



# Roadmap to Successful Storage of CO<sub>2</sub>

>> **Registration deadline:**  
2 May 2008

Register inside or online  
at [www.spe.org/atws](http://www.spe.org/atws)

## Steering Committee

Hervé Quinquis (Chairperson)  
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## Workshop Description

It is now widely accepted that antropogenic CO<sub>2</sub> emissions are contributing to undesired climate change effects.

CCS involves capturing CO<sub>2</sub> from large single point sources such as power plants, chemical plants, steel mills and other energy intensive industries and storing it in deep geological formations such as depleted oil & gas fields and deep saline formations. CCS is already acknowledged by the scientific community and the world political leaders as one of the solutions that needs to be implemented as a mitigation option in the fight against global warming. CCS has the potential to solve a quarter of the global Green House Gas problem and a number of initiatives are underway to encourage widespread deployment. Pilot sites are being conducted around the world and several states and federations are already putting in place directives and regulations that will guide the development of this emerging technology.

One of the main challenges facing the subsurface community to efficiently manage the underground storage of CO<sub>2</sub> is to tackle spatial and time scales that are much broader and longer than those considered in "traditional" reservoir management.

To address the critical issues of capacity, safety and integrity of a site, one has to consider the following elements:

- space wise: the well, the reservoir, the overburden up to the surface, the sideburden and also the basin scale
- time wise: the initial state of the site, the injection phase and finally the post injection phase which can last up to a 1000 years.

There is no point in capturing CO<sub>2</sub> unless it can be securely stored in the long term. The oil and gas industry has the knowledge and skills required to select, develop and operate industrial-scale CO<sub>2</sub> storage projects. At some point we expect to be called upon to use those skills because, if CCS is to contribute its share of the solution to the global GHG problem, that would mean a CCS industry around the same scale as today's oil and gas industry.

The workshop will be dedicated to sharing the views of the many disciplines involved in these issues to try to establish a roadmap to an efficient and cost effective storage.

## Who Should Attend

The workshop is a limited attendance meeting for up to 70 people and is designed to enable an interaction between the various stakeholders from the CCS community, primarily:

- professionals from the oil and gas industry who are involved in evaluating, designing, building and monitoring CO<sub>2</sub> storage site
- professionals from the industry at large, in particular from the energy sector (electricians, etc.) who will capture CO<sub>2</sub> and get involved in the storage process

The workshop is aimed at people whose principal job falls into any of the following categories:

- Reservoir Engineers
- Geology/Geosciences
- Simulation Engineers
- Production Engineers
- Researchers

**BOOK NOW!**  
Places are limited

## Roadmap to Successful Storage of CO<sub>2</sub>

### WORKSHOP TIMETABLE

#### Monday 19 May

1700-1900 hours:	Registration
1900 hours:	Reception and Dinner

#### Tuesday 20 May

0800-0900 hours	Registration
0900-1030 hours:	Session 1
1030-1045 hours:	Coffee Break and Posters
1100-1230 hours:	Session 1 continued
1230-1330 hours:	Lunch
1330-1530 hours:	Session 2
1530-1545 hours:	Coffee Break and Posters
1545-1700 hours:	Session 2 continued

#### Wednesday 21 May

0900-1030 hours:	Session 3
1030-1045 hours:	Coffee Break and Posters
1045-1230 hours:	Session 3 continued
1230-1330 hours:	Lunch
1330-1530 hours:	Session 4
1530-1545 hours:	Coffee Break and Posters
1545-1700 hours:	Session 4 continued

#### Thursday 22 May

0900-1030 hours:	Session 5
1030-1045 hours:	Coffee Break and Posters
1045-1200 hours:	Session 5 continued
1200-1300 hours:	Lunch
1300 hours:	Workshop closes

### DAY ONE - TUESDAY 20 MAY

#### Session 1: 0900-1230 hours

##### *Outline: The Big Picture*

##### **Session Managers: Iain Wright and Hanspeter Rohner**

The workshop will start with a scene setting overview of the global climate change issue, the ecological, societal and political implications for the world at large and the role CO<sub>2</sub> emissions from human activities plays in those issues. The discussions will look at the sources of CO<sub>2</sub> emissions, the methods with which such emissions can be curbed and will focus on one of these methods: CO<sub>2</sub> Capture and geological Storage (CCS).

We will elaborate on the rationale for CCS, the potential it has in helping to achieve emission reduction targets and the political and regulatory challenges that have to be overcome to achieve worldwide deployment.

The focus of the workshop is on the geological storage and we will then look at the current state of CO<sub>2</sub> storage, R&D and demonstration projects around the world and the outlook for commercial deployment. Session 1 will also set the stage for the following sessions through short reviews of the current state of technology, new technology options, risk issues and potential problem areas and solutions.

