

CCS in the CDM: potential and issues

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SB-34 side-event, Bonn

June 17, 2011



Overview

- History of CCS in the CDM
- What can we expect if CCS would be allowed in the CDM?
 - What kind of projects would we see?
 - How much?
 - And where?
- Cancun decision
- Main issues

History of CCS in the CDM

2005	IPCC Special Report published and welcomed by COP Two new methodologies for CCS projects in the CDM submitted • Vietnam: CO₂ capture from NGCC plants, pipeline transport, storage in offshore EOR operation • Malaysia: Co-capture CO₂ and H₂S from offshore gas well, storage in aquifer Discussions from CDM Executive Board deferred to COP/MOP Decision to hold in-session workshop
2006	Submissions Workshop held in June in Bonn New methodologies rejected based on desk review No agreement at COP/MOP2 in Nairobi

History of CCS in the CDM

2007	Submissions No agreement at COP/MOP3 in Bali
2008	Two synthesis reports on issues CCS in CDM No agreement at COP/MOP4 in Poznan
2009	Expert report, represented by CDM Executive Board No agreement at COP/MOP5 in Copenhagen
2010	Decision that CCS is eligible provided number of issues can be resolved
2011	Submissions Synthesis report (to be published) Technical workshop (to be published) Modalities and procedures (to be adopted by COP/MOP7?)

CCS: which CO₂ sources?

Coal-, gas- or biomass-fired power

Biomass conversion

Cement

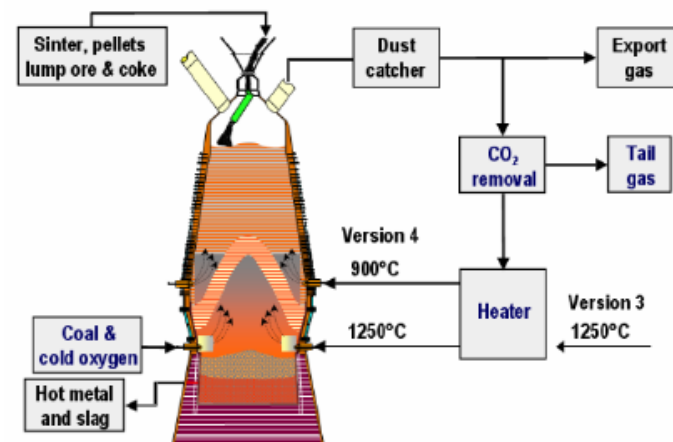
Iron/steel

Refineries

Natural gas production (“Sweetening” of gas)

