ZEP Advisory Council 53

6th December 2017

Agenda Item 1: Introduction

1.a. AC53 Agenda

Appended to this paper is the agenda for the 53rd meeting of the Advisory Council.

1.b. AC52 Draft Minutes

Appended to this paper are the draft minutes for the 52nd meeting of the Advisory Council, which took place on 13th September 2017.

The Advisory Council are invited to approve the minutes of the last meeting.

1.c. ACEC October Meeting Minutes

Appended to this paper are the minutes for the October meeting of the ACEC.

1.d. ACEC November Draft Meeting Minutes

Appended to this paper are the draft minutes for the November meeting of the ACEC.

1.e. Chair's update

Appended to this paper is an update for SET-plan TWG9 CCS and CCU activities and summaries of the Chair's external meetings since the AC52 in September.

ZEP Advisory Council 53

Draft Meeting Agenda: 6th December 2017

10:30 – 17:00 CET
Covent Garden 2 (COV2) Place Rogier 16, 1210 Saint-Josse, Brussels

Item		Lead Presenter	Time
1	Introduction and welcome: • Adoption of Agenda • Approval of AC52 minutes and review of actions • Chair's update	Graeme Sweeney	10:30 – 10:50
2	Secretariat Update	Luke Warren	10:50 – 11:00
3	Commission updates: • DG RTD • DG ENER • DG GROW	 Vassilios Kougionas Vladimir Zuberec Maria Velkova	11:00 – 11:30
4	Overview of European Parliament, Council & other relevant activities	Nikki Brain	11:30 – 11.45
5	Irish CCS developments	Henry Smyth, Ervia	11.45 – 12:30
	Lunch		12:30 – 13:15
6	CO_2-DISSOLVED	Christophe Kervevan, BRGM	13:15 – 14:00
7	UK East-Coast Economic Benefits of CCS	Stephen Kerr, Summit Power	14:00 – 15:00
8	Review of Network 2018 Work Programmes Network Policy and Economics update Network Technology update	 Lamberto Eldering / Jonas Helseth Filip Neele	15:00 – 16:20
9	External Relations Group (ERG) update	Jonas Helseth	16:20 – 16:50
10	Any other business & closing remarks		16:50 – 17:00

European Zero Emission Technology and Innovation Platform

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ZEP Advisory Council 52

Draft Minutes

Attendance

Advisory Council members

Didier Bonijoly (alternate)	BRGM
Lamberto Eldering (alternate)	Statoil
Ward Goldthorpe	Sustainable Decisions
Stuart Haszeldine	SCCS
Jonas Helseth (alternate)	Bellona
Gardiner Hill	BP
Pierre Le Thiez	IFP Energies nouvelles
Filip Neele	TNO
Rob van der Meer	HeidelbergCement
Marie Bysveen (alternate)	Sintef
Constantin Sava	GeoEcoMar
Graeme Sweeney	ZEP Chairman

Observers and other attendees

Myles Allen	Oxford University
Nicky Denning	Fuels Europe
Siri Eritsland	Norwegian Ministry of Petroleum and Energy
Willem Frens	BA2C
Arthur Heberle	Mitsubishi Hitachi Power Systems Europe
Rannveig van Iterson	European Climate Foundation
Vassilios Kougionas	European Commission
Enrico Maggio	Sotocarbo
Samantha McCulloch	IEA
Caterina de Matteis	IOGP
Brian Murphy	Ervia
Andy Read	ROAD
Alberto Pettinau	Sotocarbo
Michael Schuetz	European Commission
Bradley Steel	Pöyry
Maria Velkova	European Commission

ZEP Secretariat

Nikki Brain	ZEP Secretariat
Luke Warren	ZEP Secretariat

Item 1: Introduction

The Chair (GS) introduced the meeting. The AC adopted the agenda for the meeting and approved the minutes of AC51. LW fed back on the actions from AC 51, with all actions having been completed. The AC endorsed the actions taken by the ACEC on its behalf since the last AC meeting.

Chair's update

GS fed back on his meeting with Allard Castelain, CEO of the Port of Rotterdam. He said the Port is not advertising its planned activity on CCS until the political landscape in the Netherlands is more certain. GS noted the Port of Rotterdam was interested in taking on a role as Chair of a ZEP Working Group, and that the Port may also present at the ZEP hydrogen workshop in October.

Andy Read (AR) said the conversation was ongoing between the Port, Government and capture companies about the future of the ROAD funding. He said it was unlikely funding could simply be transferred and that if the Port had to apply for new EU grants this could delay any future project by two to three years. He said that there was strong political support for continuing a project but that it was not yet clear whether the right set of stakeholders would align.

Michael Schuetz commented that the OGCI could be a potential source of funding for the successor to ROAD.

On the SET Plan Implementation Plan, GS said that target one had been changed in light of the cancellation of ROAD, and that the changes had been agreed by member states. The final draft had been sent to the Commission for approval, and that the Plan was to be presented to the SET Plan steering committee on the 27 September.

Item 2: Secretariat update

Luke Warren (LW) shared a financial update for ZEP-C for 2016-17. He said that while there was a predicted deficit over the two year period, ZEP-C was on track to reach a surplus in 2018. The AC approved the financial papers.

LW said that the next call for funding under Horizon 2020 opened in December and therefore it was unlikely a new contract would be signed before April 2018, leaving ZEP with a funding gap. He said under the new round there would also be funding for support to the SET-Plan working group which the Commission wished to retain in some form. GS said an approach would need to be agreed to cover the funding gap before AC53. The AC endorsed the ACEC to approve this on its behalf.

LW informed that AC that Olav Skalmeraas had retired from the AC, and thanked him for his contribution. LW said that Lamberto Eldering (LE) and Dominique Copin had put themselves forward to join the AC, and invited the AC to vote on their membership.

Item 3: Commission updates

DG RTD

Vassilios Kougionas (VK) said that the Commission was in the process of assessing the SET Plan Implementation Plan, and that it would go to the Steering Committee pending approval from Directors. He said that the successor to the TWG-9 would not necessarily be a standing working group as it had been referred to previously, but that the Commission aimed to retain the same membership.

VK updated the AC on the Mission Innovation workshop taking place on 25 September. He said that the Commission will ask ZEP's opinion before formalising an EU position.

Stuart Haszeldine (SH) noted that Mission Innovation could potentially fill gaps on research into infrastructure and whole system costs of CCS. He asked whether the final document could be shared with the UK government. VK agreed this would be possible.

DG ENERG

Michael Schuetz said the Directorate was involved in ongoing discussions with the ROAD stakeholders.

On PCIs, MS said that the four CO2 transport proposals were being consulted on with the Thematic Group, and that the High Level Group would take a decision on which projects would be listed on 17 October.

MS said the CCS Project Network was holding an advisory forum on 25 October, and that invitations would be sent to stakeholders shortly.

MS said there would still be a tender for support to the network, however due to the lack of projects being developed, the timing of this was uncertain. MS said the Commission was in touch with the Secretariat, GCCSI, about how remaining money from this grant period could be usefully spent on bridging activity until new projects come forward.

MS said the European Parliament had discussed amendments to the Energy Union Governance Directive for the first time, and hoped to adopt a position by the end of November. Of particular debate was the 50 year perspective proposed in the draft text.

On the Renewable Energy Directive, MS said that opposition from MEPs and members states made it likely that the text concerning inclusion of waste based fuels would need to be amended in some form. On the issue around restricting support for biomass to CHP, he said there was some opposition from Member States.

MS reported on a study by the Commission looking into the effect of an emissions performance standard on 550pm for capacity mechanisms, the link for which is here. The report concludes that without an emissions performance standard, there will be significant stranding of coal assets. However he said sufficient opposition to the proposal for an EPS may lead to a blocking minority in the Council.

GS fed back that the vice- president's office had followed up with a question about the EPS recommended by ZEP, but that the relevant person was now on personal leave and as yet, their replacement had not been identified.

MS said that DG Unit 2 was dealing with the EPS and would be happy to have input. He agreed to put GS in touch.

DG CLIMA

Maria Velkova (MV) told the AC she had taken on a new position in unit C3 of the Commission which covers land use and finance for innovation, including NER 300 implementation and preparing the innovation and modernisation funds.

MV said that while the Innovation Fund cannot be progressed without the ETS Directive, there will be little time after the adoption of the Directive so an impact assessment and proposal are already being worked on.

