



## The EU Flagship Programme

### *The key to the rapid deployment of CCS in Europe*

Meeting with European Commissioners Potocnik and Piebalgs –  
European Strategic Energy Technology Plan, 22<sup>nd</sup> June 2007, Brussels

#### The case for CCS

The Intergovernmental Panel on Climate Change (IPCC) has confirmed that unless we cut GHG emissions by 50%-80% by 2050, the impact on global warming will be disastrous. But with world energy demand expected to double by this date, the challenge will be enormous.

It means we must act fast, using a portfolio of solutions, *no single solution being capable of reducing CO<sub>2</sub> emissions on such a massive scale*. This includes renewable energies, energy efficiency, biofuels - and CO<sub>2</sub> capture & storage (CCS). Indeed, if deployed to its full potential, **CCS could reduce CO<sub>2</sub> emissions in the EU by over 50% by 2050<sup>1</sup>**. This includes not just the power sector - which alone accounts for around 30% - but many other industry and transportation sectors as well.

In fact, CCS could effect nothing less than a revolution in the way Europe meets its rising energy demand:

1. By producing clean fossil fuel power through the sequestration of CO<sub>2</sub>
2. By allowing the production of large volumes of clean hydrogen which could be used for electricity or fuel
3. By combining with biomass to actually achieve net *negative* emissions (because biomass also draws CO<sub>2</sub> down from the atmosphere whilst it is growing)

...all the while ensuring a secure energy supply.

If Europe is to achieve the CO<sub>2</sub> reduction targets outlined in the EC's Energy and Climate Package of 10<sup>th</sup> January - and endorsed at the European Council Spring Meeting in March - the wide-scale deployment of CO<sub>2</sub> capture and storage technology is therefore essential.

#### The Vision of the ZEP Technology Platform

Such was the impetus behind the formation of the European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP) in December 2005 - a broad coalition of European industry, NGOs, scientists and governments, united in their support for CCS as a key solution for combating climate change. Our Vision? To enable zero emissions from European fossil fuel power plants by 2020. This involves implementing a complete CO<sub>2</sub> value chain – from the capture of CO<sub>2</sub>, its transportation to storage sites, to its storage in geological formations deep underground.

To this end, a Strategic Deployment Document and Strategic Research Agenda were published in March 2006 and endorsed at our first General Assembly in September. These outline key steps for achieving the rapid take-up of CCS in Europe by 2020, leading to its wide implementation from 2020-50.

<sup>1</sup> Bellona Paper, August 2006, [http://bellona.no/artikler/notater\\_stangeland\\_solomon](http://bellona.no/artikler/notater_stangeland_solomon)



Timing, however, is critical: if EU emission reductions are to be achieved, *immediate* action is required. This means implementing an EU-wide initiative which integrates *all* aspects of CO<sub>2</sub> capture, transport and storage – including technology, infrastructure, the environment, health & safety, legal and regulatory issues, funding mechanisms and, of course, public communication. Indeed, without such a framework, there will be no incentive for industry to invest - in the critical period up to 2020 *and* beyond.

### The EU Flagship Programme: a holistic approach

At its heart is the EU Flagship Programme - up to 12 large-scale demonstration projects that cover the whole range of CO<sub>2</sub> capture, transport and storage options, in a variety of geographical and geological settings, Europe-wide. Such a programme has already been recognised in the conclusions of the European Council Spring Meeting, with the aim of having all projects operational by 2015.

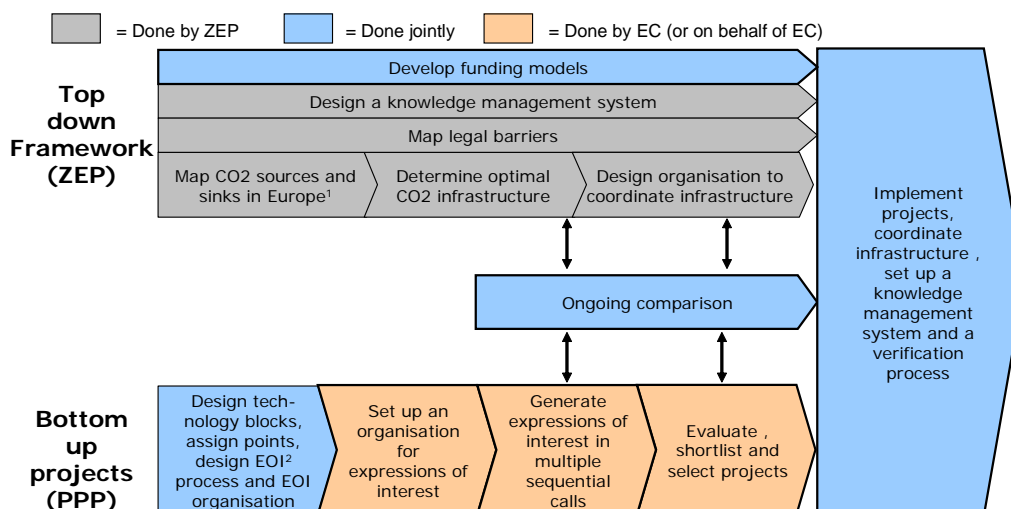
**The ZEP Platform therefore recommends that the EU Flagship Programme represents a key element of the European Strategic Energy Technology (SET) Plan Initiative.**

At this stage, it is imperative that we ‘learn by doing’ in order to reduce costs and risks, and accelerate technology development as quickly as possible. While European equipment manufacturers are currently leaders in CCS technology - well-positioned for the global export market - it is important to maintain that lead.

