

ZEP Advisory Council 61

5th December 2019

Agenda Item 1: Introduction and welcome

1.a. AC61 Agenda

Appended to this paper is the agenda for the 61st meeting of the Advisory Council.

1.b. AC59 Draft Minutes

Appended to this paper are the draft minutes for the 60th meeting of the Advisory Council, which took place on 25th September.

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 July meeting of the ACEC.

1.d. ACEC November Draft Meeting Minutes

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

ZEP 61st Advisory Council meeting

5th December 2019

DRAFT AGENDA 10:30-17:00*

The Office, Rue d'Arlon 80, 1040 Bruxelles

Item		Lead Presenter	Time
1	Introduction and welcome	Graeme Sweeney	10:30 – 10:50
2	Secretariat Update	Luke Warren	10:50 – 11:00
3	Commission updates: <ul style="list-style-type: none"> DG CLIMA DG RTD DG ENER 	Maria Velkova Vassilios Kougionas Peter Horvath	11:00 – 11:45
4	Overview of EU policy development ZEP and the European Green Deal: updated ZEP objectives and messages	Per-Olof Granström	11:45 – 12:30
5	SET-plan	Luke Warren	12:30 – 12:45
	<i>Lunch</i>		12:45 – 13:30
6	CCS and CCU in the EU Industrial Strategy	Peter Handley, DG GROW	13:30 – 14:00
7	SPIRE Industrial Roadmap	Pierre Herben	14:00 – 14:30
8	The EcoBase project	Roman Berenblyum	14:30 – 15:00
9	Overview of the National Energy and Climate plans	IOGP	15:00 – 15:30
10	CCUS Projects Network/update	Liliana Guevara Opinska	15:30 – 15:50
11	Review of Network Work Programmes Network Policy and Economics update: <ul style="list-style-type: none"> TWG Policy and Funding TWG EU Taxonomy for Sustainable Finance Network Technology update: <ul style="list-style-type: none"> TWG Collaboration across the CCS chain TWG CCU and Sink Factor Methodology TWG CCUS Pipeline Networks 	Lamberto Eldering, Kim Bye Bruun, Jonas Helseth Graeme Sweeney Filip Neele, Arthur Heberle Short presentation by Rob van der Meer	15:50 – 16:30
12	External Relations Group update	Jonas Helseth, Helen Bray	16:30 – 16:50
13	AOB and closing remarks	Graeme Sweeney	16:50 – 17:00

European Zero Emission Technology and Innovation Platform

ZEP Secretariat,
Carbon Capture and Storage Association Offices
Rue de la Science 14b, 1040 Brussels, Belgium
www.zeroemissionsplatform.eu

ZEP Advisory Council 60 – 05th June 2019

Draft Minutes

Attendance

Advisory Council members

Constantin Sava	National Institute of Marine Geology and Geoecology, Romania
Didier Bonijoly	BRGM
Filip Neele	TNO
Florence Delprat-Jannaud	IFP Energies Nouvelles
Graeme Sweeney	ZEP Chairman
Helen Bray (alternate)	Shell
Jonas Helseth (alternate)	Bellona
Lamberto Eldering	Equinor
Rob van der Meer	HeidelbergCement
Stuart Haszeldine	Scottish Carbon Capture and Storage Association

Observers and other attendees

Anastasios Perimenis	CO2 Value Europe
Angus Gillespie	GCCSI
Antonia Mattos	Element Energy
Annya Schneider	GCCSI
Arthur Herberle	Hitachi Power
Brian Murphy	ERVIA
Caterina de Matteis	IOGP
Ceri Vincent	BGS
Eric de Coninck	ArcelorMittal
Irma Pacevičiūtė	Equinor
Johanna Lehne	E3G
Jørild Svaestuen	Gassnova
Keith Whiriskey	Bellona
Kim ByeBruun	Shell
Martijn Van de Sande	Netherlands Enterprise Agency
Pietro Gimmondo	RINA
Sidonie Ruban	Air Liquide
Ståle Aakenes	Gassnova
Stanislas Van Den Berg	Total
Stijn Santen	CO2 Net
Valentin Moens	

