

ZEP Advisory Council 55 – 13th June 2018

Draft Minutes

Attendance

Advisory Council members

Didier Bonijoly	BRGM
Dominique Copin	Total
Mark Driessen (alternate)	Port of Rotterdam
Lamberto Eldering	Statoil
Ward Goldthorpe	Sustainable Decisions
Pierre le Thiez	IFP Energies Nouvelles
Filip Neele	TNO
Philippa Parmiter (alternate)	SCCS
Nils Røkke	Sintef
Graeme Sweeney	ZEP Chairman
Keith Whiriskey (alternate)	Bellona

Observers and other attendees

Rafal Bernat	Warsaw University of Technology
Amelie Carron	Air Liquide
Niels Peter Christensen	Gassnova
Eric de Coninck	ArcelorMittal
Caterina de Matteis	IOGP
Charlotte Elvsaaas	Norwegian Ministry of Petroleum and Energy
Gearóid FitzGerald	Ervia
Paal Frisvold	Consultant
David Hanstock	Progressive Energy
John Macarthur	Shell
Enrico Maggio	Sotacarbo
Valentin Moëns	European Turbine Network
Jean-Xavier Morin	CO2 H2
Alberto Pettinau	Sotacarbo

ZEP Secretariat

Nikki Brain	ZEP Secretariat
Luke Warren	ZEP Secretariat

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Item 1: Introduction

GS gave apologies from Rob van der Meer and Charles Soothill.

GS welcomed AC members and observers, and the agenda for the meeting was adopted.

WG noted a correction to the AC54 minutes.

LW provided an update on the actions arising from AC54. PP agreed to follow up with Stuart Hazeldine on the action to share data with Achim Boenke, DG GROW. NR confirmed he had represented ZEP on the CCUS roundtable at Mission Innovation, but that there had been no possibility for ZEP representation at the Clean Energy Ministerial side event. All other actions had been completed.

The minutes for AC54 were approved.

There were no matters arising from the April and May ACEC minutes.

Chair's update

GS fed back on the engagement programme for April and June.

The Governance Directive was a key focus; including meetings with EPP MEPs. Currently the Parliament's position on 2050 climate plans is much stronger than that of the Council, which seeks to remove requirements for any obligatory plans for 2050. The potential for some parliamentary questions and an own-initiative report were discussed.

On the Mid-Century Strategy (MCS), GS said the Commission intends to make a statement prior to COP outlining the level of ambition to be pursued. There may be some modelling undertaken between now and then, but this is likely to be limited. GS said that mid-century modelling will include macro-economic input, which is welcome. ZEP was advised to remain engaged with those working on this; in particular at Cabinet level, Isaac Valero in the Canete Cabinet.

WG said the impression from the meeting notes is that a lot of individuals are not familiar with CCS, and asked whether this was an accurate assessment, and whether ZEP needed to do more on outreach. GS said this was a fair assessment. In the case of the EPP MEPs the level of understanding was relatively low, but they engaged and wanted to know more. GS said ZEP had provided a lot of material and will follow up on questions to Parliament. The MEPs had a good understanding of why it was important to get the long-term perspective in the Governance Directive right.

GS said that as an ETIP, ZEP had limits to what it could do in terms of outreach as this was the scope of giving expert advice. He said outreach should be a priority for the Coordinated Support Action for the SET-Plan Implementation Working Group (IWG).

GS met with Peter Handley, DG GROW. There was a useful discussion on what a counterfactual to CCS should look like for the MCS. GS said it was clear that the High Level Group for Energy Intensive Industries will be influential in setting the level of ambition on CCS for industry.

GS also met with the ETUC who are members of the AC but have not actively been engaged. GS said this was due to resource as Philip Pearson from the TUC had been the main participant in ZEP and had retired. It was agreed that while ETUC did not have resource to actively contribute to working groups ZEP would instead ask them for commentary on specific areas of interest.