Ammonia production

Ethylene production



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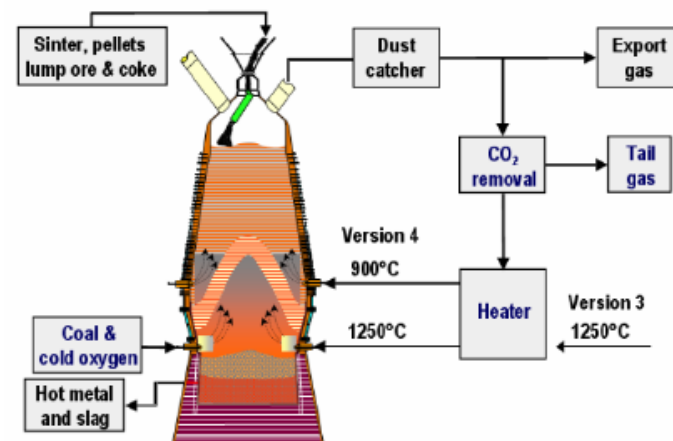
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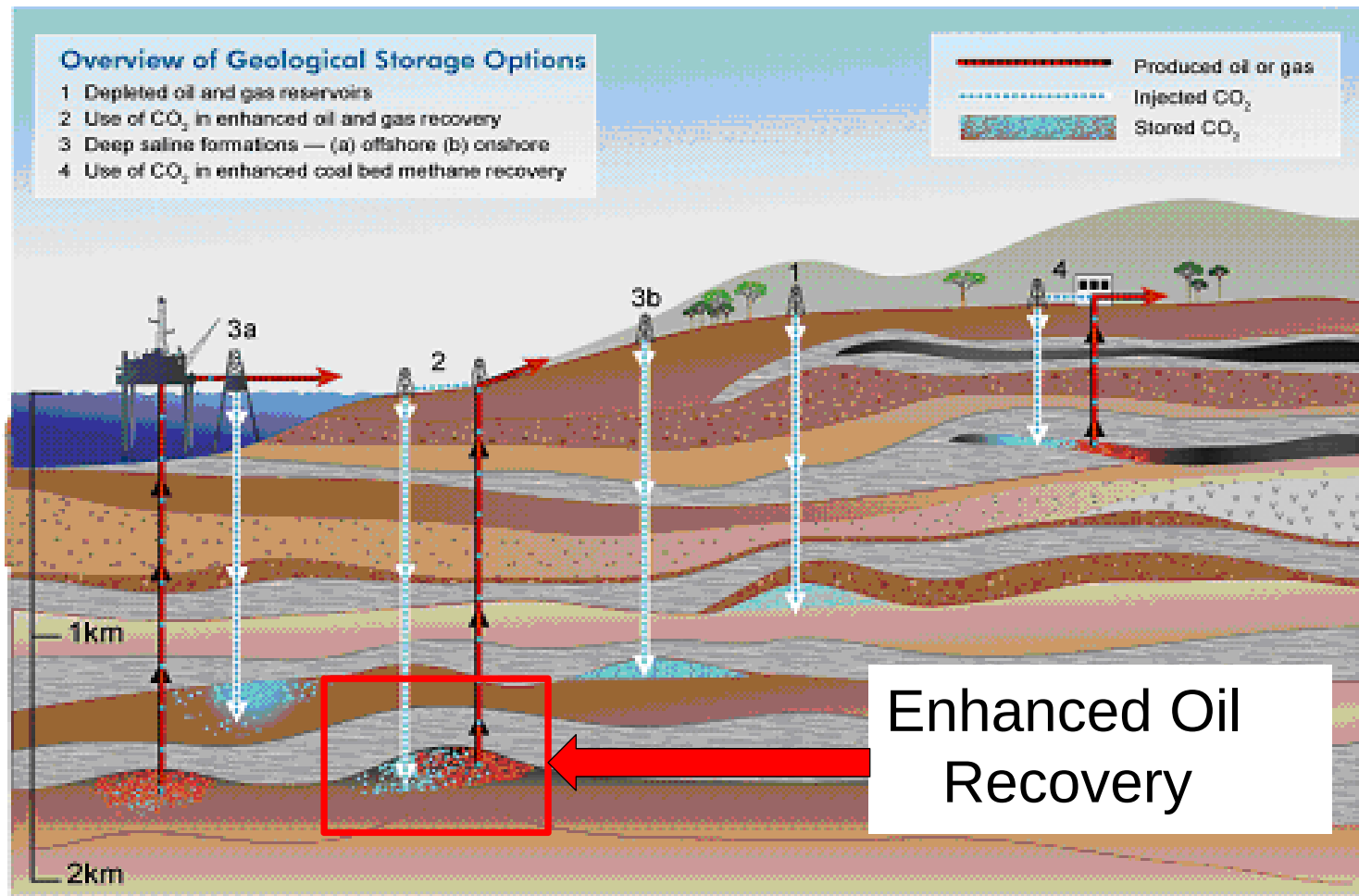
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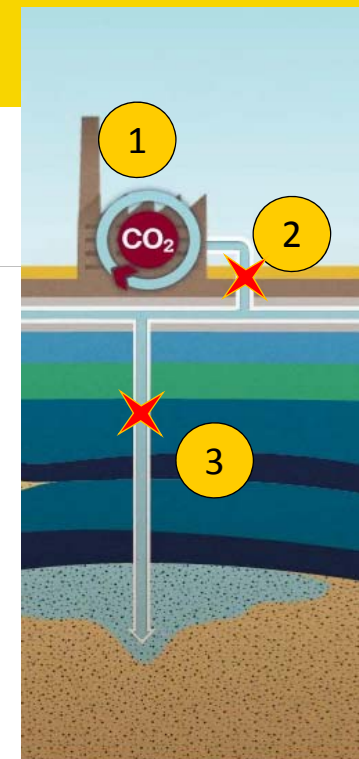
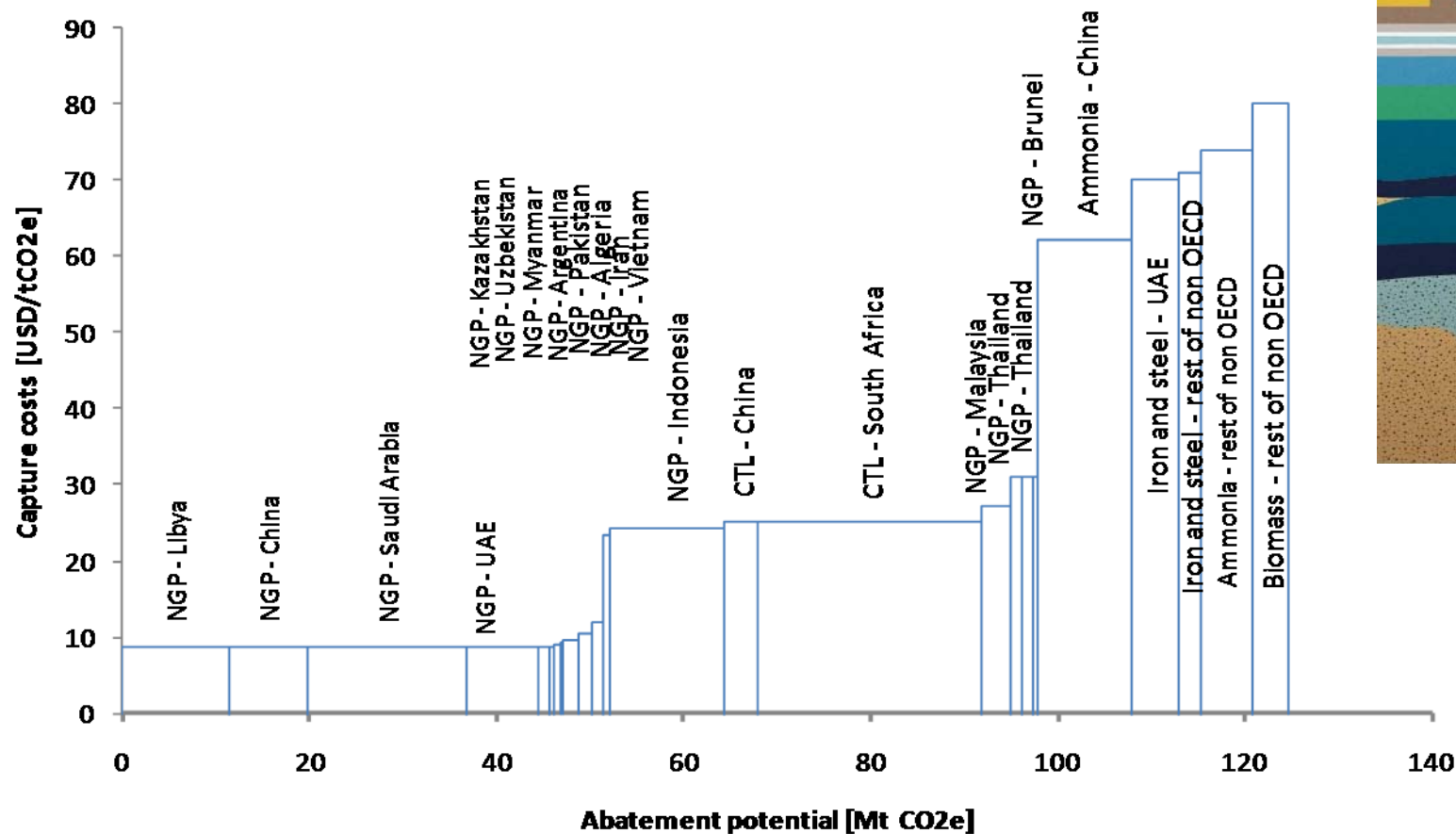