There will therefore be considerable interaction between demonstration projects so that key ‘learning messages’ are shared. These include:

- a) Improving the cost-effectiveness and availability of CO<sub>2</sub> capture technologies; and optimising overall system performance when integrated into a power plant on a large-scale;
- b) Assessing the potential of a wide range of storage sites, demonstrating their safety to the public and responding to their concerns;
- c) Testing the fundability of CCS in order to build confidence in its wide-scale deployment post 2020;
- d) Testing the effectiveness of public-private-partnerships (PPP).

### The EU Flagship Programme A top down and bottom up approach – roles?



1. Power, steel, aluminum, cement, refineries and base chemicals (to be initiated by the EC)

2. EOI = Expressions of interest in a demo plant

Demonstration projects will be selected using a top down/bottom up approach: ZEP will develop an overall CO<sub>2</sub> infrastructure, taking into account multiple industries; while a PPP will establish a process for attracting Expressions of Interest and evaluating projects against agreed criteria.

The research and development of next generation technology must continue in parallel, to ensure rapid cost reduction after 2020. Here, the EU Flagship Programme will provide critical feedback. A plan for CO<sub>2</sub> transport infrastructure in Europe must also be developed, including a pipeline system that crosses national boundaries - on land and offshore - with the potential for integration with shipping.

### **Making it happen**

All of this is achievable. Indeed, it is why so many large-scale CCS projects have already been announced, Europe-wide. But it will only be *feasible* if the following conditions are met:

#### **1. A regulatory framework for the geological storage of CO<sub>2</sub>**

This must not only be established within individual member and associated states, but across Europe as a whole:

- By 2008, amend existing EU legislation (concerning waste and water) in order to clarify the conditions under which CO<sub>2</sub> is stored underground
- By 2010, implement new EU guidelines for Member States permitting geological storage projects (including risk management, site selection, operation, monitoring, reporting, verification, closure and post-closure)

Good progress is being made and ZEP is confident that a framework will be in place by 2010.

#### **2. A fiscal framework to incentivise the 'early movers' (i.e. the EU Flagship Programme) and investment in the wide implementation of CCS post 2020**

The EC has commissioned a study to ascertain the full costs of implementing the EU Flagship Programme which will be available in September 2007. The Platform will also shortly be presenting its own estimations.

While industry will clearly shoulder a fair share of these costs - they must have an incentive to do so, with all the risks such a commitment involves. Indeed, *it is why such a step change has not already happened*. ZEP therefore recommends the following commercial incentives:

- a) Full accreditation of CCS under the EU Emissions Trading Scheme (EU ETS), on the grounds that a tonne of CO<sub>2</sub> avoided is equal to a tonne stored. This should include an enhanced credit allocation for CCS projects in the EU Flagship Programme;
- b) Inclusion of CCS in the Clean Development Mechanism of the Kyoto Protocol;
- c) An Early Mover Fund to help finance the EU Flagship Programme, possibly using income from auctioning the credit allowances under the EU ETS;
- d) The provision of EU loan guarantees through the European Investment Bank (EIB);
- e) Direct investment from Governments - either in CO<sub>2</sub> capture technology or the transportation network - should be considered and legalised through the amendment of EU guidelines for State Aid;
- f) Other forms of fiscal incentives should also be considered.

### **3. A comprehensive public information campaign (see separate paper)**

A comprehensive public information campaign is vital in order to communicate the key role CCS could play in combating climate change, within a *portfolio* of solutions, including renewable energies and energy efficiency.

The challenge is to get the key messages out early so that the public are reassured that their lives will not be affected adversely in any way. On the contrary, if we do not develop CCS technology, their lives will almost certainly be affected adversely by climate change.

#### **Promoting strong international collaboration**

Since the bulk of CO<sub>2</sub> emissions in the future will come from countries such as India and China who will continue to rely heavily on fossil fuels (especially coal), it is vital to promote strong international cooperation. Not only will this engage them on climate change issues, but contribute significantly to their development of CCS technologies, in partnership with European industry.

#### **Maximising synergies with other European Technology Platforms**

It is equally important to link up with other related European Technology Platforms and initiatives in order to maximise opportunities in sustainable energy, e.g. Advanced Engineering Materials and Technologies (EuMaT); Steel (ESTEP); Hydrogen and Fuel Cells; Sustainable Chemistry; Biofuels; and Sustainable Mineral Development.

### **European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP)**

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