MV said the contract has been signed for a study into the climate abatement potential of CCU applications. The study will include stakeholder workshops, and information would be shared with ZEP in due course. In parallel the Scientific Advice Mechanism will also be providing an opinion on the topic in April 2018, and will also be holding stakeholder workshops. MV confirmed that regulatory issues would form part of the study and it was expected that changes would be made to monitoring and verification requirements.

Item 4: Overview of European Parliament, Council & other relevant activities

Nikki Brain (NB) gave an overview of developments in the European Parliament and Council on various parts of the Clean Energy Package.

NB said that 17 MEPs had tabled an amendment to remove the reference to "waste based fuels" in the Renewable Energy Directive, with a smaller amount of MEPs suggesting amendments to promote waste based fuels from "unavoidable" streams of CO2 where they contribute to significant CO2 savings over the lifetime of the product.

NB said that the Commission has confirmed that the proposal to limit biomass to CHP in the RED is due to the limited availability of biomass and the need to use it most effectively. It was agreed that ZEP was supportive of this principle, but that given the necessity of negative emissions in 2 degree or below scenarios, that it would make sense to also allow bioenergy with CCS within the proposal. It was agreed that ZEP would write to Mechthild Wörsdörfer to share a suggested amendment as a matter of urgency.

NB said that there had been proposals by some MEPs and Member States to remove the references to a 2050 target for EU emissions. It was agreed that the ERG would discuss increasing ZEP's communication on this issue within the Governance Directive.

GS fed back on his engagement with the Bulgarian Permanent Representation, and Katrien Prins, Policy Officer at DG ENER. He said that the Bulgarian representation had agreed to put ZEP in

touch with energy colleagues to look at the potential for undertaking modelling. DG ENER had welcomed the offer of a ZEP view on what a “good” PCI application for CO2 transport would entail.

Item 5: Industrial CCS investment mechanisms

Bradley Steele (BS) of Poyry Consulting presented on the industrial investment mechanism for CCS produced for the Teesside Collective (presentation slides are attached for reference).

The mechanism proposed reflects a need for a “pay at the gate” solution for CO2 transport and storage for industrial CCS, and recognises that the ETS will not by itself provide a sufficient economic driver for investment.

It was recognised that there would need to be an element of competitiveness to ensure costs were reduced over time, given that all costs are recovered by industry in the proposed mechanism. This would also be a factor in relation to State Aid requirements.

The proposal included an agreement for industry to contribute to the funding by returning EUAs corresponding to sequestered CO2 to government. The AC questioned how returning EUAs to government did not constitute carbon exposure. BS said that as 95% of EUAs are freely allocated, it was perceived by the industries involved to be an acceptable cost provided they received a return on their investment in capex and recovered operating costs.

Jonas Helseth (JH) questioned whether the proposal diminishes social license to operate, i.e. reduces the incentives to decarbonise using other methods. BS said that CCS would be the cheapest way to decarbonise some processes, but not others.

It was agreed that Network Policy & Economics would need to take this work into account when looking at the operation of the Innovation Fund, and should continue to speak to Poyry. Gardiner Hill (GH) added that the OGCI would also want to join discussions. GS said this should be a priority area of work for NWPE to take forward.

Item 6: CCS in a below 2 degree scenario

Myles Allen (MA), Oxford University and Samantha McCulloch (SM), IEA, presented recent findings on the role CCS will need to play globally in meeting a below two degrees scenario as set out in the Paris Agreement.(presentation slides appended to minutes).

MA said that countries’ current pledges do not address the deep emissions cuts needed post-2030. MA put forward a proposal for a mandated CCS certificate system for mandatory sequestration.

GS pointed out that the UK got close to mandatory sequestration several years ago, and that it was seen as an environmental performance standard. He added that for such regulation to be successful it would need to be supported by the fossil fuel industry.

LE fed back from the IPIECA event held the day before the ZEP AC, where MA had presented. He said there was not much pushback against the idea other than on the issue of long term liabilities of CO2 storage. It would help if infrastructure was in place.

SH added that if mandatory sequestration was introduced it would stimulate competition to provide storage services.

GH said the OGCI would look at the issue in detail including the legal issues around liability.

GS said NWPE should look at the issue further.

SM presented the findings of the IEA's 2017 Energy Technology Perspectives in relation to CCS in a below two degrees scenario.

JH asked whether lead times were taken into account in the ETP. SM said the modelling assumed that storage was available. JH said it would be useful if realistic lead times could be included in the modelling.

MA said it would be useful to see figures for carbon sequestered in each region. SM said that IEA GHG would shortly be publishing a paper on CCS roll- out.

GH asked whether ZEP could produce its own response to the IEA/ IEA GHG work, and how it links with the ETIP's previous work on hubs and clusters. Filip Neele (FN) said this linked in with the proposed work for TWG- 9 on hubs and clusters.

Item 8: Conversation with Marco Mensink, CEFIC

Marco Mensink (MM) gave a short introduction addressing CEFIC's recent report on its 2050 pathway. He said that the report was an interim piece of work and that CEFIC would be presenting its mid- century plan in 2018. He said CEFIC doesn't have a position on CCS, and that his comments at the Innovation Fund roundtable reflected that the Innovation Fund money was for industry, so industry should choose how to spend it.

He said that looking at available ways to decarbonise today, CCU is feasible now. He said that a technical document was needed to look at CCS in the chemicals industry. He said that 95% of CEFIC's members were SMEs and therefore the cost of infrastructure for CCS would need to be socialised.

MM said that he did not see SET Plan activity 9 as a CCU activity and that it would be good to align activities. GS said that the CCU community had been involved in drafting the Implementation Plan and it says what they asked it to. He said there would be an ongoing opportunity to input through the standing working group.

JH said that governments did not hear industry saying there is a need for CO2 infrastructure and that it would be helpful for CEFIC to take part in ZEP's discussions on this. MM said the priority for the industry was attracting inward investment for Europe, and decarbonisation was one part of this. He said he had raised the electrification issue with the policy team who produced the CEFIC report.

LW addressed the opportunities for clean hydrogen to reduce emissions from industry. MM agreed there was scope and that the Innovation Fund needed to come forward for industry to look into it further.

Item 9: Network Policy and Economics update

LE gave an update from Network Policy & Economics. The Network had met in August to identify a new work programme based on the output from the ACEC Away Day.

GS said that there may need to be a new piece of work done on the criteria for good PCIs for which ZEP could provide input. LE said that in this case new members were needed for the group.

JH said a new co-chair was needed for TWG policy and finance. GS said Allard Castelain was interested in having the Port of Rotterdam contribute and asked for details to be shared with him.

Rob Van der Meer (RVM) presented the final draft of the report from TWG CCU and Energy Intensive industries for approval. The AC approved the report. It was noted that further work needed to be done separately on the sink factor of EOR.

Item 10: Network Technology update

FN gave an update from Network Technology. He introduced the paper for Mission Innovation and asked for the AC's approval to take this to the meeting in Houston.

GH commented that storage site evaluation is missing from the tables, with the focus being on operation and closure. FN responded that this was due to MI focusing on low TRL levels.

GS said that in light of this, did ZEP need to ensure that FP9 and H2020 focused on higher TRL levels. He said it was worth being involved in MI to try to influence the process.

FN said that NWT would meet on 19 October to review MI, and to define its work topics based on the output from the ACEC Away Day. He said it would be useful to discuss with the TWG CCU EII to see if there were areas of shared interest going forward. FN said he would like NWT to focus on specific clusters in detail, including the relationship between CCU and CCS development, as well as CHP and hydrogen, and look at how the IEA's work could be implemented at a regional level. He said he would also like to focus on solving the issue of long term liability for storage.

Marie Bysveen asked how best the research community could support PCI applications; FN said this should also be a focus of NWT. Ward Goldthorpe (WG) said that the collaboration between ERA- NET and ZEP was encouraging in this respect.

Item 11: External Relations Group (ERG) update

JH gave an update from the ERG. He asked for approval for the revised ZEP narrative. The AC approved the document.

Ton Wildenborg (TW) talked through the proposed event jointly hosted by CCS organisations in the European Commission tent at COP 23. Charles Soothill is to present on behalf of ZEP. TW asked for the AC's help in attracting CEOs and senior executives of relevant organisations to the event.

LW updated the AC on the planned clean hydrogen workshop, saying the scope was now very much to get a conversation going between different parts of the hydrogen community. The workshop would highlight ZEP's work, the Statoil project and Port of Rotterdam. The Secretariat recently met Mark Van Stiphout at DG ENER who was very keen for this event to go ahead and also for ZEP to facilitate other conversations bringing together parts of the commission which work separately from one another.