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Item 2: Secretariat update

Finance

LW provided an update on ZEP-C finances. Forecast income for 2018 is €180,000. Total income received to date is €122,500. A further €42,500 of invoices have been issued and it is expected that the outstanding invoice can be issued in the 3/4Q 2018. ZEP-C started 2018 with a net equity position of -€36,650; the forecast outturn shows ZEP-C returning to a budget surplus in 2018 of €39,858 by year end.

LW said that the call for support under H2020 for ZEP closed on April 19th. The CCSA has submitted a proposal to provide the Secretariat service for 36 months. Notification of the grant award is expected soon. If the CCSA proposal is successful EC has indicated that may be possible to backdate the grant. Given these arrangements the CCSA is continuing to provide Secretariat services to ZEP while it awaits the outcome of the evaluation process.

Membership

LW said that at the last AC it was agreed to develop a structured process to recruit new members to ZEP.

The Secretariat previously developed a pack of information on ZEP shared with organisations inquiring about membership. The Secretariat will now hold a record of engagement with potential member organisations and review this periodically to potential to re-engage or approach new organisations. The Secretariat has drawn up a provisional list to be shared with the ACEC for input, and proposes this is reviewed every six months. The AC agreed with this approach.

LW said John MacArthur had been nominated to the ZEP AC and invited the AC to vote.

ZEP review

LW said that at the 2017 ACEC Away Day it was agreed to review ZEP's longer-term structure and funding to ensure that the Platform remains effective and sustainable.

The Secretariat proposed to undertake a survey of a wide range of stakeholders to understand their priorities, and to hold a more targeted workshop in Autumn to review feedback and consider how ZEP might respond. Conclusions would be presented to the AC in December.

GS said that engagement with Member States should be a priority; and understanding how ZEP could support the SET-Plan process going forward.

WG said there was a difficulty currently in engaging a broader set of stakeholders for whom CCS would be part of future including the industrial community and end users, so this should be an area of focus.

PH asked whether the work would be undertaken by an independent expert or internal review. LW said the proposal was for the Secretariat to lead the process, with anonymity for participants. However if a case is made for using experts and the resource is available, this could be possible.

Item 3: ZEP-C AGM

ZEP-C members agreed that as a non-member GS could chair the AGM. GS confirmed the meeting to be quorate.

GS asked for approval of the finances and particularly for members to acknowledge the paragraph on emphasis of matter. This was noted and the finance paper and budget approved. The budget is annexed to the meeting minutes.

AOB

NR asked whether ZEP-C members were liable with regards to the budget. GS said members do not have any matters of liability, but Directors may be and this should be looked into further.

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Item 4: Commission updates

DG RTD

VK gave an update on proposals for Horizon Europe (formally FP9). 35% of the budget will be allocated to addressing climate change.

There are three pillars to the new framework- Open Science, Global Challenges and Industrial Competitiveness. CCUS sits under climate, energy and mobility for which the budget is €15bn.

It is anticipated that ERA will continue to be funded under Open innovation.

VK said that Parliament and Council negotiations on the budget were ongoing. Q3&4 of 2018 would be used for strategic planning, and the new programme would begin on 1 Jan 2021.

VK thanked the ZEP participants who represented the EU at the Mission Innovation workshop in Houston.

WG asked whether projects could be undertaken which encompassed different work packages, given that development of CCS could serve multiple areas. VK said this would be possible.

VK said there would be an official consultation on Horizon Europe towards the end of the year.

GS said that given the split between CCU and CCS for industry under the proposals, it needs to be clear to the energy cluster that CCS for industrial activity is an energy activity. ZEP has also submitted a position on the treatment of hydrogen under the new framework; currently electrolyzers are considered innovative whereas SMR/ATR is not. VK said ZEP should keep engaging on the issue including a follow up meeting to the workshop held in 2017. GS said there had been considerable efforts to progress the discussion with little success; however in the context of the Horizon Europe proposal perhaps some momentum could be gained.

