

UPDATE ON WORLD BANK CCS WORK PROGRAM

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Presentation overview

- CCS program structure
- Examples of regional projects
- Economic and sector work component
- Outcomes of program



WB Carbon Capture and Storage Trust Fund

Main objectives of the CCS TF

- Two core elements guiding its work at the international, regional and national levels:
 - Capacity building and knowledge sharing assistance regarding CCS,
 - Carbon asset creation services.
- In co-operation with leading international and bilateral initiatives (Global CCS Institute, CLSF, EC programs, IEA Programs and others)

CCS TF structure and work program

- Total capitalization of the Trust Fund is \$8 million:
 - Government of Norway – \$6 million,
 - Global CCS Institute – \$2 million.
- The work program consists of the following two components:
 - Country-level component focusing on country- or project-specific activities (\$6.9m)
 - Economic and sector work component: regional regulatory, economic and financial instruments analyses, July 2010 – October 2011 (\$1.1m)



Work Program - Country level activities

□ Projects include:

- Assessments of geological storage
- Training and workshops on legal and regulatory requirements for CCS
- Assessments of applicability of capture technologies

Country/region	Amount allocated (US \$m)
Botswana	1.4
Republic of South Africa	1.1
China	1.8
Kosovo	0.4
Indonesia	0.85
India	0.5
Egypt	0.2
Jordan	0.15
Maghreb	0.4
Turkey	0.1
TOTAL	6.9



Work Program - Country level activities

Example country work program: In partnership with government

Jordan

- The Ministry of Energy and Mineral Resources and the Ministry of Environment are the main counterparts to the project
- Project work will also be advised by the Ministry of Planning and International Cooperation and the Ministry of Water, as well as research institutes such as the National Energy Research Center
- Project includes
 - Assessment of potential for CCS activities, such as CO₂ sequestration in oil shale
 - Assessment of institutional capacity for CCS
 - Recommendations on capacity-building activities
 - Identification of barriers to CCS development and applications



Work Program - Country level activities

Example country work program: In partnership with private company

China

- Objective is to provide support to the China Power Investment Corporation (CPI) to demonstrate a commercial size CCS project at one or more IGCC plants they are developing
- The IGCC plants could also potentially be funded by the World Bank
- Research includes
 - Optimization and integration of CO₂ capture systems into an IGCC power plant
 - Assessment of the different CO₂ transportation options
 - Assessment of the technical feasibility and economics of CO₂ storage options
 - Analysis of the market of CO₂ utilization in different industries
 - Assessment of the technical capacities of domestic equipment manufacturers and recommendations on technology transfer arrangements and IPR issues



Work Program - Economic and sector work: Focus on Balkans and Southern Africa regions

1. Review of Regulatory and Institutional Frameworks on CCS
2. Techno-economic assessment of CCS deployment in power systems in the Southern Africa and Balkan regions
3. Assessment of climate finance sources to accelerate CCS deployment in developing countries
4. Business model and financing options for CCS projects



Work Program - Economic and sector work: Focus on Balkans and Southern Africa regions

1. Review of Regulatory and Institutional Frameworks on CCS

- Review of existing multilateral, bi-lateral and national legislations and regulatory bodies applicable to CCS in Balkan countries and Southern Africa countries most active in South African Power Pool (SAPP):
 - South Africa, Botswana and Mozambique
- Identification of gaps in legal framework that might prevent the development of cross-boundary and national CCS projects
- Recommendations for addressing gaps

2. Techo-economic assessment of CCS deployment in power systems in the Southern Africa and Balkan regions

3. Assessment of climate finance sources to accelerate CCS deployment in developing countries

4. Business model and financing options for CCS projects



Work Program - Economic and sector work: Focus on Balkans and Southern Africa regions

1. Review of Regulatory and Institutional Frameworks on CCS
2. **Techno-economic assessment of CCS deployment in power systems in the Southern Africa and Balkan regions**
 - Investigation of the economic effects of CCS investments on the regional power systems using techno-economic model
 - Focus on countries in SAPP region and Balkan countries with cross border electricity connections e.g.
 - Kosovo, Serbia, Montenegro, Macedonia and Croatia
 - Develop cost estimates for CCS units and the associated infrastructure to use as inputs in the model
 - Determine the incremental cost of CCS installed in power plants compared to plants without CCS, and the impact on regional electricity price.
3. Assessment of climate finance sources to accelerate CCS deployment in developing countries
4. Business model and financing options for CCS projects



Work Program - Economic and sector work: Focus on Balkans and Southern Africa regions

1. Review of Regulatory and Institutional Frameworks on CCS
2. Techo-economic assessment of CCS deployment in power systems in the Southern Africa and Balkan regions
3. **Assessment of climate finance sources to accelerate CCS deployment in developing countries**
 - Requirements and suitability for CCS to be covered by climate finance for Nationally Appropriate Mitigation Actions (NAMAs)
 - Develop guidance on CCS carbon asset creation.
4. Business model and financing options for CCS projects



Work Program - Economic and sector work: Focus on Balkans and Southern Africa regions

1. Review of Regulatory and Institutional Frameworks on CCS
2. Techo-economic assessment of CCS deployment in power systems in the Southern Africa and Balkan regions
3. Assessment of climate finance sources to accelerate CCS deployment in developing countries
4. **Business model and financing options for CCS projects**
 - Investigation of different financial structures in editable business model for CCS projects through WBG instruments and climate financing funds.
 - Using a case study CCS project, apply a menu of financial instruments to explore finance package that minimizes total cost and risk implications, and encourages private sector investment.
 - Case studies may include CCS projects in South Africa and/or Botswana.



Work Program - Economic and sector work

- Outcomes
 - Summary reports for each activity
 - Legislation and Regulations affecting CCS
 - Economics of regional power systems where CCS is employed
 - CCS carbon asset creation
 - CCS financing model
 - Synthesis report integrating the findings from the ESW studies
 - 2 Workshops: One in the Balkans and one in Southern Africa, tentatively in March and May respectively
 - Report on 'Guidance for Preparation of CCS Projects in Developing Countries'





Thank you

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