Item 12: Any other Business and closing remarks

LW confirmed that Lamberto Eldering and Dominique Copin had been elected to the AC.

Actions

Action		Owner	Deadline
2	Secretariat to propose approach to cover funding gap before AC53, to be endorsed by ACEC.	Sec	November
3	Secretariat to share Mission Innovation document with UK Government	Sec	September
3	MS to put GS in touch with DG Unit 2 to discuss EPS	MS	September
4	It was agreed that ZEP would write to Mechthild Wörsdörfer to share a suggested amendment as a matter of urgency.	Sec	ASAP
4	It was agreed that the ERG would discuss increasing ZEP's communication on 2050 targets within the Governance Directive.	ERG	September
5	NWPE, Poyry and OGCI to continue discussion on industrial investment mechanisms	NWPE	December
6	NWT to produce response to IEA/ IEA GHG work	NWT	December
7	NWPE to understand the opportunity to input on the criteria for good PCIs.	NWPE	December
7	Invitation to be sent to members to join TWG PCI	Sec	September
7	Terms of Reference to be made with Port of Rotterdam re co-chair for TWG policy and finance.	Sec	September
8	TW asked for the AC's help in attracting CEOs and senior executives of relevant organisations to the event.	AC	November

Advisory Council Executive Committee

Minutes: Conference Call – 10th October 2017

Attendance

Graeme Sweeney	Ardnacraggan Energy Services Ltd. (Chair)
Charles Soothill	ZEP Vice Chair
Arthur Heberle	Mitsubishi Hitachi Power Systems
Jonas Helseth *	Bellona
Gardiner Hill	BP
Arthur Heberle	Mitsubishi Hitachi Power Systems
Nils Røkke	EERA/Sintef
Luke Warren	ZEP Secretariat
Harriet Howe	ZEP Secretariat

* Jonas Helseth acted as Frederic Hague's and Rob van der Meer proxy

1. Introduction and general update (open session)

The October meeting agenda was adopted, following an amendment to move the Mission Innovation update to the introduction item and add an item on CSLF. LW went through actions from the September AC52 meeting. LW and GS agreed to following up with Michael Schuetz at DG ENER regarding discussions with DG Unit 2 on the EPS. Minutes from the meeting were approved and adopted.

<u>Mission Innovation update (as per item 2.a.ii. on agenda)</u>

Nils Røkke provided an overview of the Mission Innovation Worksop, which had taken place the previous week in Houston, with Filip Neele and Wim van der Strict also attending as representatives of the European Commission and ZEP on the topics of capture, storage and utilisation, respectively. A summary note of the workshop was circulated ahead of the meeting as pre-read 2.a.ii. Feedback from the workshop was that it was well attended and organised. However, there was a perceived overrepresentation of utilisation representatives and these discussions did not cover LCA or climate mitigation.

The implementation of Mission Innovation activities was discussed, noting the short timeframe of 2021 to achieve its aims. Some countries attending the workshop had suggested that the Mission Innovation process should be merged with the CSLF, with the latter covering policy aspects. It was also suggested that the second call of the ERA-NET Act programme could be used as a delivery vehicle for international collaborative projects, based on the 'Priority Research Directions' from the workshop.

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Graeme Sweeney raised the upcoming meeting with Patrick Childs (Deputy-Director General, DG RTD), taking place on 18th October. It was agreed that a briefing note covering the Mission Innovation workshop should be produced and shared during the meeting.

CSLF workshop

LW gave a summary of the CSLF workshop, which was co-hosted by the CCSA and took place on Friday 6th October. The event focused on policy and communications issues, with agreement that there was a need for better communication and understanding of CCS. Strong messages were developed, which are expected to form the basis of the upcoming Ministerial meeting. Discussions included:

- Highlighting the unique value of CCS
- Pushing for policy parity, with a cross-sector focus
- Positive framing of CCS and societal benefits
- Increasing the credibility of CCS in the climate space
- Effectiveness of advocacy in the EU (beyond ZEP and Bellona) and the potential need for a new organisation

On the last point LW added that Chris Davies had suggested establishing a CCS campaign group, which could be separate from governments and so have the ability to be more provocative. It was agreed that more discussion was needed on who the campaigning would be aimed towards and input sought from politicians on whether this is something they would want.

2. Network and Temporary Working Group updates (open session)

a. Network Technology

AH gave an update on the NWT, with the next meeting planned for Thursday 19th October in Brussels. The draft meeting agenda was circulated ahead of the meeting for information as pre-read 2.a.i. All reports in the existing TWGs have been closed (with the exception of TWG Mission Innovation) and it was agreed that these now be closed.

It was agreed that ZEP should ask Vassilios Kougionas at the next AC53 meeting in December about the status of negotiations for H2020 and the Connecting Europe Facility in the Multi Annual Financial Framework. GS suggested that ZEP needed to more clearly publicise its achievements to date. GH added that this should include an assessment of the funding received so far for CCS in Europe and how effective this had been in the R&D space. An action was taken to discuss this at the upcoming NWT meeting.

- *SET-Plan TWG9*

HH gave an update on progress of the TWG9, including the adoption of the Implementation Plan by SET-Plan countries and the Commission at the Steering Committee meeting, which took place on 27th September. The first meeting of the Standing Working Group is currently being planned for the 30th January in The Hague. It was agreed that there was still some disconnect between the

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actions in the Implementation Plan and proposals under the H2020 draft Work Programme. It was agreed that this should be raised at the meeting with Patrick Childs.

b. Network Policy and Economics

JH gave an update of the NWPE, including the need for a new co-chair for the TWG Policy and Finance. The Secretariat will follow up with the Port of Rotterdam Authority regarding this position.

European Court of Auditors consultation

ZEP was invited by the ECA directly to provide input for the consultation on EU support to commercial demonstration projects of RES and CCS technologies. LW informed the ACEC that the purpose of the consultation was to provide a review of funding programmes and a chance to advise on improvements for futures programmes (including the Innovation Fund), which will then go to the Commission, Council and Parliament. A draft response was circulated ahead of the meeting as pre-read 2.b.iii. It was noted that the format for responding was not very flexible and that ZEP should adopt a critical tone.

The Secretariat took an action to add a section on the CEF under question 1 and check the overall response for tone. The response would then be shared with the ACEC and also with Air Liquide for input, particularly with regards to NER300 management.

Element Energy report

LW updated the ACEC that the Smart Funding Pathways report had been published online and that the consultants would be attending the ZEP Government Group meeting taking place on 27th October. The Secretariat took an action to produce a short ZEP summary of the report to highlight the key messages and to share this with the ACEC and ERG before the next meeting.

c. External Relations Group (ERG)

JH provided an update on ERG activities. The ACEC approved Sarah Kempe (Shell) to take the position as interim co-chair of the ERG following Mark Downes stepping down from the position. JH noted that he would arrange a catch up between himself, Sarah and Weber Shandwick to provide an introduction to ZEP and the ERG.

HH provided an update on progress for planning the Clean Hydrogen workshop, with a draft agenda for the meeting circulated as pre-read 2.c.iii. HH added that formal invitations to the workshop would be circulated later that day.

UK East Coast CCS report

The UK East Coat CCS report was discussed. GS added that Strathclyde University are currently seeking funding from NERC for a separate report, which would be useful in backing up the messages from the report. The ACEC agreed that Pale Blue Dot should be invited to present on the work at the AC53 meeting in December.

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3. AC53 agenda

It was agreed that the following items should be added to the draft AC53 agenda circulated ahead of the meeting as pre-read 3:

- Invitation to Vassilios Kougionas to cover MFF developments
- Invitation to Pale Blue Dot to present East Coast CCS report (as above)
- A discussion on the 2050 Commission decarbonisation roadmap, with an invitation to Michael Schuetz or a colleague to provide an update. It was agreed that this would be raised in engagements on the 18th October
- Updates on the 2018 work programmes for Networks, including the achievements from 2017. This should also include other programmes which the Platform should be involved with in 2018, including the SET-Plan and Mission Innovation.

CS noted that the upcoming IEA CCS summit should have some relevant outputs and agreed to keep the ACEC updated on this matter.

4. 2018 meetings of AC and ACEC

A list of proposed dates for 2018 meetings of the AC and ACEC was circulated ahead of the meeting as pre-read 4. LW agreed to circulate the dates as a word document to the ACEC to get agreement and finalise.

