



## ZEP Advisory Council Meeting #24

### Minutes of meeting

Date and time: 16 September 2010, 10.30 – 17.00 hrs.

Venue: Centre Borschette, Rue Froissard, Brussels

Status: draft

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The list of attendees is attached as annex 1.

### 1 Opening

Chairman opened the meeting, he

- welcomed everyone, especially candidates Karl Bergman (Vattenfall), Geir Westgaard (Statoil) and Arto Hotta (Foster Wheeler) as well as the guests Kurt Georgsen (Statoil) and Nick Otter and his GCCSI delegation,
- excused Siemens for not being able to attend,
- highlighted the organisational changes:
  - o Mabey has stepped down and recommends Jesse Scott as his successor
  - o Kather has made his seat available
  - o Suess of Siemens has stepped down and recommends Nicolas Vortmeyer
  - o Trude Sundset from Statoil stepped down and recommends Geir Westgaard.
  - o Harry Lampenius from FW resigned and nominated Arto Hotta
  - o Reinhardt Hassa has stepped down from the management board of Vattenfall and proposed Karl Bergman
- summarised the voting procedure and mentioned that, if Karl Bergman is elected as AC member, he would become Vattenfall's member of the AC, in which case Niels Peter Christensen will step back as regular member of the AC,
- asked for attention for improving the efficiency of the meeting, in particular to observe the speaking rights (AC members and taskforce chairs only),
- summarised the agenda for AC 24 proposed some small changes, asked for, and received approval of the agenda.



## 2 EU CCS developments

### 2.1 NER300

Scott Brockett (EC) gave a summary of the current status of the NER 300 call, see also a note of a telephone call with Scott that was included in the pre-read.

- As announced earlier the call will open at the end of September or early October.
- On the issue of licensing the NER300 scheme the EC wants to create public value for money and therefore the project sponsor will be required to grant, and to procure that any relevant foreground owner grant, a non-exclusive license on written request, for the implementation of a similar project anywhere in the world, on the following conditions:
  - o Licensing would be on terms that are commercially reasonable
  - o The license must be necessary for implementation of the project in question
  - o In respect of licensing into a third country, the intellectual property laws and enforcement regime should provide equivalent protection to those of the EU
- An information day will be held very short after the opening of the call.

The discussion regarding NER300 and licensing is summarised as follows:

- the requirement to release foreground IP for this type of commercial projects has never been implemented before. It will set a precedent. In the past the mechanism was always that the grant would be clawed back in case that the IP-owner did not disseminate the IP appropriately.
- ZEP members asked for the fine print of the licensing conditions. Scott's reply is that this is unfortunately not possible, he will however consider the comments made at the AC meeting.
- The licensing requirements rest on the project developer who has to impose them on his supply chain.
- ZEP members stressed that licensing conditions are not a small issue. The supply chain has invested a lot of funds of its own in the development of IP and does not want to jeopardise this knowledge. Some fear that the way the EC now proposes to handle it will effectively be a showstopper.
- Some fear that the EC approach will infringe existing contracts.
- In defence of the EC-approach on licensing it should be noted that the licensing requirements will only be called upon in extreme situations and that project developers are not asked to up-front give up their IP. Ultimately, NER300 funding may be crucial in the development of a future market for products that the supply chain has invested heavily in developing.
- ZEP recognised that the issue of licensing is both significant and sensitive, understands the intention of the EC, accepts that NER300 has to provide public value for money and will submit to the EC (Delbeke) its point of view regarding licensing early next week.

