



MINUTES

CSLF Financial Issues Task Force Meeting
New Delhi, India
11-12 October 2007

Prepared by the CSLF Secretariat

LIST OF ATTENDEES

Australia:	Victoria Walker
European Commission:	Derek Taylor
France:	François Kalaydjian
India:	Anil Razdan (Task Force Chairman), Rakesh Nath, T. Sankaralingam, G.B. Pradhan, V.P. Joy, Malti Goel, P.R. Mandal, Alok Kumar, R.R. Sonde, S. Barari, V.P. Joy, R.K. Sethi
Korea:	Chang Keun Yi
United Kingdom:	Sanjay Bali, Simon Dilks
United States:	Judd Swift, Raj Luhar, Kevin Graney, Eric Anthony Jones
CSLF Secretariat:	Richard Lynch
Asian Development Bank:	Josh Carmody, Nataliya Kulichenko, Ashok Bhargava

PRESENTATIONS

All presentations from this meeting are online in the “Task Forces” section of the CSLF website:
<http://www.cslforum.org/taskforces.htm>

MINUTES OF MEETING

1. Welcoming Remarks

The Task Force Chair, Secretary Anil Razdan of India’s Ministry of Power, welcomed the meeting attendees to New Delhi and the first formal meeting of this Task Force. He also welcomed the presence of the Asian Development Bank. Chairman Razdan stated that larger public funding would be essential to accelerate R&D in CCS technologies and their wider dissemination. He also stated that he hoped the deliberations and discussions in the meeting would be useful and productive, and would set the tone and direction of the work to be done in this area.

2. Status of Task Force Activities

Richard Lynch of the CSLF Secretariat delivered a short presentation that provided an historical background of the origin and status of the Task Force. It was formed at the Melbourne CSLF meeting in September 2004 when India was asked by Policy Group to “organize and lead a Task Force on financing initiatives for sequestration in developing countries.” India made presentations at both the Berlin CSLF meeting in September 2005 and the Delhi CSLF meeting in April 2006 that proposed creation of a US\$100 million fund to assist the financing of carbon capture and storage (CCS) projects. The reasoning behind this proposal was that developing countries have yet to be appropriately involved in CCS R&D projects; such projects are often costly and developing countries usually have more pressing needs for their limited resources. The Policy Group did not come to a consensus concerning the proposal, but did agree that involvement of emerging economy countries was important to the success of the CSLF. At the Paris CSLF meeting in March 2007, the Task Force was requested to develop a detailed plan on how to address the financing of CCS projects in emerging economy countries.

3. Presentation of Proposal by India

G.B. Pradhan, Joint Secretary of India’s Ministry of Power, delivered a presentation that outlined India’s proposal to the CSLF concerning project financing. The CSLF Charter states that one of the objectives of the CSLF is to make CCS technologies “broadly available internationally.” However, there are difficulties involved in the financing of R&D for these technologies by developing countries because these countries have other sectoral demands on their financial resources. Broad availability of these technologies in real terms is also linked to treatment of intellectual property rights (IPR). In order to resolve these problems, India is proposing the creation of a fund for support of CCS R&D. Contributions to the fund could come from voluntary contributions of CSLF Members, and these contributions could be in the form of in-kind “scientific manpower or research infrastructure” as well as financial contributions. R&D projects could be part financed from the Fund and remaining financing would be required to be arranged by the project proponents. Any IPR resulting from the R&D supported by the fund could be made available to all CSLF Members and at concessional terms to other developing countries, with any monies received returned back to the fund.

4. Discussion of Goals and Objectives

Chairman Razdan asked CSLF Members represented at the meeting, as well as the Asian Development Bank, to provide their thoughts and ideas.

Victoria Walker, representing Australia, stated that this is an important area that needs international investment and that if existing mechanisms are not working effectively, these need to be addressed.

Derek Taylor, representing the European Commission, informed the Task Force that one billion euros of research funding was being committed in European Union alone in next few

years to bring CCS to commercial deployment, and this did not include demonstrations (of which up to twelve are planned). Concerning the proposed international fund, it would be useful to know what the anticipated size would be for the voluntary contributions to the fund as well as the total size of the fund itself.

Chairman Razdan stated that India is interested in identification of project opportunities that were not directly associated with oil and gas, as India's oil and gas resources are located offshore, away from industrial and utility sources of carbon dioxide. India would be happy to associate with projects located outside of India, as India has a high population density. Concerning the projected size of the fund, it would be better to get an overall project listing in terms of priorities, and then determine what size of fund is required.

François Kalaydjian, representing France, informed the Task Force that an initiative now exists for demonstration of CCS in China between European Union and China. A common fund could be a good option, but there are also other financing mechanisms.

