



## **News from Carbon Sequestration Leadership Forum – new Technology Roadmap**

The international Carbon Sequestration Leadership Forum (CSLF), a voluntary climate initiative of developed and developing nations focusing on development of improved cost-effective technologies for the separation and capture of carbon dioxide for its transport and long-term safe storage, adopted a new Technology Roadmap. The new Roadmap was published on the CSLF website in August 2009 and can be found at the address [http://www.cslforum.org/publications/documents/CSLF\\_Tech\\_Roadmap\\_081809.pdf](http://www.cslforum.org/publications/documents/CSLF_Tech_Roadmap_081809.pdf).

The Roadmap identifies the current status of CCS technologies around the world, the increasing level of activity in the industry, the major technology needs and gaps, and the key milestones for the development of improved cost-effective technologies for the separation, capture, transport, and long-term storage of CO<sub>2</sub>.

The Roadmap is divided into 5 modules:

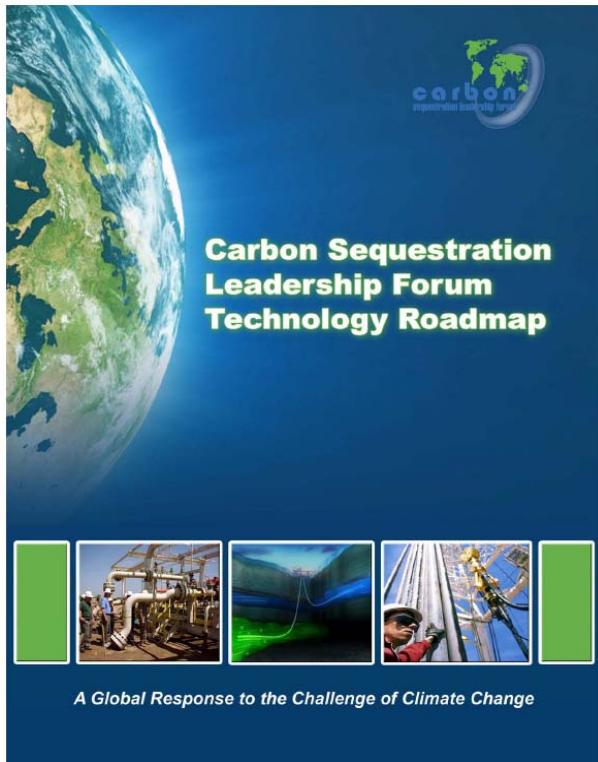
- 0: Introduction;
- 1: Current status of CO<sub>2</sub> capture and storage technology;
- 2: Ongoing activities in CO<sub>2</sub> capture and storage;
- 3: Gap identification;
- 4: Technology roadmap.

Module 1 provides a concentrated overview of the current status of the CCS technology and its individual parts, explains the various types of capture, transport, storage and use of CO<sub>2</sub>, and brings an overview of the costs of CCS.

Module 2 summarizes the ongoing CCS activities worldwide, incl. the four running major industrial projects (Sleipner, Weyburn-Midale, In Salah and Shohvit), the running pilot projects (e.g. Schwarze Pumpe) as well as 24 other major project announcements from around the world. Basic data for each project and links to relevant websites are provided as well. The summary is supplemented by a brief summary of the current status of CCS-related activities in each of the CSLF member states.

Module 3 – ‘Gap identification’ – represents probably the most important part of the Roadmap. It is divided into two parts. The 1<sup>st</sup> part explains the general reasons why a new/improved technology like CCS is needed and summarizes the key technological needs to assure widespread deployment of CCS. These needs are:

1. Demonstrate, by 2020, fully-integrated industrial-scale CCS projects;
2. Reduce CO<sub>2</sub> capture cost, efficiency penalties, and transport infrastructure costs (CCS needs to compete cost-wise with other climate change strategies such as increased use of renewables);
3. Validate effectiveness of monitoring for safety, long-term security, environmental impact and verification;
4. Establish applicable sets of operational guidelines for more accurate geological surveys and for injection/measurement/mitigation techniques;
5. Create the ability to optimize transport infrastructures to accept CO<sub>2</sub> from different sources.



The 2<sup>nd</sup> part of Module 3 focuses on technology gaps. Key gaps and lacking knowledge are identified for all the main parts of the CCS technology, i.e. for CO<sub>2</sub> capture, transport, storage, uses of CO<sub>2</sub>, storage security and integration. Priority activities that are necessary for filling the identified gaps are listed for each part of the technology. The final table provides an excellent overview of the key technology needs and gaps related to CCS.

Module 4 includes the Technology Roadmap itself, defining the main activities and expected achievements for periods 2009-2013, 2014-2020 and post-2020 that are necessary for answering the main technology needs of CCS. The role of the CSLF and respective CSLF actions are described, incl. key milestones defined by topic and timescale.

The Roadmap sees the implementation of national and international pilot and demonstration projects as a critical component in the development of lower-cost, improved capture technologies and safe long-term storage. CCS can play a critical role in tackling global climate change. In order for it to be an effective part of the solution, CCS must be demonstrated as soon as possible with wide deployment by the target date of 2020. It is essential to establish the technical foundation for affordable capture, transport, and safe and effective long-term geologic storage of CO<sub>2</sub> as quickly as possible.

The CSLF will continue to catalyse the deployment of CCS technologies by actively working with member countries, governments, industry, and all sectors of the international research community on the strategic priorities outlined in the Technology Roadmap. The CSLF will continue to work with existing and new support organisations, in order to efficiently utilise scarce world resources and effort and to ensure that key technology gaps are addressed.