Regarding the guidance documents Scott remarks:



- Comments on the guidance documents 1, 2 and 3 are manageable. They will be finished by the end of the year.
- Comments on guidance document 4 are more extensive. Scott believes there are some misunderstandings about the intentions of the EC regarding the financial security and liability regime. He clarified as follows:
  - o The financial security that is advised would normally be based on the site-specific probability distribution of leakage, and even a 95th percentile of this distribution would be much less than the total CO2 stored.
  - o The guidance document will describe a range of options for arranging financial *security* with regard to the surrender of allowances in case of any leakage. Two main directions are:
    - FS where the operator remains responsible for surrender of allowances e.g. escrow accounts or bank guarantees, in this case the operator would be responsible for any leakage, and the state would be exposed only if both the liability exceeded the security and the operator was bankrupt.
    - FS where a degree of responsibility for surrender is taken over by a third party, for instance where the third party acts as an insurer (insurance can be provided by MS or the private sector). For a small number of sites this would tend to be more expensive for the operator than the bank guarantee option. For the insurer, there would be a small probability of very significant losses, but the net expected result on the basic assumptions COM had used would be a profit.
  - o The final guidance document will discuss the options and their consequences, but will not recommend particular options. It would be for the MS to determine the appropriate approach for their territory, normally be based on substantial further analysis.

The discussion following Scott's presentation is summarized as follows:

- Scott's clarification about the financial security regime is appreciated.
- Member state insurance could be a very welcome solution. However, some member states can handle becoming exposed to risk themselves, while others can't.
- On the question about possible conflicts between Member State-provided insurance and state aid regulation the EC notes that MS-provided insurance is not ruled out in principle from a State aid perspective, but every case would need to be assessed on its merits .
- There are still some outstanding issues such as the consequences of the withdrawal of licenses. The liability would then fall on the member state.
- It is not possible anymore for ZEP to give additional advice to the commission: the stakeholder consultation is now closed. EC is now waiting for the comments of member states for which the deadline is 28 September.
- Chairman concludes that the timetable is clear, that it is also clear that there is no more room for ZEP consultation, that key critical issues have been dealt with and that for additional key issues companies will always have the option of discussing them with their government

## 2.2 Advisory forum

The draft presentation that ZEP prepared for the AF meeting of 17 September was presented by Paelinck.



It was stressed that ZEP is keen on having the Project network and Advisory Forum working effectively and wants it to be a success.

### 2.3 CCS EII

Gardiner Hill presented the outcome of the CCS EII meeting of 15 September. At that meeting the EC proposed funding vehicles needed to deliver the IP, among which a new idea for large R&D pilots called "Spearhead Projects". These would be Framework Programme projects in which a substantial part of the funding comes from a MS.

- The CCS EII was welcomed by ZEP,
  - o it opens a channel for a dialogue with member states.
  - o The CCS EII is not a funding scheme by itself but it has proposed a financing toolbox of existing instruments (such as FP7 ) which could be combined to implement the EII for funding of R&D for CCS. There is a need though to ensure that such R&D projects further the case of CCS by improving the KPI's of CCS EII.
- there was also some criticism.
  - o Funding under FP7 has its drawbacks such as a requirement for participation by companies from at least three different member states. However, to develop a new vehicle for funding CCS R&D would take at least 2 years. Nevertheless, specific examples of important projects that would be unable to be realized under FP7 rules would be welcomed by the EC to help understand whether it might be necessary to explore different vehicles.
  - o In the past expectations were created to allocate more funding to CCS R&D. So far there is no sign of such an additional budget
- Because the CCS EII is mostly about R&D the Taskforce Technology offers its assistance. The EII team agreed that ZEP will organise a second round of expressions of interest with specific criteria to be addressed – such as quantified assessment of benefits, the relevant partners, the financial commitment of companies and member countries etc. in order to prioritise topics on R&D pilots, as part of its preparation for the next meeting of the CCS EII team. ZEP AC members will be approached on this topic in the short term by TFT / Dirk Goldschmidt.
- The EII team will then give a recommendation and only preselected projects will be asked to work out a detailed application.
- ZEP/Gardiner Hill will deliver a presentation on the progress of the CCS EII at the next SET plan conference on 15 November in Brussels.

### 3 Large scale roll out of CCS after 2020

Stan Dessens presented the slides of the pre-read. In the presentation there is a mention of a bonus-malus system that is proposed in the Netherlands in addition to the ETS as an incentive for CCS.

- Vattenfall has experience with similar bonus-malus systems. Stromberg recognizes it as a potentially valuable instrument and recommends to make a serious analysis, to develop a position paper on the issue and to consider to include it in the next SDD.