Chang Keun Yi, representing Korea, stated his personal opinion that a common fund is necessary for future work in CCS involving developing countries. It is appropriate for developed countries to take the lead, and this activity should start as early as possible.

Judd Swift, representing the United States, noted that the CSLF was not created to be a funding entity. However, U.S. President Bush has recently proposed the creation of a new Clean Energy Technology Fund that would fund projects in the developing world. The United States, as a member of this Task Force, is looking forward to exploring other funding possibilities with the international financial community. Concerning CCS activities within the United States, the U.S. Department of Energy (DOE) recently announced that it will cost-share with private industry three major CCS projects (with a total cost of US\$312 million); the DOE cost-share will be US\$197 million. Since 2001, there has been more than US\$350 million in U.S. Government CCS R&D expenditures.

Nataliya Kulichenko, representing the Asian Development Bank (ADB), stated that ADB is, in principle, interesting in participating, but is still in early stages of evaluation concerning its role in CCS.

The following comments were made in the ensuing discussion:

- Large scale R&D will have to be funded through international mechanisms, and we need to find a way for this to happen. (United States)
- Public funding will be needed for CCS demonstrations. But we also need industry participation, and industry needs to see some benefits before it can be expected to be fully committed. (European Commission)
- These are issues that rise beyond profit. There needs to be public funding. (India)
- New technologies will cut cost and raise efficiency of CCS. Technology development is absolutely critical. (United States)
- Research and testing is also needed on coals that will be used in future projects within next 5-10 year timeframe. (India)

- Developing countries like India do not yet have much experience in large scale CCS R&D. Capacity building is needed, and an international public fund could help make this happen. (India)
- Alternative uses of captured CO₂ need to be explored. (India)

5. Financial Community Perspectives on Financing CCS in Emerging Economies

Josh Carmody, Senior Project Specialist for the Asian Development Bank's Regional and Sustainable Development Department, delivered a presentation that served to define the clean energy challenge for Asia and also describe ADB's energy-related activities. Energy use in the Asia-Pacific region is rapidly increasing to support economic growth and for the next two decades, the Asia-Pacific region will have greater energy investments than anywhere else in the world. As a result, there will be a large increase in greenhouse gas emissions from the region, and it is already starting to happen. ADB activities in Asia's energy sector include assistance for renovation and modernization of existing power plants and replacement of inefficient power plants as well as encouragement of demand side management methodology for power system operations. Concerning CCS, ADB support includes low-cost financing to offset higher transaction costs and grant-based funding for technical support and knowledge sharing. ADB is already supporting some CCS-related activities in China. Financing of CCS projects is not an easy proposition, and ADB is open to try to find solutions that are "out of the box." The "trillion dollar challenge" is in attracting the necessary capital; private capital is essential for large-scale CCS projects in emerging markets. National policies, institutions, and processes need to encourage private capital.

The following comments were made in the ensuing discussion:

- There appears to be a tremendous availability of opportunity within multilateral banks such as ADB that is, for the most part, unknown to those of us participating in this Task Force. The Task Force could take inventory of all multilateral banks and organizations within those banks, as well as other bilateral institutions. We should see what is out there, and also share some of our ideas with them. (United States)
- Competition for capital exists, but there may also be a competition for enough talented people who can manage CCS R&D and demonstration projects. Also, an additional concern about implementing CCS in developing countries is that there will be an energy penalty, due to carbon capture power needs, for any power plant that implements CCS. For developing countries, this may be an issue, since that lost power is needed. (France)
- There seems to be two options for financing CCS: we can let the private sector develop and sell the technology with a buyout of IPR with public funds for use in the public domain, or the technology can be developed with public funding for broad dispersal. It may well be cheaper to pay the developer for the technology and place the intellectual property rights into public domain, while giving the developer some rights for widespread implementation. Some kind of formal comparison of these options would be useful. (India)

- There is no prohibition of public funding for development of intellectual property. A mechanism for doing this needs to be developed. If CCS technology is developed privately, the initial owner of technology may require a high purchase price. (ADB)
- One necessary criterion for the success of any formal program for funding CCS projects is the willingness of private developers involved to make the technology available and affordable for widespread promulgation. (European Commission)
- ADB willing to work with the CSLF. As a start, it can provide a report written by former World Bank Vice President Richard Stern that examines the types of funding potentially available from various sources. (ADB)
- Present level of funds for technical assistance needs to be enhanced significantly by ADB for making any impact on development of CCS technology. (India)