#### Session 2: 1330-1700 hours

##### *Technical Challenges*

##### **Session Managers: Hervé Quinquis and Henk Pagnier**

This session together with session 3 will address the many technical questions that must be answered to ensure a long term safe and cost effective storage and will review the tools and methodologies that should be used and sometimes developed to achieve this goal.

How much can I store? At what rate? How do I ensure confinement? These questions are at the core of this workshop, hence the discussion will cover both session 2 and 3.

In order to structure this long session we will follow the life cycle of a storage site from the pre-feasibility phase through to the building, then operating, monitoring and finally decommissioning phases.

The technical issues that will be reviewed will be very diverse calling on a truly multidisciplinary discussion spanning topics such as basin/reservoir modeling, drilling/completion, well integrity/cements, injectivity, rock/fluid interactions, geomechanics, geochemical/seismic monitoring, risk/uncertainty management, ...

## DAY TWO - WEDNESDAY 21 MAY

### Session 3: 0900-1230 hours

#### *Technical Challenges*

**Session Managers: Hervé Quinquis and Henk Pagnier**

Please refer to Session Description listed under Session 2 (previous page).

### Session 4: 1330-1700 hours

#### *Case Studies of Geological Storage of CO<sub>2</sub>*

**Session Managers: Torsten Clemens and Nicolas Aimard**

A number of geological storage of CO<sub>2</sub> projects have been considered and implemented. In this session, case studies of the different types of storage projects will be presented. The case studies will include CO<sub>2</sub> geological storage in aquifers, coal mines, gas fields and oil fields.

The session aims at identifying what has been actually achieved or planned on real field cases and what can be defined as the current state-of-the-art in geological storage technology. Storage integrity prediction models, storage performance and risk management, specific monitoring techniques, project best practices and key uncertainties will be presented and discussed. Learning from the field cases will be derived and brought into context in the technology session held before; technology needs will be illustrated and discussed.

## DAY THREE - THURSDAY 22 MAY

### Session 5: 0900-1200 hours

#### *Road Map to Successful CO<sub>2</sub> Storage*

**Session Managers: Bruno Saftic and Arthur Lee**

In session 1, we have set out a broad review of the need for carbon dioxide capture and storage (CCS). We saw CCS as one option in a portfolio of greenhouse gas mitigation options. In sessions 2-3, we described and reviewed in detail several key technical challenges of CCS. In session 4, we illustrated by example the successes and challenges addressed in specific CCS projects around the world. In this session, we have a panel of experts, together with members of the audience, to address broader questions about issues that can help or hinder deployment. In essence, we need to discuss how a roadmap may be formulated to lead to widespread deployment of CCS.

The issues that will need discussion include:

- Urgent need for a legal and regulatory framework, including environmental health and safety limits to long term responsibility considerations, in many countries at the national, supra-national and sub-national level.
- Understanding the need for incentives to build CO<sub>2</sub> transportation infrastructure
- Public communication strategies adequate for CCS concept.

## GENERAL INFORMATION

### FORMAT

Two and a half days of informal sessions, with a number of short presentations and breakout discussions per session. There will be an evening drinks reception and dinner on Monday 19 May 2008. Full details will be provided with the registration pack.

### POSTER SESSIONS

The steering committee plans to hold poster sessions during the workshop. Please indicate on your registration form if you would like to present a poster.

### ATTENDANCE

Up to 70 delegates from relevant disciplines with proven experience and/or knowledge of the subject areas being covered.

### SCRIBE'S REPORT

The steering committee will appoint a scribe to make a full report of the workshop, summarising all presentations and discussion. This report will be circulated to all attendees. The copyright of the scribe's report will belong to SPE.

### ATTENDANCE CERTIFICATE

All attendees will receive a certificate from SPE attesting to their participation.

### CONTINUING EDUCATION UNITS

The workshop qualifies for SPE Continuing Education Units (CEU), at the rate of 0.1 CEU per hour of the workshop.

### COST AND RESIDENCY INFORMATION

Attendance at the workshop is residential and non-residential. The workshop will be held at the Hotel Bellevue, Dubrovnik, Croatia.

**Non-Residential Rate: GBP 550** to include welcome reception and dinner on Monday 19 May, 3 lunches, coffee breaks, all workshop sessions and scribe's report.

**Residential Rate: GBP 940** to include 3 nights hotel accommodation, welcome reception and dinner on Monday 19 May, 3 lunches, coffee breaks, all workshop sessions and scribe's report.

### CANCELLATION POLICY:

Written notice received 30 days before the starting date of the workshop entitles registrants to a 50% refund. There will be no refund for cancellations received after this time.