CCS: which reservoirs?



IPCC, 2005

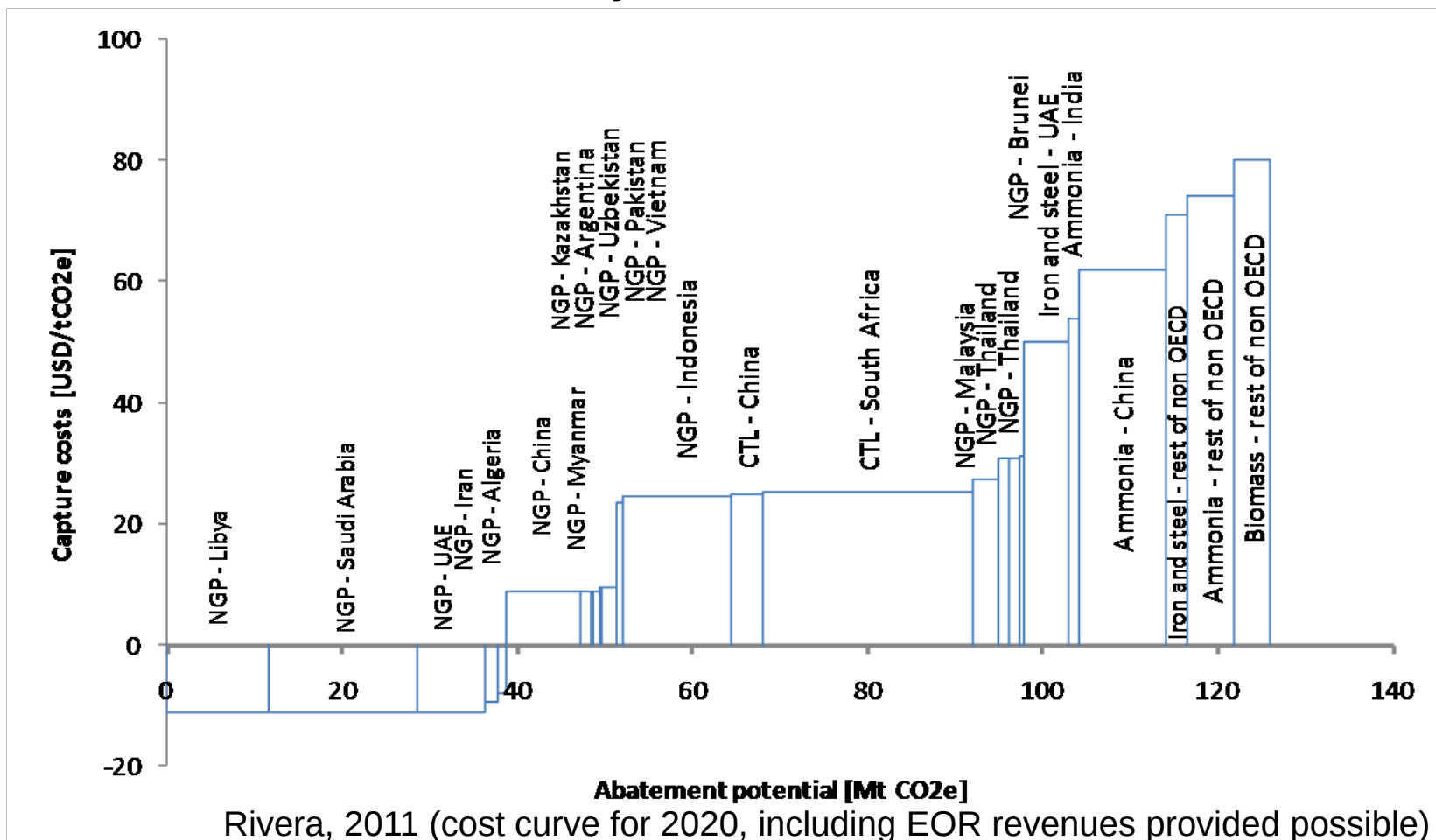
What projects – costs of capture



Rivera, 2011 (cost curve for 2020, capture costs only)

What projects?

Enhanced Oil Recovery



Where could we see CCS projects?

Middle East:	Increasing amount of sources Active private sector Enhanced Oil Recovery
Southern Africa:	Some high-purity sources CCS roadmap, interest from government Storage capacity concern, mostly offshore
China:	Sources and interest Short-term storage capacity, but long-term?
Brazil:	Active industry Enhanced Oil Recovery Sources potentially from biomass
Malaysia/Indonesia	Early industry and government interest Gas industry sources and reservoirs

Cancun decision elements

Paragraph 3 (a)	Site selection
Paragraph 3 (b)	Monitoring plans
Paragraph 3 (c)	Use of modelling
Paragraph 3 (d)	Decision on criteria for site selection/monitoring plans
Paragraph 3 (e/f)	Project boundaries
Paragraph 3 (g)	Account for release of CO ₂
Paragraph 3 (h)	Transboundary projects
Paragraph 3 (i)	Project emissions accounting
Paragraph 3 (j)	Independence of assessments
Paragraph 3 (k/l)	Risk and safety/socio-environmental impact assessment
Paragraph 3 (m/n)	Liability
Paragraph 3 (o)	Damage restoration/remediation

Other issues flagged in submissions

- Energy penalty: CCS is energy-intensive
- Displacement of renewable energy and energy efficiency projects – delaying move away from fossil fuels
- Permanence of CO₂ storage can be estimated but not guaranteed – which is what the CDM needs
- Enhanced Oil Recovery: receiving carbon credits for bringing more oil on the market?
- Use of storage capacity for CO₂ that could have been avoided
- CDM is not for experimental technologies
- Doubts about legal and regulatory frameworks in many developing countries

Conclusions

If CCS does go forward in the CDM:

- Coal-fired power plants are unlikely to be included
- Projects likely occur in upstream and chemical industry, including biomass conversion
- Mainly in oil- and gas-producing countries

However, some principle questions need to be addressed

- Overcome system-related and moral issues?
- Enhanced Oil Recovery?
- Sufficient trust in permanence?

Thank you!

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