5. Finance update (closed session)

LW provided an update on ZEP finances, noting that there had been no change since the AC52 meeting in September. LW added that conversations with Gassnova regarding membership were ongoing, with the expectation that they would make a decision shortly. GS updated that there had been no recent communications with Exxon and took an action to follow this up. Additionally, GS and LW took an action to follow with Mitsubishi Hitachi Power Systems regarding membership.

6. 2018 ZEP Grant

LW provided an update on the situation with the ZEP grant, with €1 million currently allocated in the H2020 draft Work Programme, assumed to be for a 3 year period. It is expected that the call for submissions will be in late 2017 with a new contract signed ~June, resulting in a funding gap for a Secretariat of ~6 months. LW presented 4 possible options (outlined in pre-read 5.c). It was agreed that options for the Secretariat during this time would likely involve a combination of the first 3 of these options. LW agreed to seek input from the CCSA board to discuss possible options. LW also took an action to follow up with Weber Shandwick on the options for communications support during this time and agreed to update the ACEC ahead of the next meeting.

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7. Actions

Action		Owner
1	LW and GS to following up with Michael Schuetz regarding a meeting with DG Unit 2 on the EPS	LW + GS
2.a.ii	Briefing note to be produced for meeting with Patrick Child summarising ZEPs involvement in the Mission Innovation process	GS + NR + FN + Sec
2.a.i	Funding and R&D assessment to be raised at the October NWT meeting	FN + AH
2.b.iii	Secretariat to share draft response to ECA consultation with the ACEC and Air Liquide for input	Sec
2.b	Secretariat to produce a short summary of the Element Energy report and share with ACEC and ERG ahead of the next meeting	Sec
3	Secretariat to update AC53 agenda based on ACEC feedback	Sec
4	LW to circulate meeting dates word document to ACEC to finalise	LW
5	GS and LW to follow up with Exxon and MHPS regarding membership	GS + LW
5	LW to follow up with Weber Shandwick on options for support during the bid funding gap.	LW

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Advisory Council Executive Committee
Minutes: Conference Call – 9th November 2017

Attendance

Graeme Sweeney	Ardnacraggan Energy Services Ltd. (Chair)
Charles Soothill	ZEP Vice Chair
Lamberto Eldering	Statoil
Angus Gillespie	Shell
Jonas Helseth *	Bellona
Gardiner Hill	BP
Filip Neele	TNO
Nils Røkke	EERA/Sintef
Luke Warren	ZEP Secretariat
Nikki Brain	ZEP Secretariat

* Jonas Helseth acted as Frederic Hague's and Rob van der Meer proxy

1. Introduction and general update (open session)

Introduction & actions from last meeting

The November meeting agenda was adopted. Luke Warren (LW) went through the actions from the October call. LW informed the ACEC that Michael Schuetz would be moving on to a new role in DG ENER from 1 December and would no longer be focused on CCS. All actions had been completed.

The minutes from the October ACEC call were approved.

Hydrogen workshop

Graeme Sweeney fed back on the ZEP hydrogen workshop on the 8 November. Presentations were given by Claude Heller on behalf of ZEP, Niko Lymperopoulos from the Hydrogen and Fuel Cell Joint Undertaking, Mona Molvik from Sintef, and Lamberto Eldering from Statoil.

Participants agreed with the proposition that hydrogen needs to be produced at scale. The argument for SMRs with CCS to enable large volumes of clean hydrogen in the near-term was supported by Hydrogen Europe, who said that a steel company is investigating a hydrogen reduction furnace but they need to know that sufficient volumes of hydrogen will be available. Clean and Green hydrogen were not viewed as competing.

GS said that Hydrogen Europe had voiced the view that the current CCU fuels debate was distractive work that will lose industry credibility.

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Luke Warren noted that "clean" hydrogen is out of the scope of the Joint Undertaking currently, but that there will be a reassessment of this around FP9 and this is an opportunity given that the context for hydrogen has changed substantially since the JU was set up. He said the JU would be releasing a proposal for a project looking at heat.

Nils Rokke stressed the importance of the CertifHy project including clean hydrogen as it puts a value on this type of hydrogen.

The outcome of the workshop was a mandate for the stakeholders to present a proposal to Commission on next steps and ZEP had agreed to facilitate next steps.

Graeme Sweeney engagement

GS fed back on his meetings with Maltese MEP Miriam Dalli. While Malta has no direct interest in CCS Dalli was supportive of ZEP's positions and willing to take input around committee meetings, which is a positive outcome in strengthening relations with the S&D.

Jonas Helseth (JH) fed back on a meeting with North- Rhine Westphalia. Discussions centered on coal phase out and nuclear phase out at the national level and how this links to industrial policy in NRW. Also discussed were the PCIs and the impact of the Port of Rotterdam project for German decarbonisation. NRW were open to the idea but mentioned they had challenges with ongoing PCI activity. ZEP offered to undertake modelling at a regional level for NRW, which was received positively.

2. Network and Temporary Working Group updates (open session)

a. Network Technology

Filip Neele fed back on the October Network Technology meeting. The Network had proposed three new Temporary Working Groups on CCU, Liability in the CCS chain and CCS in a Below 2 degrees scenario, and draft Terms of Reference for each would be presented to AC53 for approval.

CCU

Rob Van der Meer had presented ZEP's CCU paper which had led to a debate around the "sink factors" in the report. There was a concern that this could be interpreted that CCU is not worth funding.

Gardiner Hill (GH) said that the Royal Society was focusing on permanence of carbon abatement in CCU so it would be good to include them in the work, along with Niall Mac Dowell of Imperial College. JH said that DG CLIMA had also requested a study on LCA of CCU products but that the timeline for this work was at odds with the legislative process.

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Liability in the CCS chain

On the liability work, FN said the TWG wanted to look at organisational models for CCS networks to address cross-chain risk; and long-term storage risk to come up with a ZEP recommendation of how to approach liability in CCS chain. FN said that the Elegancy and Align projects have storage liability as part of their remit, and OGCI are also looking at this. Angus Gillespie (AG) suggested that the individual companies ZEP wished to take part be approached.

The ACEC questioned whether storage risk is a top concern. FN said the work was not intended to present storage as risky but to address issues around unlimited liability in the CCS Directive which were difficult for storage operators. The work would aim to show that the risks involved are not large and could be insured, giving risk a numerical value.

GS said that the monitoring requirements under the CCS directive increase cost and there should be a way of underwriting risks once they are understood, which reduces cost of CCS delivery. GH said BP would favour a performance based system that makes a cost effective proposition.
Lamberto Eldering (LE) referred to previous work done by the CCSA and Climatewise, on insurance companies looking at the barriers for CCS, which could be a starting point for the work.

LW said the draft storage permit for ROAD could also contain interesting solutions to liabilities.
It was agreed the Terms of Reference should be formulated to reflect this discussions.

Mission Innovation & FP9

FN said the three ZEP representatives to Mission Innovation had shared their report with Vassilios Kougionas but had not yet received a response. The report looked to select topics more relevant to Europe. NR said there is an opportunity to push forward on implementation in the Clean Energy Ministerial and CSLF, noting that the link with the Breakthrough Energy commission is weak.

GS said that Patrick Childs had asked ZEP for missions under FP9. It was agreed FN would lead on developing a proposal. LW said the Secretariat would ask Vassilios to focus on this at AC53, including the concept of “lighthouse projects”.

It was agreed it would be useful to have a template for missions from RTD to inform ZEP work in this area.

b. <u>Network Policy and Economics</u>

Lamberto Eldering fed back on a call between the Network co-chairs in which progress was made on defining future priorities for the group. A short-term priority was responding to the request from Artur Runge-Metzger, DG CLIMA, for a proposal on how to find a CCS ”market maker” through the Innovation Fund. It was agreed that the disbanded TWG on transport and storage should be reconstituted to undertake the work. LE said that a draft proposal would be sent to AC53.

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Angus Gillespie said that due to the short time for the piece of work Owain Tucker would not be available to co-chair as before. It was agreed it would be good to have someone from Shell involved in the work, and the Port of Rotterdam.

The ACEC approved the ZEP summary of the Element Energy report to be shared with Commissioner Moedas.

c. ERG

LW said he would be attending a briefing my Ervia for MEPs in Brussels on 21 November hosted by Sean Kelley MEP.

