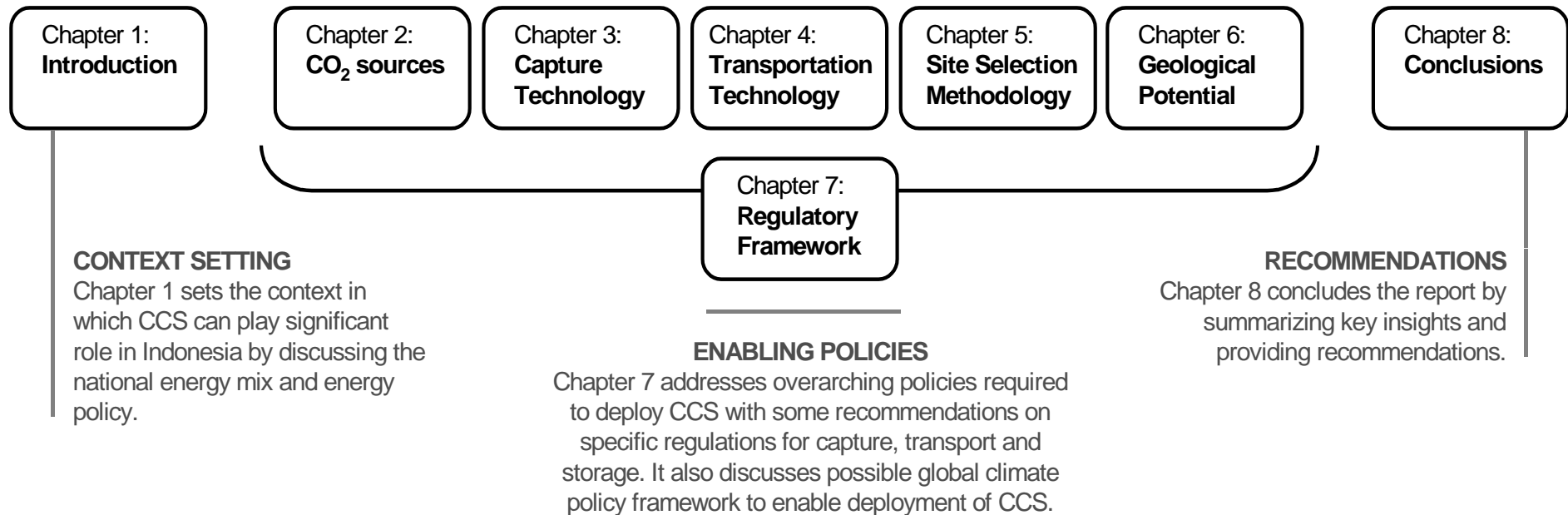
Chapters 2 and 3 address one of the first technical steps of a CCS project. Chapter 2 discusses sources of potential CO₂ emissions in Indonesia relevant for CCS application and continued by chapter 3 that looks at different capture technology options.