ZEP Secretariat

Luke Warren	ZEP Secretariat
Charlie Garner	ZEP Secretariat
Per-Olof Granström	ZEP Secretariat

Speakers

Patrick Dixon	CCUS Advisory Committee
Sofie Vold Fogstad	Ministry of Petroleum and Energy, Government of Norway

Commission

Maria Velkova
Peter Horvath
Vassilios Kougionas
Peter Handley

DG CLIMA
DG ENER
DG RTD
DG GROW

Item 1: Introduction

GS welcomed AC members and observers. The agenda for the meeting was adopted and the minutes from AC59 were approved. **GS** added that Stuart Haszeldine will give an update on project networks and that we will make sure there is a section for him to do that on a regular basis.

AC59 adopted and responded to a wide range of consultations. The ACEC has taken the liberty to approve the minutes. There were no matters arising from the July and August ACEC minutes.

Chair's update

AG asked about the proposed ZEP conference. **GS** noted that it will be included in the ERG feedback at the end of the meeting.

Sustainable Taxonomy

GS: The largest amount of work has been on the sustainable taxonomy but extremely worthwhile. It was probably overly ambitious in terms of the scope, which has left some constituencies disappointed. Given our remit, CCU constituents were disappointed that they weren't included in the Taxonomy. The reason is that our broader members could not agree on the methodology to be used to determine whether they would qualify.

On the taxonomy, we have put forward a piece that says we should appoint external advisors to allow those that were not yet assessed to have the possibility to put forward proposals to be assessed against the targets and to be put forward to the taxonomy in the future. In addition, there should be an option to reapply after a period. **GS** noted we should have a key interest in this.

The consultation is now closed and there are a lot of responses on the matter of nuclear. In particular, the gas package is on its way and there was a lot of response on gas. The decision has been taken to reconvene the TG2 experts to get CCS described as an economic activity and allowed to be applied to the taxonomy.

We have proposed that the third criterion be removed; all hydrogen manufacturing devices need to be applied to taxonomy. Note for **GS** working group there will be some fairly heavy lifting on this.

SET Plan Actions:

LW: Requested Regular periodic update on reporting and Targets to take frequent views on CCS and CCU targets and to understand initiatives at various levels and identify synergies and gaps.

SH: Discussed the CCUS projects network noting:

- Network now has 9 member organisations (<http://www.ccusnetwork.eu/network-members>), representing 13 (more or less) distinct projects; a further 5-7 projects have noted interest and are expected to join.
- Most major CCS projects in Europe and most CO2 Transport PCIs are members, or in process of joining.
- Other, smaller and less well-known projects showing interest and asking about membership.
- Network represented at major CCS events and conferences since formation, including Oslo high-level conference in early September.
- Collaboration with IMPACTS 9 project agreed and progressing, CCUS Network involved with Oslo workshop.
- Initial interim Management Report prepared and accepted by EC in July, good support and interaction with Network from EC officials.
- First face-to-face knowledge sharing meeting held in Brussels in May, second scheduled for October in Schiphol, interim members' teleconference held in August.
- Participants in Working Groups and subjects for Thematic Reports taking shape and will be firmed up in October.
- Second open Webinar being planned for later in year.
- Website has active news feed and social media receiving good level of interest (<http://www.ccusnetwork.eu/news-and-events>).

Item 2: Secretariat update

Actions from AC59

LW highlighted the actions from the last AC meeting:

- ZEP to share NECPs analysis with DG ENER and DG CLIMA
- Sec to prepare policy legacy paper with specific asks for the next Commission (for Sec Gen)
- NWPE to prepare Gantt chart of EU CCUS projects
- ZEP to attend Stakeholder Dialogue on EU Taxonomy for Sustainable Finance on 24th June
- TWG CCU to prepare short one pager outlining the four questions raised by the TWG and presented at the AC.
- LW to attend 24th and 25th June meetings of the HLG on EII and report back on work progress
- Sec to prepare letter for DG RTD (RE: DG GROW's involvement in the ETIP)

Secretariat Developments

LW introduced the new ZEP secretariats Per Olof Granström (Brussels) and Charlie Garner (London). Noted a second member of staff will be joining in the Brussels office.