- Chairman concludes from the discussion that ZEP should indeed make this step and asks Taskforces Policy&Regulation and Demonstration&Implementation to take this task up and report progress at the next AC meeting

#### 4 Results of the Strategy survey

This agenda item was taken off the agenda. ZEP secretariat was asked to communicate and discuss this either via a telephone conference or with other means before the next AC meeting.

#### 5 Government Group

Tone Skogen asked the AC to keep in mind that the GG is an informal group, without a mandate, that does not meet very often.

Chairman underlined the importance of the Government Group for ZEP and asks the Government Group to make a contribution to the ZEP agenda at every AC meeting.

#### 6 Voting of AC candidates

The candidates for the ZEP advisory council are listed in the following table. ZEP AC members were given voting forms at the start of the AC meeting. These forms were collected at the beginning of lunch. After lunch the results of the voting were announced by chairman. All candidates listed in the table below were accepted as AC member.

Advisory Council candidates					
Surname	Name	function	Organisation	Country	category
Bergman	Karl	Vice preseident Vattenfall AB, Head technology centre CCS	Vattenfall	Sweden	UT
Budge	Richard	CEO	Powerfuel	UK	FF
Hotta	Arto	Director, Research and Development	Foster Wheeler Energia Oy	Finland	SUP
Scott	Jesse	Brussels Programme Leader	E3G	Belgium	NGO
Vortmeyer	Nicolas	CEO New tech, CTO fossilpower generation	Siemens AG Power Generation	Germany	SUP
Westgaard	Geir	Vice President EU Affairs Office	StatoilHydro	Belgium	FF

#### 7 JTI Hydrogen

The presentation of Gijs Vriesman was postponed to the next AC meeting

#### 8 Progress of the CCS project at the Mongstad refinery

[The Mongstad CCS project will be based on CO<sub>2</sub> capture from a gas fired CHP plant and will represent a complementary project to the CCS projects within the EU that intend to seek funding from NER300.](#)



Kurt Georgsen of Statoil gave a presentation of status for the full-scale CO<sub>2</sub> capture project at Mongstad and shared experiences from the planning process of capturing CO<sub>2</sub> from a gas fired Combined Heat and Power (CHP) plant.

In general, Georgsen described a mega project with high complexity and, at this stage of the planning process, large risk. The project needs more time to mature and as a consequence the investment decision has been postponed from 2012 to 2014. The revised time table and activity plan are based on standard industry practice and consistent with normal practice for large projects in Statoil.

Three specific reasons were given for the postponement of the investment decision:

- Scaling-up to the required dimensions represents a considerable technological and industrial challenge.
- It adds complexity that the CO<sub>2</sub> capture project is to be integrated with a CHP and a refinery in operation. The utility systems are demanding and the tie-in solution to the CHP represents a challenge due to the enormous dimensions.
- The use of amine solvent has raised questions about health and environmental impacts. These questions must be addressed and clarified in a satisfactory manner, even though this particular technology for the time being is considered to be the most mature.

Hauge considered the Mongstad CCS project as important and the delay as damaging to the cause of CCS. The other Norwegian CCS project at Kårstø has also suffered important delays. According to Hauge, this damages public acceptance.

Hauge asked why chilled ammonia was not chosen at Mongstad. Georgsen explained that he could not comment on this in the middle of a pre-qualification process based on an open international tender competition in accordance with the EEA's procurement regulations.

Hauge furthermore criticised the lack of openness on financial issues. Georgsen remarked that Statoil has given initial rough estimates at a very early stage of the project. As soon as there is enough maturity in numbers Statoil intends to share them.

On the issue of identifying a storage site for Mongstad, Georgsen replied that this is the responsibility of the Norwegian government and as such he was not in a position to comment.

The last and rough cost estimate for the Mongstad full-scale CO<sub>2</sub> capture project was provided in the Masterplan of February 2009. According to Stromberg, cost estimates for post-combustion CCS with gas feedstock are usually roughly double the cost of using hard coal, partly because of the price of fuel needed for the efficiency penalty. Heitzmann, however, offered a different view: the use of hard coal requires additional process equipment because of the many contaminants it contains. CCS with hard coal is therefore not as cheap as some think.