6. Providing Incentives for CCS Demonstration and Deployment

Derek Taylor, Energy Advisor for the European Commission's Directorate-General for Energy and Transport, delivered a presentation on what can be done, from a governmental viewpoint, to meet the financial challenges for implementation of CCS. The initial demonstration phase for CCS will require public funding support. Studies have shown there will be an increase in capital cost (by up to 40-60%) and operating costs (by up to 25-30%) for a CCS-equipped power plant as compared to an equivalent power plant without CCS. To take on this issue, the European Commission is examining several possible initiatives to stimulate early large-scale CCS demonstrations, including facilitation of public aid for demonstration projects and making some forms of commitment to help address the higher operating costs of CCS. As a first-line incentive, the European Union has implemented an emissions trading scheme that is a market-driven mechanism that should adequately reward low-CO₂ practices over carbon-intensive ones. Other incentives being contemplated include feed-in tariffs; preferential grid access for power plants with CCS; monetary rewards for each tonne of CO₂ captured and stored; and direct subsidies to offset the higher operating costs of power plants with CCS.

The following comments were made in the ensuing discussion:

- There is a need to start developing the necessary transport and storage infrastructure as soon as possible, and also for linking CO₂ emission sources into this transmission infrastructure, if widespread deployment of CCS by 2020 is to be accomplished. There is currently no oversight or standards concerning the chemical purity of CO₂ that would be transported, which presently may vary depending on the source of the CO₂. (France)
- Trans-boundary transport of CO₂ and storage liability issues also exist and need to be addressed. (European Commission)
- The European Union is considering up to twelve demonstration projects in order to demonstrate all the different technologies for CCS. These would include precombustion, postcombustion, oxyfuel combustion, use of different fuels, storage in saline aquifers, storage with enhanced oil recovery, etc. It would be better to first demonstrate these technologies in areas where they will be utilized, as this will help in public acceptance. (European Commission)

7. Financing Existing CCS Projects: How has it been done and what are the lessons for emerging economies?

Victoria Walker, Counsellor for the Australian High Commission in India, delivered a presentation that described Australia's approach for financing CCS projects. Australia looks on CCS as offering one of the only viable short to medium term opportunities for reducing greenhouse gas emissions while maintaining international competitiveness. Currently there are three avenues for financing of CCS projects in Australia: stand-alone commercial projects, such as the Monash Energy and Hydrogen Energy DF3 Projects; commercial projects with government support from the Low Emissions Technology Demonstration Fund (LETDF); and support through industry, research & government alliances such as the Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC). So far, LETDF has provided nearly A\$200 million in financial support for three CCS projects, while CO2CRC has a seven year budget of about A\$140 million (half of which was provided by industry) for developing "safe and economical CO₂ geosequestration technologies." CO2CRC is also a sponsoring organization for the CSLF-recognized CO2CRC Otway Project. The A\$30 million Phase I funding for that project comes from several sources including CO2CRC, private industry, agencies of the Australian government, and the regional government of the state of Victoria (where the project is located). There have been several lessons learned from these activities:

- Stand-alone commercial CCS projects are unlikely to happen until a valuation of CO₂ occurs through an emission trading scheme or other process.
- Government participation is necessary for the first few large-scale CCS demonstrations. Governments also need to put the necessary legal and regulatory framework in place before CCS deployment can happen, and do whatever is necessary to facilitate public acceptance of CCS technologies.
- CCS costs can eventually be reduced through collaborative R&D. Such R&D should be encouraged by all means possible. This would include identifying and encouraging private capital and other financial institutions (or insurers) to contribute.
- CCS can succeed only if it becomes a profitable and viable business operation.

François Kalaydjian, IFP's Deputy Director for Sustainable Development, delivered a presentation that described financing mechanisms used by the European Union for CCS projects such as the CASTOR project (in Europe) and COACH project (undertaken jointly with China). In the case of the CSLF-recognized CASTOR project, financing has come from the European Union and in-kind contributions from industrial partners (including the pilot plant operator). For the COACH project, 40% of the cost will be borne by agencies of the Chinese government. Key issues and challenges being addressed include how to gain widespread acceptance of CCS through an international cap-and-trade system and how to gain recognition of CCS as a clean development mechanism (CDM), which would help to develop exchanges with emerging countries. Additionally, development of appropriate technologies and financing mechanisms suitable for emerging countries is also essential. Financing CCS for worldwide deployment cannot happen until a clear legal and regulatory framework is established, financial mechanisms are developed that can create a global

market, and consistent emission reduction rules and tools are created to support an international CO₂ market.