LW Noted that:

- The Secretariat now has an office in Brussels – on Science 14, Rue de la Science
- Per-Olof Granström, EU Director heads this office
- The Brussels office will lead on coordinating the ZEP and SET-Plan CCS/CCU activities with support from colleagues in London
- Recruiting new member of staff to the office
- Charlie Garner joined the secretariat, based in London and replaces Marine d'Elloy

Finance update

LW discussed:

2019 Income

- Since AC59 Port of Rotterdam settled. Total invoice been reissued with new purchase order details. Expect Gassnova invoice issued in the 4Q 2019.
- The forecast income for 2019 remains €167,500 and 2019 Expenditure remains on target.

Proposed changes to ZEP-C expenditure

- ZEP-C accountants made two recommendations changes to expenditure;
- As ZEP-C accounts become simpler – we will move to quarterly management which will save c.€600 p.a.
- Accountants can host the ZEP-C registered office. The opening of the secretariat's office in Brussels means that it can receive mail, etc: Save c.€1,700 p.a.
- ACEC endorsed proposals on August call - subject to agreement by the AC, these will be implemented.

Item 3: The role of CCS and CCU in the EU industrial Strategy

Peter Handley, DG Grow

PH: The commission is prepping candidate commissioners for hearing in European parliament so need guidelines outlined.

PH discussed the new European Green Deal (EGD) and raising the ambition. He noted wanting to be the first continent to commit to net zero - if everyone achieves their GHG targets then there will be a 45% GHG reduction by 2030. The language from the EGD also promises circular economy, focusing on all resources across the value chain and committing to decarbonisation of energy intensive industries. **PH** noted that competitiveness must play a big part in the 2050 net zero challenge. **PH's** commissioner has portfolio on AI and Data - **PH** noted that these alternative focus areas also need to be fully embedded into the EGD and noted that we must flip the 2050 goals to look at the EGD in terms of key industry action. Finally, there was talk of the *shift in the allocation of responsibilities* at the commission: 3 executive vice presidents at top, in charge of digital and industry, EGD, and finance.

PH discussed the strategic value chains work in DG grow which will be published in October. This will include 30+ industries including low emission areas.

PH discussed the Sustainable Finance Action plan – Green Taxonomy. He highlighted that this should support how we give advice to investors which would help us transition to climate neutrality.

PH discussed the work on the **Masterplan report coming out on 9th October to the High-Level Group** which discusses energy intensive industries. It brought in think tanks, institutional investors in climate change, financial institutions to give the resources to draft an initiative on cross industrial sector discussion on risk. **ZEP** were invited to discuss. The masterplan explains how to create markets for low or zero- emission projects. Within this there are three strands: 1st strand includes carbon pricing and carbon boarder tax and how to compete on a fair basis with larger markets such as China.

The 2nd strand includes innovation and technological readiness. This looks at the challenge of how to attract widescale investment. The 3rd strand discusses resources and infrastructure and how to move away from fossil fuels to clean energy feedstocks. PH noted that there is a place for carbon capture and storage, particularly given the residual greenhouse gas emissions problem.

Questions and Comments

GS noted we had an opportunity to do substantive work on *green taxonomy* and it would be interesting to see the compatibility of the paths. He also noted that clean hydrogen should not be at the expense of renewables, and a straightforward competition will emerge as complimentary technologies like electrolysis develop.

LE noted that CCS needs to be at point of least cost so that it's a sensible choice. He welcomes the competitiveness of CCS and the introduction of border taxes. **PH** agreed and responded saying that the acceleration of European projects has helped to shift and concretise CCS and CCU away from political dogma.