GH fed back from the IEA Chief Executives meeting on CCS earlier in week. 10 CEOs attended and it was agreed the IEA should take strong leadership on CCS. GH pointed out that there are a lot of high level international organisations- IEA, CSLF, Mission innovation, GCCSI, Clean Energy Ministerial, taking responsibility for international coordination on CCS. It was suggested that the IEA could be the group to bring together industry and government.

GS said ZEP had received a request from Mechthild Wörsdörfer for input into the Clean Energy Ministerial meeting in 2018. It was agreed the Secretariat would keep eye on this action and set up a call with Silvia Bartolini when appropriate to discuss input into the CEM and the Commission's view on the various international processes.

It was agreed that GH would present on behalf of ZEP at the CSLF Clean Energy Ministerial instead of LE.

GS thanked CS for presenting at the EU Pavilion side event on CCS at COP 23.

GS fed back on Project Network meeting, saying that the output of the Network over the past two years had been minimal, but that DG ENER is set on renewing the Network and a call would be issued soon. Nikki Brain (NB) also attended and agreed to provide a summary note.

3. AC53 agenda

LW said that Stephen Kerr of Summit Power had confirmed to present, along with Ervia and BRGM. It was agreed that to increase the time available the presentation from INA would be postponed until the next AC.

LW said it was agreed on the last ACEC call that time should be dedicated to the 2018 programme for the Networks, so an extended timeslot had been given for this purpose.

4. 2018 meetings of AC and ACEC

The ACEC agreed the AC and ACEC meeting dates for 2018 with two amendments. The February ACEC call will take place on the 15th and the April call on the 12th.

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5. Finance update (closed session)

LW said there had been no change in ZEP-C finances since the last ACEC call. Income for 2016-17 came to €165000, with a forecast deficit of €27,313. ZEP-C is on track to have a budget surplus in 2018. LW said debt had reduced from €138,000 Euros in 2016 to c.€50,000.

GH brought up the issue of outstanding debt. LW said the major creditor is Ardnacraggan, and that as ZEP has started invoicing for membership it should enable these debts to be cleared in 2018.

6. 2018 ZEP Grant

LW said that ZEP had started a conversation with the Commission on the funding gap, with a formal letter sent to Vassilios Kougionas. It was agreed that Weber Shandwick (WS) would be contracted on a 3 month period but that this would need to be covered by ZEP-C, as H2020 funding does not cover third party contractors. WS have come up with a proposal for this 3 month period. It was agreed the proposal should go to the AC once ZEP has more visibility on H2020.

7. AOB

LW said the CCSA was commissioning a consultant to look at the future structure of the organisation. At the ACEC Away Day there was discussion about similar work being taken forward for ZEP.

LW said ZEP and the CCSA had not yet received a response to the letter to the Norwegian Government, but that it had been well received by stakeholders.

8. Actions

Action		Owner
2.a.	Network Technology to review draft ToR for the TWG liabilities in the CCS chain to reflect ACEC feedback	FN/Sec
2.a.ii	Develop a proposal for “missions” on CCS for FP9	FN
2.c.	Secretariat to set up a call with Silvia Bartolini on CEM when appropriate	Sec
2.c.i.	Summary note on the Project Network	NB
6	Weber Shandwick proposal to be shared with the AC	Sec

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ZEP Advisory Council 53

6th December 2017

Agenda Item 1.e: Chair's update

External meetings

The ZEP Chair has participated in a number of meetings with external stakeholders and processes since the last AC52 meeting:

12 September

- **Silvia Bakardzhieva**, Environment Attaché, Permanent Representation of Bulgaria to the EU
- **Katrien Prins**, Senior Policy Officer at Dir. B1 – Networks and Regional Initiatives, and **Michael Schuetz**, Senior Policy Officer at Dir. C2 – New energy technologies, innovation and clean coal, DG ENER, European Commission
- **Miguel Angel Capilla Esquitino**, Policy Assistant to MEP Carolina Punset (ALDE, ES), Shadow Rapporteur on Energy Union Governance

A summary of these meetings can be found as pre-read 1.e.I.

18 October

- **Mechthild Wörsdörfer**, Director of Directorate C - Renewables, Research and Innovation, Energy Efficiency, and policy officer **Vladimir Zuberec**, DG ENER, European Commission
- **Patrick Child**, Deputy-Director General, and **Vassilios Kougionas**, Policy Officer CCS Technologies, DG RTD, European Commission
- **Artur Runge-Metzger**, Director at Directorate C - Climate Strategy, Governance and Emissions from non-trading sectors, and **Maria Velkova**, Policy Officer Finance for Low Carbon Innovation, DG CLIMA, European Commission
- **Hugo Geerts**, Head of Cabinet of Minister Joke Schauvliege, Flemish Environment, Nature and Agriculture Minister, and **Stijn Caekelbergh**, Policy Officer Climate Change, Flemish Department for Living Environment, Nature and Energy

A summary of these meetings can be found as pre-read 1.e.II.

8 November

- **Matea Juretić**, Policy Assistant to MEP Miriam Dalli (S&D, MT)

- **Dr Ralf Kuder**, Head of Department for Energy and Telecommunications, and **Dr Christian Engel**, Head of Department for Climate, renewable energy, environmental economics, sustainable development and consumer protection

A summary of these meetings can be found as pre-read 1.e.III.

Letter to Norwegian Parliament

As part of the ongoing Norwegian Government debate on the Norwegian budget, a proposal was submitted to cut the budget for the proposed Norwegian industrial CCS project. Were this proposal to be approved, it would seem extremely unlikely that this project will proceed. This could have extremely negative knock-on effects on broader European CCS developments.

It was therefore decided that a joint letter from Graeme Sweeney, Chairman of ZEP and Luke Warren, Chief Executive of CCSA, should be sent to the Norwegian Standing Committee on Energy and the Environment. This letter was sent on the 30th October and sets out the critical importance of the Norwegian CCS project to international efforts to deploy CCS as part of the global response to climate change.

A copy of this letter can be found as pre-read 1.e.IV.

SET-Plan TWG9 CCS and CCU update

Following feedback from the European Commission a final version of the Implementation Plan was presented to, and adopted by SET-Plan countries at the SET-Plan Steering Committee meeting on 27th September in Brussels, attended by TWG9 co-chairs William Christensen (Norway) and Joelle Rekkers (Netherlands).

The adopted Implementation Plan included changes made to Research and Innovation Activity 1 (addressing Target 1 of the Declaration of Intent: at least one commercial-scale, whole chain CCS project operating in the power sector) in order to reflect the ROAD announcement made in June. The title of the R&I Activity was changed from '*Delivery of the ROAD project*' to '*Delivery of a whole chain CCS project in the power sector*', with the recommendation that the application of CCS in the power sector be supported through the development of additional projects, including the Magnum hydrogen project, in order to achieve the 2030 targets set out in the Declaration of Intent. The Implementation Plan has now been published on the SETIS website.

The next meeting of the TWG9, as a new 'Standing Working Group' will take place on Tuesday 30th January 2018 at the Ministry of Economic Affairs in The Hague. The Commission has indicated that a call for funding to support the Standing Working Group is expected to open on the 3rd May 2018, close on the 11th September 2018, with the new contract starting around the end of 2018.

ZEP Engagement Programme 12 September - Recap Note CONFIDENTIAL

Introduction and key outcomes

A series of meetings with key interlocutors was organised for Dr Sweeney on 12 September.

Meetings were held with the following EU officials:

1. **Silvia Bakardzhieva, Environment Attaché, Permanent Representation of Bulgaria to the EU**
2. **Katrien Prins, Senior Policy Officer at Dir. B1 – Networks and Regional Initiatives, and Michael Schuetz, Senior Policy Officer at Dir. C2 – New energy technologies, innovation and clean coal, DG ENER, European Commission**
3. **Miguel Angel Capilla Esquitino, Policy Assistant to MEP Carolina Punset (ALDE, ES), Shadow Rapporteur on Energy Union Governance**

Key outcomes of the meetings include:

- Silvia Bakardzhieva noted that one of the country's priorities is to ensure coherence of EU financial support tools. SB indicated that Bulgaria sees potential in CCS, but does not have the funds. She expressed interest in using the cohesion funds.
- Silvia Bakardzhieva agreed with the need to see CO_2 transport infrastructure as a European public good and the importance of having a non-Western European project. She stressed that there is interest in the capital and proposed a meeting in Sofia with the Ministry of Energy.
- Michael Schuetz highlighted that Vice-President Maros Sefcovic is the penholder on the SET Plan and that he will likely attend the SET Plan conference in Bratislava. Considering that action 6 and 9 are far advanced, he may embrace the results under these work streams first.
- Katrien Prins outlined the next steps for the PCI selection process. She indicated that as soon as Member States have shared their views, the thematic list will be considered by a higher decision-making body at a meeting on 17 October. She further indicated that once a project proposal is included on the PCI list, the next step is to conduct a feasibility study.
- Miguel Esquitino supported the suggestion that Member States should assess the need for CCS as part of their long-term planning under the national energy and climate plans.