8. Options for Action and Decisions for Implementation

Chairman Razdan asked CSLF Members represented at the meeting, as well as the Asian Development Bank, to provide their thoughts and ideas on various options for action. The following comments were made in the ensuing discussion:

- Shared and cooperative research is a very good thing. But an international fund for R&D would take a lot of effort to set up and administer. It might be better to do work bilaterally, with a focus on specific topics of interest. (European Commission)
- It will be necessary to identify what technologies are to be adopted in each country, and these technologies should be relevant to where they will be used. R&D projects of CCS technologies should be publicly funded, with participation from developing countries where possible. Developing countries will likely opt for cleaner technologies if they are affordable. (India)
- India needs technologies that are efficient and would be willing to participate in any demonstration that is taking place outside of India, if the results will be useful to India. Technologies should be affordable when deployed, and should be cheaper than present options. (India)
- It might not be realistic to expect CCS technologies to be cheaper than present options. The cost of CCS technologies will come down after they are demonstrated, but they may never be cheaper than present options. Also, India has specific conditions (e.g., fuels) that would not exist elsewhere, so demonstration of CCS in India, targeting research for Indian conditions, would be a more effective way of proceeding. It might be better not to opt for a “buy later” technology; the best approach may be for India to develop its own expertise. (European Commission)
- CCS technology needs to be affordable for poorer countries. If India could afford to do its own project, it would. CCS is still not ripe for demonstration in India. More directed fundamental research is needed to reduce the cost. Energy efficiency / conservation technologies offer cheaper option for immediate results of lowering carbon intensity. (India)
- A focus on India’s specific needs could help the chances for forming a fund. It would be helpful if there could be defined objectives rather than relatively broad and undefined goals. A short list would help outside governments decide on what projects are of interest to support. An unfocused fund would be much harder to support and implement. (European Commission)
- We cannot wait for long, as time is working against us. There is obviously a need to start demonstrations of CCS in India, and it will therefore be important to do in-country demonstrations that correspond to India's specific needs. It is also important to continue long-term research, which will help reduce the cost of CCS. And concerning CCS costs, analysis should be done to determine if 90% capture of CO₂ is necessary for any given application. Capturing 60% would cost less. (France)
- Priorities of the developing countries should be considered so that their participation in the CSLF is meaningful. The viability of a public fund to support CCS

demonstrations may depend on proposed size of the fund. One project could easily absorb entirety of a fund. For that reason, it might be better if there were separate funds, each with different funding sources, for R&D and demonstrations. (Korea)

- CCS development fits in well with ADB priorities concerning the environment. ADB will consider supporting any request concerning proposed financing. (ADB)
- The U.S. position is that it is committed in partnering with developing countries to reduce cost of all technologies and will work with all developing countries to ensure sustainable development. The proposed Clean Energy Technology Fund (described earlier) is another possibility. Money for this fund would be provided by developed countries. (United States)
- CCS is very important technology, but it is a lot of work to develop a new fund and there will be many issues. Existing funds and mechanisms should also be examined to see if they can be utilized. (Australia)
- CCS project financing could also be explored through the CDM route, which is the main existing large-scale financing mechanism for low carbon project activities in developing countries, and creates a way for the developed countries to carbon finance projects in developing countries. There is a recent announcement of CDM board on the inclusion of CCS from coal fired power plants and discussions/ negotiations on this will be held at COP/MOP3 in Bali, Indonesia in November 2007. It will be in the interest of developing countries like India to take a positive position on this issue for securing finances for respective CCS projects. (United Kingdom)

9. Summary and Next Steps

Chairman Razdan asked CSLF Members represented at the meeting to suggest next steps for the Task Force. The following comments were made in the ensuing discussion:

- The Task Force should propose softer activities such as workshops for the exchange of information. Liaisons with existing funding bodies could also be explored without making any commitments. (United Kingdom)
- The Task Force should coordinate between existing forums to ensure we are not attempting to duplicating mechanisms that already exist. (Australia)
- ADB is requested to register as CSLF stakeholder. This will help to keep it involved in the CSLF. (United States)
- The Task Force could attempt to work out a financial roadmap for CCS. Specifically, the funding mechanisms, first for research projects and ultimately for affordable adoption of technology, need to be addressed. (India)

To wrap up the meeting, Chairman Razdan, representing India's delegation, proposed that the Task Force reach consensus on the following two proposed conclusions from this meeting, concerning demonstration and eventual widespread deployment of CCS:

- Collaborative research and development is essential.
- It will require public funding in part if not in full.

Task Force members are asked to provide comments on these proposed conclusions.

ACTION ITEMS ARISING FROM TASK FORCE MEETING

Item	Lead	Action
1	United States (lead) and Australia	Develop a current listing of existing funds and other mechanisms that could be approached to support CCS R&D and demonstrations in developing countries.
2	United States	Provide details to Task Force members on the proposed Clean Energy Technology Fund.
3	Asian Development Bank	Provide a copy of or reference to the Richard Stern report to the U.S. delegation.
4	All Task Force members	Provide comments on proposed conclusions from Task Force meeting, as offered by India.