
The role of CDM in Carbon Dioxide Capture and Storage

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Brief Introduction to the CDM

- Non-annex parties to the Kyoto Protocol (countries such as Saudi Arabia) can generate Certified Emission Reductions (CERs) through greenhouse gas (GHG) emission reduction projects
- GHG emission reduction project must be registered with the CDM EB in order to be eligible to receive CERs
- The application process is onerous and project developers usually work with CDM experts to achieve project registration
- CERs can be sold on the market to Annex 1 countries (current prices range from about US\$5 – US\$20 per CER (1 tCO₂e))
- Buyers include private companies, international institutions and governments in countries such as EU 15, Japan, etc.

A First CCS Methodology Submitted to EB

- Project developers must complete a Project Design Document (PDD) as part of the process in achieving registration of an GHG emission reduction project
- The PDD is prepared based on an accepted methodology for the project type. If an accepted methodology does not exist, a new methodology submission must be prepared
- A CCS methodology application, prepared by Mitsubishi UFJ Securities, was submitted to the CDM Methodology Panel for Round 13 in September 2005. This was a world first.
- The CDM EB, at its 22nd meeting, decided that the eligibility of CCS projects as CDM project activities, would require a COP/MOP decision. This decision is still pending.

CDM Eligibility Issue – Latest Developments

- The CDM Secretariat has compiled submissions made by the Parties on Project boundary, Leakage and Permanence
- “Report on the workshop on CCS as CDM project activities” (which was held in conjunction with SBSTA) is available on the UNFCCC website
- The Meth panel is finalizing recommendations for the CDM EB on CCS CDM methodology issues (to be considered at EB 26)
- The above documents will be considered at COP/MOP2 and a decision should be forthcoming on the eligibility issue