Key follow up actions stemming from the meetings include:

- ZEP consider the possibility of a presentation at the Ministry of Energy in Sofia, Bulgaria. Potentially in combination with a similar visit to Bucharest, Romania.
- ZEP/ WS to draft/ share ZEP's views on characteristics of 'public infrastructure' with Katrien Prins.

Please find below a detailed overview of the meetings.

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Detailed overview of the meetings

1. Meeting with Silvia Bakardzhieva, Environment Attaché, Permanent Representation of Bulgaria to the EU

Participants:

Member State: Silvia Bakardzhieva (SB)

ZEP: Graeme Sweeney (GS) & Nikki Brain (NB)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This meeting was intended to introduce ZEP to the Permanent Representation of Bulgaria and assess how to engage the government. It was also meant to engage the country as it prepares to assume the Presidency of the Council as of 1 January 2018.
- SB expressed her hope that the Innovation Fund will work better than the NER300 and any carryover of associated problems is prevented. She highlighted that the low carbon technologies to be funded are not cheap, as they are not yet available on the market in most cases.
- GS outlined ZEP's work on smart funding, outlining in particular the opportunities for low-income Member States through the regional funds.
- SB noted that one of the country's priorities is to ensure coherence of EU financial support tools, adding that this will have to be assessed more closely. SB indicated that Bulgaria sees potential in CCS, but does not have the funds. She expressed interest in using the cohesion funds.
- On Energy Union governance, SB indicated that 2050 is the maximum time horizon politically feasible. Furthermore, she emphasised her discontent with the current legislative process, as Member States are now preparing their national energy and climate plans without the legal basis being in place. She noted that many Member States are behind with their plans.
- SB agreed with the need to see CO_2 transport infrastructure as a European public good and the importance of having a non-Western European project. She expressed interest in CCU, noting that Bulgaria already has experience using CO_2 in greenhouses.
- SB stressed that there is interest in the capital and proposed a possible meeting in Sofia with the Ministry of Energy, as the issue falls under its competence. She considered the timing appropriate, also in light of the fact that Bulgaria is still drafting its national plan. It was proposed to conduct an energy system modelling exercise.

Next steps:

- WS to send thank you note (done)
- WS to share ZEP Innovation Fund paper, smart funding paper, and ME5 report (done).
- ZEP to consider a presentation at the Ministry of Energy in Sofia, Bulgaria. Potentially in combination with a similar visit to Bucharest, Romania.

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2. Meeting with Katrien Prins, Senior Policy Officer at Dir. B1 – Networks and Regional Initiatives, and Michael Schuetz, Senior Policy Officer at Dir. C2 – New energy technologies, innovation and clean coal, DG ENER, European Commission

Participants:

Commission: Katrien Prins (KP) and Michael Schuetz (MS)

ZEP: Graeme Sweeney (GS) & Nikki Brain (NB)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This meeting was intended to feed into the selection process for the proposed CO_2 transport infrastructure projects.
- KP emphasised that she is only dealing with the CO_2 transport infrastructure section of the CCS value chain.
- MS lamented the lack of support for CCS from Member States with a large share of coal in their energy mix.
- MS highlighted that Vice-President Maros Sefcovic is the penholder on the SET Plan and that he will likely be attending the SET Plan conference in Bratislava. Considering that action 6 and 9 are far advanced, he may embrace the results under these work streams first.
- GS suggested to have practitioners (industrial decarbonisers) present the Implementation Plan to maximise the impact. MS appreciated the suggestion and would discuss it with his colleagues.
- Looking at the four PCI proposals, MS noted that Norway needs to know that it has demand security, adding that other Member States have to show that they are on board.
- KS outlined the next steps for the PCI selection process. She indicated that as soon as Member States have shared their views, the thematic list will be considered by a higher decision-making body at a meeting on 17 October. She further indicated that once a project proposal is included on the PCI list, the next step is to conduct a feasibility study.

Next steps:

- WS to send thank you note (done).
- ZEP/WS to prepare and share ZEP's views on the characteristics of 'public infrastructure'.

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3. Meeting with Miguel Angel Capilla Esquitino, Policy Assistant to MEP Carolina Punset (ALDE, ES), Shadow Rapporteur on Energy Union Governance

Participants:

Parliament: Miguel Angel Capilla Esquitino (ME)

ZEP: Graeme Sweeney (GS) & Nikki Brain (NB)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This was intended as an introductory meeting, enabling ZEP to engage with the office of a key legislator on the Energy Union governance.
- MC indicated that he expected the Parliament to wrap up discussions on the Energy Union governance proposal by the end of October.
- MC inquired of ZEP why CCS projects were not realised under previous EU support instruments. He noted that there are opportunities under the latest Clean Energy Package to help boost CCS, but questioned if the technology can deliver. He referred to a recent critical article in EnergyPost.
- MC asked where the CO_2 storage would take place, if the Norwegian facilities are ready, and how the transport of CO2 by ship would work in practice.
- Referring to the PCI proposals, MC stressed that there should also be a cost-benefit analysis and wondered whether that depends on the ETS price.
- MC was somewhat surprised to hear that ZEP is not against renewables and that CCS is considered as a complementary technology. He agreed that it will be difficult for the European steel sector to compete in an increasingly carbon-constrained European economy.
- MC supported the suggestion that Member States should assess the need for CCS as part of their long-term planning under the national energy and climate plans.
- On hydrogen, MC agreed that the scale of CO_2 reduction is limited when using excess electricity to produce hydrogen and in turn use this to generate methane for use.

Next steps:

- WS to send a thank you note (done).
- WS to share list of ZEP members (done).
- WS to share ME5 report (done).

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ZEP Engagement Programme 18 October - Recap Note CONFIDENTIAL

Introduction and key outcomes

A series of meetings with key interlocutors was organised for Dr Sweeney on 18 October.

Meetings were held with the following EU officials:

1. **Mechthild Wörsdörfer, Director of Directorate C - Renewables, Research and Innovation, Energy Efficiency, and policy officer Vladimir Zuberec, DG ENER, European Commission**
2. **Patrick Child, Deputy-Director General, and Vassilios Kougionas, Policy Officer CCS Technologies, DG RTD, European Commission**
3. **Artur Runge-Metzger, Director at Directorate C - Climate Strategy, Governance and Emissions from non-trading sectors, and Maria Velkova, Policy Officer Finance for Low Carbon Innovation, DG CLIMA, European Commission**
4. **Hugo Geerts, Head of Cabinet of Minister Joke Schauvliege, Flemish Environment, Nature and Agriculture Minister, and Stijn Caekelbergh, Policy Officer Climate Change, Flemish Department for Living Environment, Nature and Energy**

Key outcomes of the meetings include:

- Mechthild Wörsdörfer agreed that the CO2 infrastructure should be regarded as a public good. She suggested that ZEP ensures a bigger chunk of funding from the Innovation Fund and FP9.
- Mechthild Wörsdörfer highlighted a side event on CCUS at the IEA ministerial in Paris on 7-8 November. She also noted that the Commission will be organising the next Clean Energy Ministerial with the Nordic countries on 22-23 May 2018. She called for ZEP's involvement.
- Patrick Child noted that FP9 is still at a conceptual level. DG RTD is due to deliver its proposals by next June, after which the other DGs will provide their input. He stressed that he wants to speak more in terms of 'Missions' for the upcoming programme and called for ZEP to share its ideas.
- Artur Runge-Metzger agreed to the need for a new narrative around the benefits of CCS which more clearly takes into account the political economy. He would welcome ZEP's input on DG CLIMA's modelling of the 2050 low-carbon roadmap.
- Artur Runge-Metzger welcomed the notion of a 'Market Maker' as public entity to operate storage spaces. He agreed that transport and storage infrastructure should be considered a public good. Mr Runge-Metzger expressed interest in using the Innovation Fund to set up a dedicated fund for this Market Maker. He asked ZEP for a project proposal including an outline of the financing needs.
- Artur Runge-Metzger fully agreed on the importance of ensuring appropriate climate calculations for CCU technologies and that double counting should be prevented. He noted the need to explore the various CCU technologies and the current levels of research funding available to them.