On the issue of amines that may form potentially harmful components in the process and in the atmosphere, Rokke expressed great confidence that this problem can be overcome.

The Chairman concluded that the discussion had been very helpful in providing greater understanding of practical issues and offering a range of different views/perspectives. He asked for similar presentations of CCS projects at future AC meetings. However, these discussions needed to be framed better. Issues had to be identified beforehand in order to lead ZEP to a conclusion.

A presentation was given by Kurt Georgsen of Statoil on the topic of the delay of the CCS project. In general he remarks that the technology needs time to mature. The original time scheme was too ambitious. He mentions three specific causes for the delay:

- The environmental impact as result of the use of amine solvent needs to be reduced which at the moment is considered the most mature technology.

Met opmaak:  
opsommingstekens en  
nummering



- Recycling of flue gas needs to be developed
- They have not managed to find a storage site.

As a result Mongstad will not be ready for the first tranche of NER300.

Hauge considered the Mongstad CCS project important and the delay as damaging the CCS cause. Also the other Norwegian CCS project at Karsto has suffered important delays. All this damages the public acceptance.

- He asked why at Mongstad chilled ammonia was not chosen, to which Georgsen replied that at the moment they await the first conclusions of an assessment of the project.
- He criticised the lack of openness on financial issues. Georgsen remarked that Statoil has given initial rough estimates for every stage of the project. As soon as there is enough maturity in numbers Statoil intends to share them.
- On the issue of storage Georgsen says that this is the responsibility of the Norwegian government, he can't comment.

Met opmaak:  
opsommingstekens en  
nummering

The cost of CCS at Mongstad haven't been released yet but can be expected to be high because it involves the use of refinery gases as a fuel. According to Stromberg cost estimates for post-combustion CCS with gas feedstock are usually roughly double of the cost of using hard coal, partly because of the price of fuel needed for the efficiency penalty. Heitzmann has however a different view: the use of hard coal requires additional process equipment because of the many contaminants it contains. CCS with hard coal is therefore not as cheap as some think. Her question about why flue gas recycling was not considered at the start of the project was not answered.

On the issue of environmental pollution, more specifically the generation of environmentally damaging nitrous amines, Nils Rokke remarked that this problem can be overcome.

Chairman concluded that the discussion is very helpful in understanding the practical issues and differences in views. He asks for similar presentations of CCS projects at future AC meetings. However these discussions need to be framed better. Issues need to be identified beforehand in order to lead ZEP to a conclusion.

## 9 Taskforce Policy & Regulation

Taskforce Policy & Regulation brought the issue of financial security and liability to the table. This was discussed as part of agenda point 2: see notes in paragraph 2.1,

## 10 Taskforce Demonstration and Implementation

Paelinck presented a summary of the draft SDD paper. The latest version was mailed to the AC members on 14 September. Regarding the SDD the AC members commented as follows

- General appreciation was expressed for a good job.
- Some believe that infrastructure issues are undervalued, specifically the underlying business models.
- There seem to be some discrepancies on hydrogen economy compared to other reports, in particular of Dynamis. It is asked to align the SDD with such reports.



- Topics that deserve attention are EPS, biofuels
- The executive summary is a weak point of the SDD. For example it lacks a paragraph on storage. It needs to be rewritten in a balanced way.
- An issue that was also raised at the time the first SDD was written was about the use of the word “aquifer” that might be misunderstood by some that associate it with the use of drinking water. It was decided to stick to the proposed wording in the SDD and not change it.

The comments will be considered by the team that finalises the SDD.

The prepared ZEP statement on EU energy roadmap got AC approval and will be addressed to DG Energy.