MV then discussed the topic of global residual emissions, stating that it's a key problem. **GS** highlighted that we need to do more on said residual emissions and the way to do that is to introduce hydrogen whilst maintaining vigilance. **PH** also suggested the need to have a governance process in place to assess **KPIs** and milestones. As such there should be an observatory to see how well industry is progressing through the transition.

SH queried the role of offsetting in Europe, asking whether Europe will try to offset carbon internationally or whether this will be contained within borders. **MV** explained we want to do it at home, and the communication plan says it is possible, particularly with biomass.

IP asked which sectors will be included in cross boarder tax. **PH** explained we are not allowed to speculate which sectors we can include. **PH** noted that the real question that should be asked is, should you apply it to every product that's traded and how do you develop a methodology for that?

IP also asked for any other general policy initiatives there will be moving forward. **PH** identified several demand side initiatives particularly in public procurement.

Item 4: Commission Updates

DG Clima Maria Velkova

Innovation Fund Developments

MV Discussed the key workshop event that took place in Oslo on 6th September. DG Clima asked different stakeholders to organise the workshop to give advice on different elements of proposals. A huge thanks noted to Chris Gent and Lamberto Eldering on the Innovation Fund Development Workshop.

A workshop taking place next Monday (30th September) on Hydrogen, another Mid October. **MV** also mentioned another workshop which took place a week prior to AC60 week – all are invited to check the minutes from the CCS workshop. They are online and available.

MV mentioned there are Internal and external contracts going on to set the various methodologies on GHG's under the innovation fund and they are preparing for first round of proposals.

LE questioned storage and funding across different parts of value chain, given that some projects are further ahead than others. **MV** noted that if projects are far head, for example *the Northern Lights Project*, there is no reason for them not to be funded ahead of other parts of the value chain.

GS noted that there isn't a need to deploy public funding in Europe that isn't consistent with the taxonomy so there needs to be a dynamic process that synergises the innovation fund and taxonomy investment criteria, otherwise it will be regarded as a barrier to investment.

DG RTD Vassilios Kougionas

European Green Deal

It's clear from President Elect that CCUS will play a big role in EGD. **VK** noted that research on CCUS will continue. This week we have several innovation days – expert researchers will come together to discuss the European clusters and how to decarbonise industries.

There is also a **2020 call for storage pilots under Mission Innovation and Horizon2020**.

DG Ener Peter Hovarth

PH discussed the HLG conference Norway – the evaluation of event was that it achieved its political objectives. The commissioner wants to pass the message on that it was a success, particularly in bringing the full European CCS chain together.

SV and **BM** echoed the success of the HLC and workshop on behalf on her colleagues.

PH noted that the next steps will depend on the next commission and long-term strategy, but the key, concrete outcome was the formalisation of the amendment to the London Protocol.

Item 5: Overview of EU related activities

Per-Olof Granström introduced himself and addressed the AC on various EU related activities that will have a direct impact on the development of CCS (slides attached).

PG highlighted the Long-term climate and energy strategy, where the European Council has not yet been able to endorse climate neutrality by 2050. 24 Member States are committed while four – Poland, Estonia, Czech Republic and Hungary – still hold reservations. He noted that there is a strong push to reach an agreement in the light of the 17-18 October European Council. The EC has published a communication on climate-neutrality in front of this week's climate summit and plans to submit the final EU long-term strategy to the UNFCCC by early 2020.

He also referred to what was said earlier regarding the responsibilities among the new commissioners, mentioning that the Latvian commissioner, Valdis Dombrovskis, will be of great importance for the development of CCS, as responsible for sustainable finance, EIB and the new long-term Industrial strategy (together with Vestager). He also referred to the plan for all the commissioners to visit all EU countries during the first 2,5 year and that getting involved in the planning here would be a great opportunity to invite them to CCUS projects.