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- Stijn Caekelbergh indicated that Flanders is now discussing its new energy and climate plan for input into the national energy and climate plan. They are working on the 2050 strategy, while the 2030 strategy will follow later. He stressed that they are open to input from industry.

Key follow up actions stemming from the meetings include:

- ZEP to engage Ms Wörsdörfer on CEM meeting in 2018 which the Commission will co-organise.
- ZEP to send Element Energy report on Mission Innovation to Ms Wörsdörfer.
- ZEP to share input with Mr Child on next steps following the Mission Innovation workshop.
- ZEP to formulate and share ideas with Mr Child for possible 'Missions' under FP9.
- ZEP to consider inviting Hydrogen Europe for the Clean Hydrogen workshop.
- ZEP to prepare project proposal for Market Maker to be financed under Innovation Fund and share with Mr Runge-Metzger.
- ZEP to extend invitation for Flanders to join ZEP government group and TWG9.

Please find below a detailed overview of the meetings.

Detailed overview of the meetings

1. Mechthild Wörsdörfer, Director of Directorate C - Renewables, Research and Innovation, Energy Efficiency, and policy officer Vladimir Zuberec, DG ENER, European Commission

Participants:

Commission: Mechthild Wörsdörfer (MD) and Vladimir Zuberec (VZ)

ZEP: Graeme Sweeney (GS), Jonas Helseth (JH)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This was primarily a catch-up meeting since MW assumed her new position.
- MW was planning to meet with the Port of Rotterdam and Dominique Ristori, Director-General at DG ENER, in the following week.
- MW was aware of the Dutch and UK announcements, as well as the four adopted PCI proposals. She was however unaware of the current situation in Norway.
- She expressed her satisfaction with the adoption of the SET Plan Action 9 Implementation Plan and in particular the fact that it is Member State driven. She acknowledged the need for a good secretariat to continue the TWG9.
- On 2050 modelling, she highlighted that the Commission combines hard modelling with an assessment of the political economic effects. DG CLIMA is now preparing to start the modelling, which is led by Director Artur Runge-Metzger. DG ENER Unit A4 - Economic analysis and Financial instruments - is closely involved.

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- MW agreed that the model struggles with 80% emissions reduction and higher, with 80% already pushing it. There is a limit to renewables due to infrastructure costs and geographical space constraints.
- She agreed that the CO2 infrastructure should be regarded as a public good and suggested that ZEP increases its engagement to ensure a bigger chunk of funding from the Innovation Fund and FP9. She recommended ZEP to speak to Artur Runge-Metzger.
- MW highlighted a side event on CCUS at the IEA ministerial meeting in Paris on 7-8 November. She also noted that the Commission will be organising the next Clean Energy Ministerial with the Nordic countries on 22-23 May 2018. She called on ZEP to be involved.

Next steps:

- WS to send thank you note.
- WS to send ME5 and Climate Solutions reports.
- ZEP to engage Ms Wörsdörfer on CEM meeting in 2018 which the Commission will co-organise.
- ZEP to send Element Energy report on Mission Innovation.

2. Patrick Child, Deputy-Director General, and Vassilios Kougionas, Policy Officer CCS Technologies, DG RTD, European Commission

Participants:

Commission: Patrick Child (PC) and Vassilios Kougionas (VK)

ZEP: Graeme Sweeney (GS), Jonas Helseth (JH)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This meeting was intended to introduce ZEP and feed into the follow-up to the Mission Innovation Workshop and engage on the Horizon 2020 draft programme.
- VK considered that the EU's opinion was taken into account at the Mission Innovation workshop in Houston. PC asked about the next steps, noting that ZEP's input would be appreciated.
- PC stated that there was a lot of emphasis on CCU at the workshop, adding that at another session in Beijing, attendees were actually talking a lot about CCS. He acknowledged that the EU conversation should also ensure sufficient focus on storage.
- PC welcomed the adoption of the PCI proposals. He noted that he chaired a ministerial meeting on the future of the TWGs under the SET Plan, adding that this is part of a bigger discussion on the future of the SET Plan itself. He noted that Member States are keen for ongoing governance.
- He noted that the thinking around the FP9 is still at a conceptual level, far from having formulated concrete programmes, adding that clean energy is naturally high on the agenda. DG RTD is due to deliver its proposals by next June, after which the other DGs will provide their input. He pointed in this context at the recent report by Pascal Lamy, stressing that he wants to speak more in terms of 'Missions' for the upcoming programme. He called for ZEP to share its ideas.

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- On the 2018-2020 period for Horizon 2020, PC noted that there is some space for hydrogen projects, adding that it is given limited attention under Mission Innovation.
- VK welcomed the ZEP clean hydrogen workshop, stressing the importance of connecting CCS and hydrogen more clearly. He suggested that ZEP invites Hydrogen Europe.

Next steps:

- WS to send thank you note (done).
- WS to send ZEP Climate Solutions report (done)
- ZEP to share input on next steps following the Mission Innovation workshop.
- ZEP to formulate and share ideas for 'Missions' under FP9.
- ZEP to consider inviting Hydrogen Europe for the Clean Hydrogen workshop.

3. Meeting with Artur Runge-Metzger, Director at Directorate C - Climate Strategy, Governance and Emissions from non-trading sectors, and Maria Velkova, Policy Officer, DG CLIMA, European Commission

Participants:

Commission: Artur Runge-Metzger (ARG), Maria Velkova (MV)

ZEP: Graeme Sweeney (GS), Jonas Helseth (JH)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This meeting was primarily intended as a catch-up meeting and a means to engage with DG CLIMA on the various funding related issues.
- Speaking about recent developments, ARG wondered how serious the Netherlands is when it comes to the recently announced CCS plans. He agreed that the adoption of the four PCI proposals is vital, adding that it is time for something concrete to happen around CCS.
- GS noted the need for a new narrative around the benefits of CCS which more clearly takes into account the political economy. ARG agreed and welcomed ZEP's input on DG CLIMA's ongoing modelling of the 2050 roadmap.
- ARG stressed the importance of maintaining European industry, stressing that the employment story has to be told more clearly. He agreed that the Port of Rotterdam narrative works.
- He wondered what the impact of the new members will be, in particular in the case of Total and the French position on CCS.
- ARG welcomed the notion of a 'Market Maker' as public entity to operate storage spaces. He acknowledged that the infrastructure should be considered a public good. ARG also expressed interest in the suggestion to use the Innovation Fund to set up a dedicated fund for this Market Maker. He noted that work on the Innovation Fund will start once the ETS trilogue negotiations are finalised, which would probably mean January 2018. ARG asked ZEP for a project proposal including an outline of the financing needs.

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- He fully agreed on the importance of ensuring appropriate climate calculations for CCU technologies, adding that double counting should be prevented. He noted the need to explore the various CCU technologies. He would assess the current levels of research funding available to CCU and whether this is disproportionate.
- ARG welcomed the Mission Innovation work, but highlighted the uncertainty around the amount of money needed, for which concrete purposes, and where it would come from.

Next steps:

- WS to send a thank you note (done).
- WS to share ME5 report, Market Maker, Climate solutions (done).
- ZEP to prepare project proposal for Market Maker to be financed under Innovation Fund.

4. Meeting with Hugo Geerts, Head of Cabinet of Minister Joke Schauvliege, Flemish Environment, Nature and Agriculture Minister, and Stijn Caekelbergh, Policy Officer Climate Change, Flemish Department for Living Environment, Nature and Energy

Participants:

Member State: Hugo Geerts (HG), Stijn Caekelbergh (SC)

ZEP: Graeme Sweeney (GS), Jonas Helseth (JH)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This meeting was intended to follow up to prior meetings with the Flemish in order to generate interest at regional level and feed into the Belgian Federal national energy and climate plan. Originally, the intention was to meet with Filip Smet, the new climate advisor in the cabinet, who excused himself at the last minute.
- SC noted that Belgium and Flanders in particular have been supportive of CCU being funded under the Innovation Fund. He stressed that Flanders is taking CCU seriously, adding that decisions on the steps forward are to be taken shortly.
- SC indicated that Flanders is currently discussing its new energy and climate plan for input into the Belgian national energy and climate plan. They are currently working on the 2050 strategy, while the 2030 strategy will follow later. He stressed that they are open to input from industry.
- HG wondered whether ZEP has been in touch with the Port of Antwerp. SC added that the Port has been mapping the emission points where CCU could be a benefit.