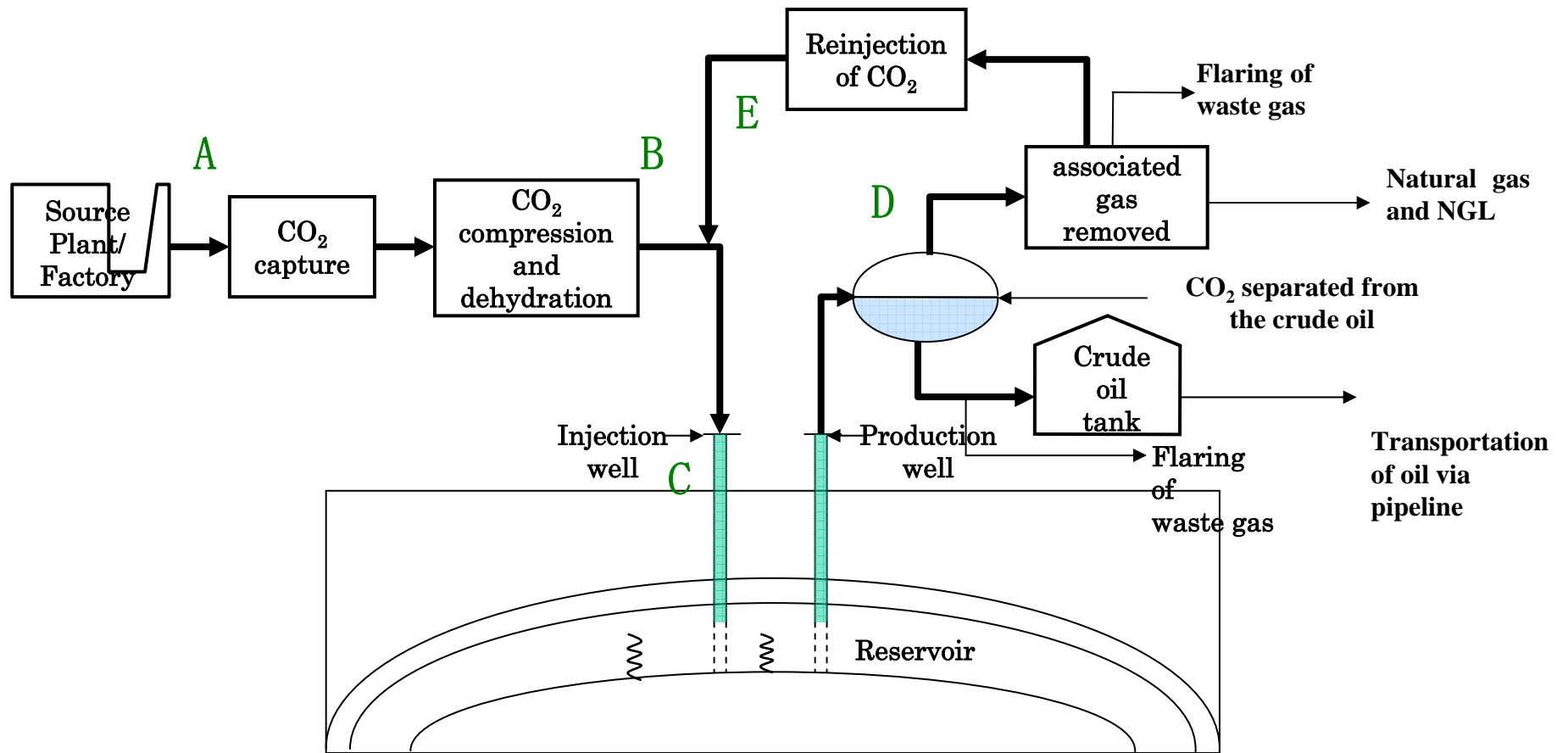


Different types of CCS projects and the CDM

- Two main types of CCS projects which may be eligible for the CDM in the future:
 - geological CCS projects which store anthropogenic CO₂ in deep saline reservoirs or spent oil/gas reservoirs
 - geological CCS projects which store anthropogenic CO₂ in producing fossil fuel reservoirs e.g enhanced oil recovery (EOR)
- Oceanic storage of anthropogenic CO₂ is unlikely to be eligible for the CDM anytime soon
- Chemically fixing CO₂ is still in the research stage and unlikely to be economically feasible in the foreseeable future, even if the CDM is utilized



A Typical Anthropogenic CCS Project



Methodological Issues

- Once CCS projects are ruled eligible as CDM project activities, the Meth Panel will be able to consider (and provide recommendations) on new CCS methodology applications
- Baseline determination will be different for those CCS projects with retrofitted (CO₂) source plants as compared to those with Greenfield source plants
- Additionality demonstration is no different to that of normal CDM projects
- Permanence is the most important single issue (both short-term during the project crediting period, and long-term)
- Most CCS experts now agree that appropriately selected sites are unlikely to seep (injected CO₂)



What's needed before registering CDM CCS projects

- An accepted methodology which is applicable to your CCS project type
- A fully completed PDD which is validation ready
- A DOE who is approved by the CDM EB to validate CCS projects
- Host (non-annex 1) and annex 1 country approval
- Capacity for CDM Registration and Issuance Team (RIT) to access the PDDs for CCS projects
- Before ERs can be verified, need at least 1 other DOE which is approved for the CCS sectoral scope
- The more the current CDM framework needs to be modified for CCS, the longer it will take for the first project to be registered



Why bother with the CDM?

- May seem very onerous at first but already 276 registered projects with over 11.1 million CERs issued
- CCS projects associated with enhanced fossil fuel production can increase IRR through income from CERs
- CCS projects which have no income source (from fossil fuel sales) can confirm an income stream through the sale of CERs
- The CDM can help to attract debt / equity investors to finance the CCS project
- Good as a means to promote Corporate Social Responsibility (CSR) for both the CER generator (seller) and buyer

Example – Large CCS Project with Oil Recovery

Financial Details

Phase 1 – Initial total investment cost	492 × 10 ⁶ US\$
Phase 2 - Initial total investment cost	985 × 10 ⁶ US\$
Average crude oil sales/yr	415 × 10 ⁶ US\$
Start of Phase 1	2009
Start of Phase 2	2012
Project life	15 years

Expenses

Average O&M costs/yr	190 × 10 ⁶ US\$
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Project IRR

13.2%



IRR of CCS Project with CER Revenue

Amount of CERs/yr

Total after Phase 1	1.6 x 10 ⁶
Total after Phase 2	5.4 x 10 ⁶

Equity IRR of Project

Without CER revenue	13.2%
CERs @ 10 US\$	21.7%
CERs @ 15 US\$	26.0%
CERs @ 20 US\$	30.5%



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