## 11 Taskforce Public Communication

Eric Drosin presented on the website, General Assembly and a leaflet on ZEP positioning

Regarding the website:

- Appreciation was expressed for the progress made, in particular the reuse of data from IEA
- Attention was asked for making the website available in languages other than English. Because of ZEP’s limited budget Eric suggested to point at the use the Google translation service
- Also it was suggested to include the social impact of CCS, in particular the employment effects

Regarding the the agenda of the General Assembly there was a discussion in which some AC members would like to see the structure of the agenda adjusted concerning presentations from member states, while others understood the logic. Eric explained what GA steering committee had in mind and AC accepted the proposed agenda.

Frederic Hauge asked taskforce Public Communication to make a proposal for ZEP presence at the COP meeting at Cancun.

## 12 Taskforce technology

Lars gave a presentation on the work on cost estimates that the Taskforce technology is presently conducting. It distinguishes i.a. between the cost of a “demo CCS plant today”, a “first of a kind CCS plants” and the cost of “CCS plants built in series”, This raised much interest, chairman asked to have a full discussion on the reports at the next AC meeting.

## 13 WG ORG

Olivier Appert presented a proposal for renewal of the ZEP Executive Committee (ACEC). All members including the chair will make their seat available at the next AC meeting to enable (re-)election. The proposal was accepted. The secretariat will address all AC members and ask for proposals of candidates.





## 14 Miscellaneous

Frederic Hauge updated the AC on the progress made by the joint taskforce on biofuels (BioCCS) of ZEP and EBTP. In November the chair (Frederic Hauge) and cochairs (Kai Sipilä and Philippe Paelinck) will meet to determine the mandate of TF BioCCS. The secretariat is asked to inform the AC of the membership list (now attached to minutes as annex 2).

Robert van der Lande explained about the establishment of a legal ZEP association (ZEP-c) that enables ZEP to manage its funding properly and legally. AC members will be asked in the coming weeks to register.

## 15 Decisions

D24.1: ZEP will submit to the EC (Delbeke) its point of view regarding licensing of foreground IP in the NER300 call early next week.

D24.2: ZEP AC members will be approached on a second round of expressions of interest in R&D lighthouse pilots in the short term by TFT.

D24.3: ZEP is to make a serious analysis of instruments for the stimulation of CCS, additional to the ETS, such as a bonus-malus system that is proposed in the Netherlands. This needs to result in a position paper. Taskforces Policy&Regulation and Demonstration and Implementation are asked to take this task up and report progress at the next AC meeting.

D24.4: ZEP secretariat is asked to communicate the results of the strategy survey and discuss this either via a telephone conference or with other means before the next AC meeting.

D24.5: Karl Bergman, Richard Budge, Arto Hotta, Jesse Scott, Nicolas Vortmeyer and Geir Westgaard are elected as new AC members.

D24.6: The ZEP secretariat shall arrange presentations of CCS projects at future AC meetings.

D24.7: The prepared ZEP statement on EU energy roadmap got AC approval and will be addressed to DG Energy.

D24.8: Taskforce Public Communication is asked to make a proposal for ZEP presence at the COP meeting at Cancun.

D24.9: Taskforce technology chairman will present and discuss its work on cost estimates at the next AC meeting



D24.10: The proposal for renewal of the ZEP Executive Committee (ACEC) in which all members including the chair will make their seat available at the next AC meeting to enable (re-)election was accepted. The secretariat will address all AC members and ask for proposals of candidates.