NR pointed out that large-scale hydrogen production from fossil fuels with CCS was identified as a Priority Research Area under Mission Innovation; furthermore a separate hydrogen Mission had been launched.

DG ENER

GS welcomed Peter Horvath to ZEP.

PH gave an update on the PCIs on CO₂ transport, saying currently two of the four projects had applied for funding through the Connecting Europe Facility (CEF). The second call of CEF is now open until October 2018.

PH shared the agenda and registration details for the stakeholder event on the Mid-Century Strategy taking place on the 10th & 11th July.

PH said two proposals had been received for the support to the successor for the Project Network. The contract will be signed in the second half of 2018.

On the Clean Energy Ministerial, PH said an initiative on CCUS had been launched, although it had been difficult to engage finance community in the launch event and therefore this a priority for the initiative between now and CEM 10.

PH said the European Sustainable Energy Week had 64 sessions and 2500 participants. Energy Technologies Europe held an event on CCUS, which had been a good exchange with some differences of opinion and strong participation from the renewables community.

DC asked whether ZEP would be involved as speaker at the event. PH said he would pass the question to Maria Velkova at DG CLIMA.

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DG GROW

TDF fed back on GROW's project over the last year on gaseous industrial effluents which looked at how CO₂, CO, NO_x, H₂, could be exploited for production of chemicals. The second phase would be to look at the use of these gases as raw materials, and to what extent regional authorities can support and boost use of these gases.

Consultancy firm Ecofys have provided analysis and mapping of where gases could be exploited, identifying geographical "hotspots". This analysis will be published soon, and roadmaps will be produced for these regions by October, followed by a conference in Brussels.

WG said there was a parallel with the ALIGN project which is looking at five CCUS clusters and there could be scope for joint meeting after the work finished. TDF said it would be possible to provide space to explain ALIGN project at the conference and how these initiatives could be joined up.

Item 5: Mission Innovation

FN and NR gave an update on the Mission Innovation programme.

30 Priority Research Directions (PDRs) for CCUS were defined at the workshop in Houston. The report from the workshop was released in May, and describes these areas in detail. FN said the report had been open for review to national representatives, but that the Commission had also volunteered comments which had largely been taken on board.

FN said the UK had taken over from the U.S. as co-leader of the CCUS Mission.

FN explained that MI was aimed at lower Technology Readiness Level (TRL) technologies, with CSLF targeting higher TRLs. CCUS activity has a roof of TRL-4; the discussion ongoing in Europe around business models may therefore be detached from this. It was noted that the recent ERA-NET ACT call takes into account the PRDs but is aimed at high TRLs. However FNs aid that while overall CCS may be high TRL but elements of a project may not be; for example monitoring of storage is lower TRL.

WG said there is a disconnect between low TRLs in MI and ERA-NET ACT philosophy and suggested that the formation of consortia for the new ACT call should be such that dominant EU countries continue the efforts of the first round to deliver at a large scale, even if the projects need to include low TRL elements.

NP asked whether ERA-NET would continue under Horizon Europe. VK said he hopes so but this was not confirmed. GS said ZEP should ensure this is part of the Platform's input to the consultation on Horizon Europe design.

It was noted that CCU was discussed in the report in the context of cement and other energy intensive industries as useful processes which can create a business case but have a marginal climate effect.

GS said that development of clusters should enable CCS and CCU to operate side by side and that the ALIGN work would be useful in demonstrating this. GS said that ZEP's position has been that if businesses benefit from climate related incentives for a process, there needs to be clear mitigation. However there was no objection to supporting these projects for industrial policy reasons if funded through other means. The focus should be on what infrastructure is common- to CCS and CCU, as this is the "public good".

PF said there was concern from Norwegian industries about the support mechanism not being able to apply for CCU projects without clear and immediate mitigation. He noted that many first projects being considered had a strong EOR component as a key enabler. PF said if we are to get clusters, CCU should be included as the pathway to a possible CCUS full chain. GS said that CO₂ Value Europe's position was consistent with the idea that there is plenty of space for clear mitigation alongside other benefits for progress to be made.