TRANSPORT

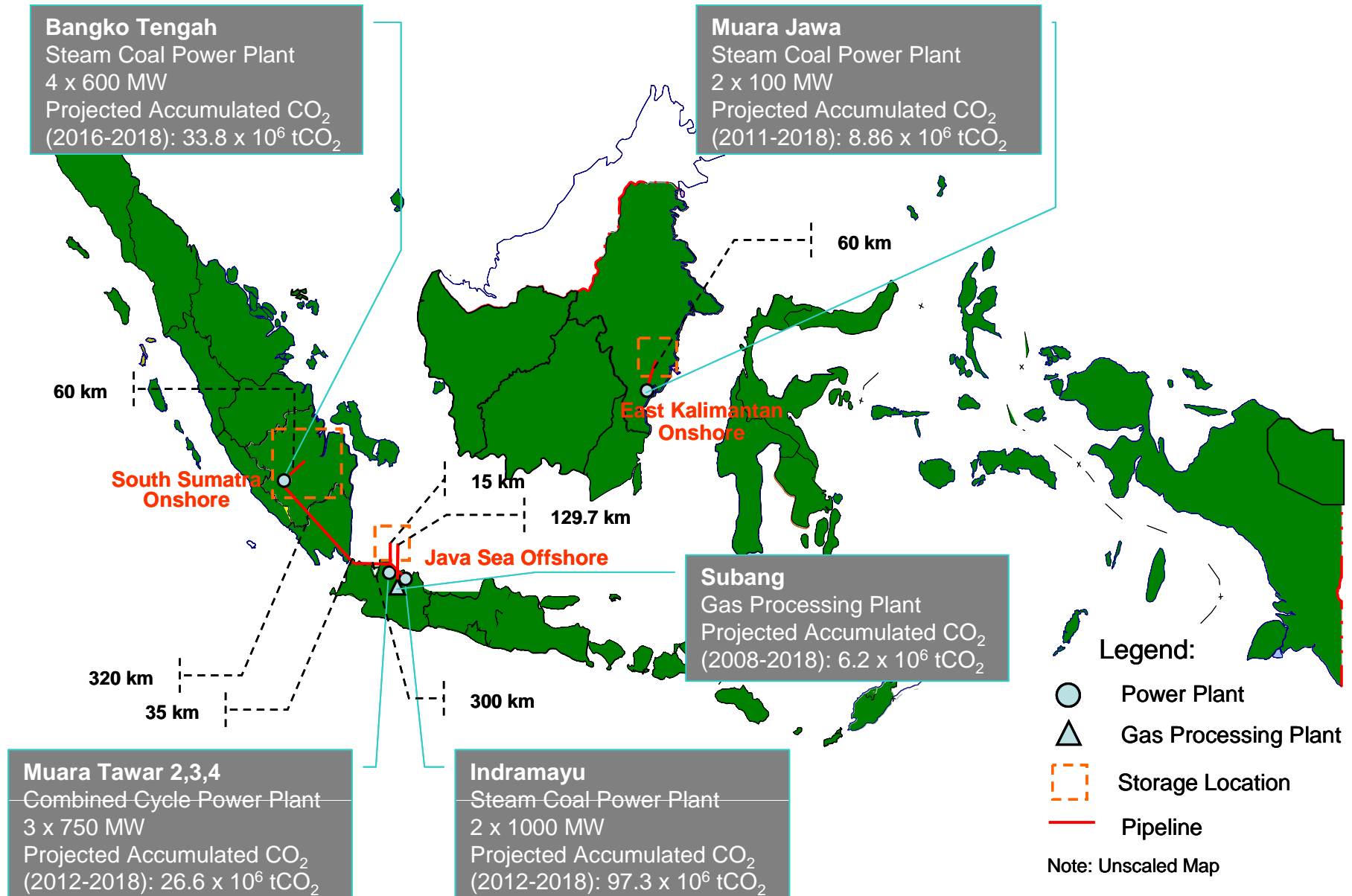
Chapter 4 reviews the options for transporting CO₂ and associated risks.