## Annex 1, attendees

AC24 attendance			
Meeting name	Surname	Name	Invitation accepted
AC24	van der Lande	Robert	Y, ZEP secretariat
AC24	van der Panne	Gert-Jan	Y, ZEP Secretariat
AC24	Georgsen	Kurt	Y, observer, presents Mongstad progress
AC24	Dussart	Francois-Xavier	Y, observer, GE Energy
AC24	Otter	Nick	Y, Observer GCCSI
AC24	Pegler	Bob	Y, Observer GCCSI
AC24	TAYLOR	Derek	Y, Observer GCCSI
AC24	Zelinger	Matthias	Y, Observer EUTurbines
AC24	Cetin	Funda	Y, observer
AC24	Chapman	Jeff	Y, observer
AC24	de Wolff	Joost J.	Y, observer
AC24	Tjan	Peter	Y, observer
AC24	Batchelor	Emma	Y, GG
AC24	Skogen	Tone	Y, GG
AC24	Bennett	Simon	Y, EC
AC24	Brockett	Scott	Y, EC
AC24	Kougionas	Vassilios	Y, EC
AC24	Sauter	Raphael	Y, EC – not present
AC24	Bergman	Karl	Y, candidate AC
AC24	Hotta	Arto	Y, candidate AC
AC24	Westgaard	Geir	Y, candidate AC
AC24	Zimmer	Stefan	Y, AC, replaces Zadroga
AC24	Scott	Jesse	Y, AC, replaces Nick Mabey
AC24	Heithoff	Johannes	Y, AC, replaces Lambertz
AC24	Bolhar Nordenkampf	Markus	Y, AC, replaces Gasteiger
AC24	Radgen	Peter	Y, AC, replaces Fischer
AC24	Booer	Anthony	Y, AC, replaces David White
AC24	Calvo	Elena	Y, AC, replaces Antonio Valero
AC24	Alonso Martinez	Fransisco Javier	Y, AC, replaces Alvarez
AC24	Appert	Olivier	Y, AC

AC24 attendance			
Meeting name	Surname	Name	Invitation accepted
AC24	Barbucci	Pietro	Y, AC
AC24	Christensen	Niels Peter	Y, AC
AC24	Constantin	Carmencita	Y, AC
AC24	Cortes-Galeano	Vicente	Y, AC
AC24	De Lannoy	Rose	Y, AC
AC24	Dessens	Stan	Y, AC
AC24	Farley	John Michael	Y, AC
AC24	Garosi	Roberto	Y, AC
AC24	Giger	François	Y, AC
AC24	Gye	David	Y, AC
AC24	Hauge	Frederic	Y, AC
AC24	Heitzmann	Martha	Y, AC
AC24	Hill	Gardiner	Y, AC
AC24	Kakaras	Emmanuel	Y, AC
AC24	Martinez Jubitero	Jorge	Y, AC
AC24	Maso	Vesa	Y, AC
AC24	Røkke	Nils	Y, AC
AC24	Soothill	Charles	Y, AC
AC24	Sweeney	Graeme	Y, AC
AC24	Szynol	Kazimierz	Y, AC
AC24	van Bracht	Mart	Y, AC
AC24	Bergmann	Heinz	Y
AC24	Drosin	Eric	Y
AC24	Frisvold	Paal	Y
AC24	Hetland	Kristofer	Y
AC24	Hone	David	Y
AC24	Paelinck	Philippe	Y
AC24	Saether	Anne Karin	Y
AC24	st. Leger	Hermione	Y
AC24	Strömberg	Lars	Y

## Annex 2, members TF BioCCS

members WG ZEP EBTP			
Surname	Name	function	Organisation
Appert	Olivier	President	Institut français du pétrole
Bergmann	Heinz	Senior Project Consultant	RWE Power AG
Bowen	Phil	Professor	Cardiff University - School of Engineering
Carbo	Michiel	Research Engineer	ECN
Dixson-Decleve	Sandrine	Director, Brussels Office, University of Cambridge Programme for Sustainability Leadership	Prince of Wales's EU Corporate Leaders Group on Climate Change (CLG)
Drosin	Eric	communications director	ZEP
Hauge	Frederic	President	The Bellona Foundation
Heithoff	Johannes	Vice President R&D	RWE Power AG
Heitzmann	Martha	Vice President, Research and Development	Air Liquide
Hone	David		Shell
Kakaras	Emmanuel	Director	National Technical University of Athens (NTUA)
Karlsson	Markku	Senior Vice President Technology	UPM-Kymmene
Nielsen	Charles	Director, R&D	DONG Energy A/S
Paelinck	Philippe	Director CO2 Business Development	ALSTOM POWER
Sipilä	Kai	Vice President, Strategic Research - energy	VTT Technical Research
Strömberg	Lars	Prof./Vice President R&D	Vattenfall