NR said there was an interesting discussion on bio-CCS in IPCC models; noting that biomass storage (i.e. natural sinks from forests) is also included and that there is a danger of double counting of bio-CCS.

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Item 6: Overview of European Parliament, Council & other relevant activities

Multiannual Financial Framework

NB said the Commission had released its proposal for the Multiannual Financial Framework 2021-2027 (MFF) on 2 May. The proposal increased climate-related spending in the EU budget from 20% to 25%. The EP has previously called for 30%, and a comprehensive, continuous source of funding for energy investments including CCU and CCS, especially for carbon-intensive regions.

NB said an InvestEU Fund had been announced to replace European Fund for Strategic Investments (EFSI); this will provide loans and guarantees to support four policy areas including up to €11.5 billion for sustainable infrastructure.

The Connecting Europe Facility will be renewed with €8.7 billion for energy projects over the 7 year period. This is an increase on the €5.3bn allocated from 2014-2020

Mid-Century Strategy

NB said the Commission plans to be able to present its Mid-Century Strategy at COP 24 in December, which will be followed by a period of scrutiny in 2019.

Mauro Petriccione, new DG for Climate Action, mentioned in a speech that CCS featured heavily in the 2011 Roadmap but has not yet emerged. He said net zero by 2050 would be assessed, with modelling and economic analysis, but would only be the Commission's proposal if it was seen to be cost-effective and feasible.

It was agreed that the argument for CCS cannot be confined to cost-effectiveness but needs to build on the "feasible" part. WG noted the UK's Committee on Climate Change were clear on the need for CCS in their response to the Clean Growth Strategy.

GS said "cost effective" means taking a broad economic perspective, as opposed to simply the cost of one activity vs another. The objective needs to be defined in order to assess the best route and work out the option that creates most value while achieving this target.

Sustainability Taxonomy

NB shared the proposed criteria from the Commission for a "sustainability taxonomy" to inform what can be classified as a sustainable investment. It was noted that there were a few areas which could be problematic depending on the detail, including requirements around energy efficiency (due to the energy penalty associated with CO₂ capture.) It was agreed ZEP should provide a response in time for the August deadline. GS asked the Network Chairs to confirm who would lead the work.

Item 7: Port of Rotterdam

MD gave an overview of the Port of Rotterdam "Porthos" project. The Netherlands has an ambition to reduce emissions by 49% by 2030. MD said that the ambition for CCS had been reduced from 20Mt CO₂ stored by 2030 to 7.2Mt.

MD said the Port was home to heavy fossil-based industries, and produces 20% of the Netherlands' CO₂ emissions. Therefore if the 49% target is to be met, it needs to be met in the Port, or there will need to be much higher ambition on other areas to compensate. CCS forms part of four decarbonisation pathways produced for the Port by the Wuppertal institute; MD said that CCS is one of few things that can make big difference which is available today.

The Porthos project is based on building T&S infrastructure that is open and independent; separated from capture. The Port is working with Gasunie & EBN on the T&S. The Port has identified its 15 biggest industrial emitters. MD said that some are very enthusiastic, others more hesitant; some have cheap CO₂ available. By 2030 the port hopes to store 5Mt CO₂/year, starting with 3Mt/year in the early 2020s. The port has identified 37Mt of storage that will be filled over 10-15 years.

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MD said the Port is well placed to expand its T&S infrastructure, and is looking at a new PCI linking to Belgium and North Rhine-Westphalia.

The Port completed a feasibility study last year that was positive; now the business case needs to be developed and an agreement on liability for CO₂ storage.

MD said that public-private partnership was essential, with a role for state-owned companies developing infrastructure, and funding required from the private sector and public authorities.