STORAGE

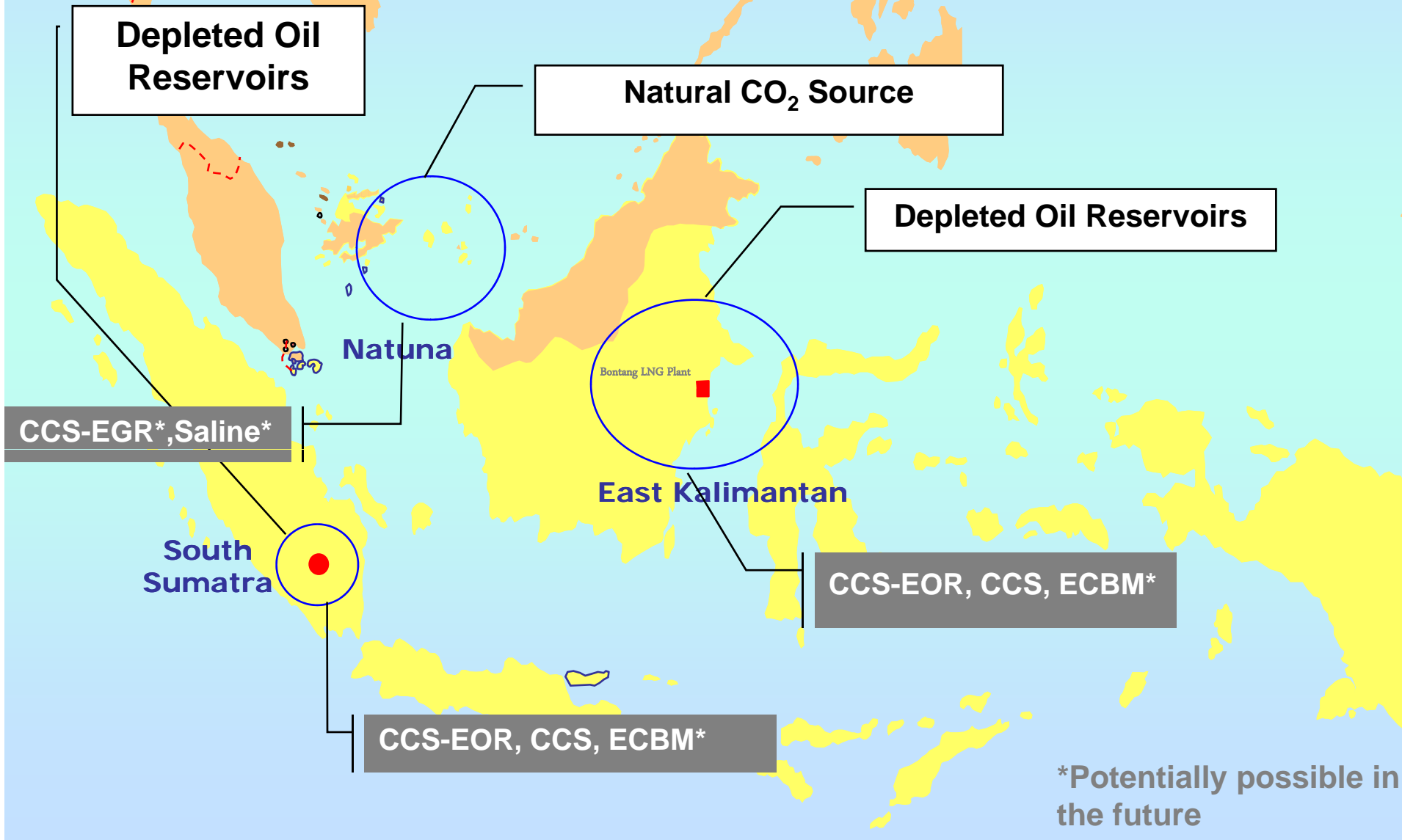
Chapters 5 and 6 deal with the storage of CO₂ underground. Chapter 5 explains site selection methodology both for non-EOR and EOR applications, while chapter 6 reviews global and Indonesia's geological potential storage.



Potential Role of CCS in Power and Oil & Gas Sectors



Potential Area for CCS



Depleted Oil Reservoirs

Natural CO₂ Source

Depleted Oil Reservoirs

Natuna

Bontang LNG Plant

East Kalimantan

CCS-EGR*, Saline*

South Sumatra

CCS-EOR, CCS, ECBM*

CCS-EOR, CCS, ECBM*

*Potentially possible in the future

Main Issues and Challenges

- No public awareness of CCS and little technical CCS capacity in Indonesia
- High costs
- No Legal and Regulatory Frameworks
- Need large investment R&D
- Financial mechanisms

Conclusions

- Huge potential of oil recoveries and CO₂ sequestration volumes is in East Kalimantan and South Sumatra
- CCS-EOR will be high on agenda
- CCS on Saline Aquifer in Natuna
- Demonstration projects are needed in developing countries funded by international sources
- National regulatory framework is needed

Area for Cooperation:

- Knowledge sharing and capacity building: *workshop & training*
- Joint Study on site of geological storage and CO2 sources
- Joint Study on CCS-EOR in depleted oil & gas reservoirs, deep saline aquifer & unminable coal seam.
- Established national regulatory framework for CCS

Thank You