Next steps:

- WS to send a thank you note (done).
- WS to send ME5, Market Maker, Climate Solutions (done).
- ZEP to extend invitation to join ZEP government group and TWG9.

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ZEP Engagement Programme 8 November - Recap Note CONFIDENTIAL

Introduction and key outcomes

A series of meetings with key interlocutors was organised for Dr Sweeney on 8 November.

Meetings were held with the following EU officials:

1. **Matea Juretić, Policy Assistant to MEP Miriam Dalli (S&D, MT)**
2. **Dr Ralf Kuder, Head of Department for Energy and Telecommunications, and Dr Christian Engel, Head of Department for Climate, renewable energy, environmental economics, sustainable development and consumer protection**

Key outcomes of the meetings include:

- Matea Juretić stressed that Ms Dalli is pro-CCS, but that there are no opportunities in Malta. She thought that a CCS focused meeting with interested S&D MEPs could however be worthwhile.
- Dr Ralf Kuder noted that the main issue is process emissions, although power related emissions are also relevant. The discussion should focus on CCS for industry but not exclude power.
- Graeme suggested that ZEP could do a NRW specific modelling of the energy system. Dr Kuder welcomed the idea, noting that this should go hand in hand with securing the political economy.
- Dr Kuder noted that there is currently an open window. He agreed to ZEP setting up a meeting of NRW industrial companies and the Port of Rotterdam to discuss the potential of CCS for NRW.

Key follow up actions stemming from the meetings include:

- ZEP to consider setting up an S&D only CCS meeting coordinated by MEP Dalli.
- ZEP to retrieve Port of Rotterdam PCI proposal and WS to share with NRW.
- ZEP to prepare cost-assumption CCS cluster for WS to share with NRW.
- ZEP to consider setting up NRW industry and Port of Rotterdam meeting.

Please find below a detailed overview of the meetings.

Detailed overview of the meetings

1. **Matea Juretić, Policy Assistant to MEP Miriam Dalli (S&D, MT)**

Participants:

Parliament: Matea Juretić (MJ)

ZEP: Graeme Sweeney (GS)

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Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This was intended to be a catch-up meeting with Ms Dalli, since she assumed her new position as ENVI Committee Coordinator. Ms Dalli was unavailable due to last minute changes.
- MJ lamented that there is no political economy for onshore storage in Europe and asked about the experiences in Australia and Canada.
- Speaking about clean hydrogen, MJ informed about the hazards involved in the hydrogen production process. She agreed that a clear regulatory framework is needed.
- Turning to Energy Union governance, she noted that there are differences over the 2050 target to include. She also stressed the need for Commission surveillance of the national plans.
- MJ stressed that Ms Dalli is pro-CCS, but that there are no opportunities in Malta. She thought that a CCS focused meeting with interested S&D MEPs could be worthwhile.

Next steps:

- WS to send thank you note.
- WS to send overview of four PCI proposals, Clean Hydrogen report, information on Quest.
- ZEP to consider setting up an S&D only CCS focused meeting coordinated by MEP Dalli.

2. Dr Ralf Kuder, Head of Department for Energy and Telecommunications, and Dr Christian Engel, Head of Department for Climate, renewable energy, environmental economics, sustainable development and consumer protection

Participants:

Member State: Ralf Kuder (RK), Christian Engel (CE)

ZEP: Graeme Sweeney (GS), Jonas Helseth (JH), Justus Andreas (JA)

Weber Shandwick: Christiaan Gevers Deynoot (CGD)

Recap of the meeting:

- This meeting was intended to introduce ZEP and prime the regional government for increased CCS engagement in the period ahead as the new federal government is formed.
- RK and CE outlined that CCS falls under the Ministry of Economic Affairs, as it maintains all competences regarding energy and climate. RK also represents the German regions at Council WP level. He stressed the uncertainty around federal government policy now due to the coalition talks.
- RK noted that the main issue for NRW is process emissions, although power related emissions are also relevant. RK stressed that NRW is responsible for approximately 30% of Germany's overall GHG emissions, adding that the discussion on CCS should focus on industry but not exclude power.
- He highlighted that with the nuclear and lignite phase out, NRW is considering how it can pursue deep decarbonisation. RK stated that they work closely with Thyssenkrup, adding that one of the major questions around electrification is where the energy will come from.

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- RK asked to what extent CCS is primarily a centralised story, to which GS replied that the hubs and clusters approach suggests otherwise. CGD highlighted that the Port of Rotterdam may serve as an example for creating sustainable economic zones as it proceeds with building a backbone CO2 infrastructure. GS suggested a potential NRW PCI proposal in the future.
- RK considered that there are different layers involved in the CCS discussion: innovation funding; political economy; and framework conditions. He stressed that there are many uncertainties, including around the tech price, political support, and prior negative experiences with PCIs.
- RK asked about CCS for power and inquired after the right political framework to enable the development of a CCS industry. He asked at what price the EU ETS would deliver CCS.
- GS suggested that ZEP could perform a NRW specific modelling of the energy system. RK welcomed the idea, but noted that the real point is whether CCS can make it as a real-life rather than modelled solution.
- RK noted that there is currently an open window. He agreed to ZEP setting up a meeting of NRW industrial companies and the Port of Rotterdam to discuss the potential of CCS for the region.

Next steps:

- WS to share Port of Rotterdam PCI proposal
- WS to share ME5 report, Climate Solutions.
- ZEP to prepare cost-assumption CCS cluster for WS to share.
- ZEP to set up NRW industry meeting.

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ZEP AC53 06.12.2017
Agenda Item 1.e.IV
Joint ZEP/CCSA letter to Norwegian Parliament on importance of Norway CCS project

Date: 30 October 2017

Importance of the Norway CCS project

Dear Member of the Standing Committee on Energy and the Environment,

We are writing to you in response to the proposed budget reduction to the Norwegian Carbon Dioxide Capture and Storage (CCS) project. The proposed budget cut risks creating uncertainty for the industrial partners and discouraging other international initiatives which look to the Norwegian project as a model for a scalable future CCS market.

Our organisations work with stakeholders to support the development of CCS as one of the core components of the European and international response to climate change. The comments we make below therefore relate to the importance of the Norwegian CCS project to wider efforts on CCS.

The loss of the Norwegian project would negatively impact global efforts to deliver CCS and hence the ability to achieve international climate goals. The perception that the Norwegian state was less committed to CCS would raise questions on whether CCS is a safe and cost-effective climate measure and could impact on CCS efforts in other countries. We note that the UK Government's new CCS policy highlights Norway as a priority partner for international collaboration. Evidence from the Intergovernmental Panel on Climate Change (IPCC) is clear that delivering the Paris climate agreement requires the widespread deployment of CCS and so it is important that we broaden the coalition of countries pursuing this critical technology.

The Norwegian project is of international significance and has a number of innovative elements that will help to support wider development of CCS. In particular we highlight the global importance of fitting CCS to multiple industrial emitters including the first-of-a-kind applications of CCS to cement and energy from waste which are globally important sources of CO_2 emissions. The development of shipping options to transport CO_2 instead of pipelines is also a world first and opens the option of deploying CCS to a wider range of countries.

The Norwegian project will generate critical insights on the regulatory regime and investment mechanisms for CCS. These are important lessons that can inform and support CCS development in other regions. In particular the development of CCS for groups of industrial emitters is of international significance. We also highlight the four projects that

have applied for EU funding to investigate how they can transport their CO_2 across borders creating an international value chain – with Norway at the centre – that drives international CCS partnerships.

The international leadership, innovation and knowledge development generated by the Norwegian CCS programme – and highlighted above - will act as important drivers for the development of an international CCS market. The creation of early CCS markets will support development of a CCS industry, stimulate CCS equipment suppliers and – as we have witnessed with renewable energy technologies – deliver significant cost reductions which can only help to increase ambition on climate action.

We hope that you find our reflections on the international significance of the Norwegian CCS programme useful as you consider further the budget proposals. We would be very pleased to discuss this issue further if that would be helpful.

Yours sincerely,

Graeme Sweeney
Chairman ETIP-ZEP
http://www.zeroemissionsplatform.eu/

Luke Warren
Chief Executive CCSA
http://www.ccsassociation.org/