MD said that Porthos is part of a national discussion on the new climate agreement. Discussions have centred on cost per tonne compared to other solutions, with pressure on the port to reduce costs. There has been lots of discussion on competition between CCS and renewables. MD said there is strong support for a regional approach. Separating out T&S is not easy as capture needs to move at the same time for government to provide support.

MD said Greenpeace had released a report and article, which expressed concern about safety of storage. MD said the Port did not want to be the national defender for why CCS is needed, and that national industry needed to speak out about its necessity.

MD said there are three taskforces under way with the Dutch Ministry on financing, permits and communication.

GS asked where ZEP could be of help. MD said access to EU funding sources would be important, and broader support in Brussels. Spreading the word about the project could be helpful. Also pushing for a higher carbon price to stimulate CCS. MD asked whether it would be possible for ZEP to put the Port in touch with German and Dutch MEPs.

LE- said there was some misinformation in the Greenpeace study which said a rift in a Norwegian field was enhanced by CO₂ injection. Equinor would be responding as there is a rift 25km away from the field that was there before injection, and the CO₂ would not migrate towards the rift. MD said it would be helpful if projects and member states could coordinate on evidence on safety of storage.

LE asked how important identification of secondary storage and operation was for feasibility. MD said this is very important and TNO and EBN are identifying the best possible next fields.

PP said that the University of Aberdeen published paper in Nature Communications modelling long term CO₂ storage over 10,000 years, demonstrating a 98% storage rate.

GS said the Port must be clear about the political economy levers, including having something clear to say about the potential for linking with North Rhine-Westphalia early.

GS said these issues for implementation need to be addressed in SET-Plan IWG meetings.

Item 8: Update on Norwegian CCS developments

NPC said the Norwegian Parliament had the ambition for one full-chain project to be complete by the early 2020s. Equinor, Shell and Total are undertaking a joint concept and FEED study, to be completed in 2019. The current forecast cost of the full-chain project is €1.3-2.3bn euros depending on how many capture projects are progressed. It is expected that the proposal put forward by the finance committee to Parliament to progress FEED for the Norcem plant, and to end the Yara project will be accepted. NPC said Yara had demonstrated the lowest potential for learning which is important for state funding. The waste-to-energy project is under study and may be granted FEED if the cost and risk factors can be reduced.

NPC said Norway's ambition is for the project to contribute to cost-effectiveness globally. FID will be costly for Norway and some amount of cost-sharing with industry and others needed. External quality assurance

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currently says the project is socio-economically unfavourable from a state investment perspective as it focuses solely on the domestic context.

NPC then fed back on work by SINTEF that looked to highlight the value of the project to the Norwegian economy. This includes safeguarding 30,000 jobs in processing industries in Norway. Production of low carbon hydrogen could generate 220bn NOK per year by 2050 and 25,000-35,000 jobs. The total labour force is 2.5million in Norway. EOR could increase export value by 8bn NOK per year.

Item 9: Innovation Fund Expert Group

GS fed back on the Expert Group meeting on the Innovation Fund. The terms of the Fund will be decided by a Delegated Act by the Commission.

The meeting comprised 50 experts who were given three minutes each to speak; therefore ZEP would also be making a written submission. It was also suggested that ZEP could write its own mock up of a Delegated Act, and that this would be undertaken by TWG Policy & Finance.

GS said the way the questions were posed by the Commission amounted to a choice between the NER300 or something else. There was a high consensus something different was needed but GS said he expected wide variation on the detail.

GS said that cross-border projects were not really addressed, or the value of projects which have benefit for multiple MS. The written response would reinforce the position that a Market Maker needs to be eligible under the fund as if this is not clearly stated, there is a danger it may not be.

GS said the contribution from key Member States at the meeting did not reflect the need for projects to access the Innovation Fund. GS said ZEP should engage with the Dutch and Norwegian industries to ensure they also include things projects will need within their input. GS said the Irish and Swedish made good contributions on CCS.

NPC highlighted the potential complexity created by fixed calls as projects would need to match this timeline. GS said a high frequency of calls would be preferable, and the agency dealing with administering the fund should keep track of projects in development.

WG said some of the recommendations from the fast track T&S report would be relevant for the Innovation Fund discussion.

Item 10: Network Policy & Economics update

LE gave the update from Network Policy & Economics. There had been no meeting between this and previous AC. Upcoming items of work for the Network include:

TWG Policy and Finance

- Response to the Mid-Century Strategy consultation due in July.
- A piece of work on linking EU funds for CCS, as requested by the Canete Cabinet. The AC did not approve the pre-read and requested more time to review; however as the request came from the Commission it was agreed the Network could progress the work in the interim.

TWG PCIs

- WG said the governance structure and a coherent narrative highlighting the need for transport corridors were a more important issue than the London Protocol.
- The PCI paper presented in the pre-reads was approved.

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Item 11: Network Technology update

FN said the next meeting is scheduled for 31 October.

TWG CCS in a Below 2 degrees scenario

The TWG had produced a draft report which was attached to the pre-reads. It was felt this was not yet ready for AC approval, and as the co-chairs could not attend the AC, it was agreed a follow-up call should be scheduled with the co-chairs.

It was agreed that the ACEC could approve the report on behalf of the AC once revisions had been made. WG said that the study undertaken by auditors in Norway demonstrated a negative benefit from developing the full-chain project, due to it only measuring domestic impact. WH said it would be useful if the section on Norway in this report could challenge that finding.

DC said he found the report interesting and valuable and that OGCI would like to contribute.

TWG Collaboration across the CCU Chain

WG explained that work was progressing in two parts. Workstream 1 seeks to quantify storage-related risks using data from operators. This group aims to deliver its contribution by 1st July.

The second workstream looks at risks and liabilities which need to be shared across the CCS chain. This group is looking at investment barriers and business risks and potential solutions. Once catalogued, the group will hold a joint workshop with the ERA-NET ACT projects in September before the next AC.

TWG CCU

FN said work was progressing on the follow-up report on CCU and Sink Factor methodology, with the next meeting planned on 21st June in Brussels. The group aims to deliver a high-level report by the autumn.

EdC said he thought the Sink factor methodology was redundant as it was clear the commission would be using Lifecycle Analysis. EdC said that as well as the initiatives under CLIMA looking at methodology, DG ENER was to set up a group of industry experts to produce their own analysis of LCA methodology.

LE said the report from the Scientific Advice Mechanism had been clear on the need to demonstrate CO₂ reduction from both CCS and CCU.

DB said that Club CO₂ would also be holding a workshop on LCA.

It was suggested by AC members that events had overtaken this piece of work and ZEP would be better placed to feed in to the Commission's processes, rather than try to create its own methodology.

It was agreed ZEP would engage in the process with DG ENER.

Item 12: External Relations Group (ERG) update

GS said that Johnny Stokes had been nominated as a new co-chair to replace Sarah Kempe from Shell. The AC approved Johnny's nomination.

GS said he would be meeting with Mauro Petriccione on 19 July, which would be a key opportunity to discuss the Mid-Century Strategy.

GS said that Weber Shandwick's contract had ended, so the Secretariat had agreed to take on external engagement support until the new ZEP contract was in place.

ZEP is holding a joint workshop with IOGP on 12 July to discuss collaboration on CCS engagement.

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Item 13: Any other Business and closing remarks

LW confirmed that John MacArthur of Shell was elected to the AC.

Actions

Action		Owner	Deadline
2	Secretariat to progress review of ZEP with survey and August workshop	Sec	August
3	Look into Directors liability for ZEP-C	GS/Sec	September
4	Follow up with hydrogen stakeholders on Horizon Europe proposals	Sec	September
6	Submit response to Sustainability Taxonomy	NWPE	August
11	Schedule call on B2DS report	Sec	June
11	Engage with DG ENER on LCA work	NWT	July

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