PG also mentioned two issues regarding the upcoming Horizon Europe. First, the five missions and the proposed mission boards and chair persons. While there are missions for climate change adaptation and climate neutral and smart cities, there is no clear fit for climate change mitigation and thus CCS and CCU in the Horizon Europe programme. Second, regarding the proposed European Partnership for Clean Hydrogen, where it is not yet clear if the mentioned definition, “near-zero carbon hydrogen” technologies only refer to green hydrogen or if it also includes blue hydrogen with CCS.

He also mentioned the three reports that are input to the EU New Industrial Strategy that will be published this autumn: *A Vision for the European Industry until 2030*, the *Strategic value chains and the Industrial Masterplan* that is now being finalised by the HLG on Energy Intensive Industries.

The Energy Council adopted ‘*Conclusions on the future of energy systems in the Energy Union to ensure the energy transition and the achievement of energy and climate objectives towards 2030 and beyond*’. From a CCS perspective, this is a fairly weak document that will now be used as principles for the further EC work, it mentions among other things that CCUS may play a role for decarbonisation, upon member states’ choice, that production of hydrogen (particularly from RES) has potential, and that the EC shall conduct analysis of sector coupling.

He said that this all lead us back to the European Green Deal (EGD), that defines the new EC and will be the main framework for the path towards net zero and the development and deployment of CCS and CCU. **PG** continued: Carbon Capture being a mature technology means that the focus now has shifted towards deployment and commercialisation: regulatory, legal, policy and finance. ZEP has a unique position with its stakeholders and as the adviser to the EU and it is crucial to actively take part and guide the CCS/CCU community:

- Keep strong focus on technology and facts
- Commit to the transition towards net-zero
- Engage with the EU institutions and other relevant stakeholders
- Take active role in the shaping this framework.

Next steps will be to review and update ZEP work plan and messages for discussion and approval at the ACEC on 22 October.

Comments

GS highlighted that the EGD and the net-zero by 2050 make it important for ZEP to engage in the political economy. He asked the AC, referring to the document in the pre-reads, and received support for taking this step, and he referred to the next step being the ACEC meeting. **GS** also discussed the need to add financial and fiscal intervention expertise to address the complexities around items such as border tax adjustment to our workgroups.

GS said that he also saw two other areas for action: the sustainability criteria in the Innovation Fund and the Clean Hydrogen Partnership should be consistent with the sustainable taxonomy, and further clarity is needed on where climate change mitigation fits into the five missions of Horizon Europe.

Item 6: OGCI updates on CCUS developments

Iain Macdonald presented the OGCI updates (slides attached).

IM discussed the case for CCUS, highlighting the 2-degree roadmap and industry challenges for tackling industrial carbon dioxide emissions. **IM** touched on OGCI's Kickstarter approach which look to facilitate large-scale commercial investment in CCUS, by enabling multiple low-carbon industrial hubs. OGCI comment on their support for consensus building, credibility and capabilities.

Questions and Comments

JH asked how we interact with politicians and stakeholders noting the impression that the oil and gas community could make by pushing the most of the conversation on. With this in mind, we need to establish how we set up CCS as a societal good. **IM** agreed that we need to understand the societal value specific of CCS to each country i.e. value added, job creation etc. **LE** agreed there is no direct solution to this but noted that the OGC wish to work on it.

AG noted that OGCI had no shortage of critics but questioned what OGCI will do to support the hubs and what OGCI are doing to support CCS? **IM** noted that OGCI is investing in clean gas projects and will help with marketing, technical support at the 5 hubs. However, **IM** did mention that there is no desire to invest in CCS directly unless through a cloud investment. **JH** noted that government funding must be a part of the package for the Kickstarter approach.

GS two things are currently not very clear to the AC which need clarifying; what OGCI is for? And to understand what the OGCI does. The OCG industry should be the financial provider of the launch of the technology that would essentially extend the lifetime of its product (CCS). Yet, it's highly unlikely that the OCG community is going to deploy capital in that way due to the difficulties in risk and reward. It is therefore waiting for civil society to alter the terms and conditions. In Europe in particular, we have focussed on streams of money that are readily available, rather than looking for a new stream to make CCS commercially viable. There is a need for a 30-company collaboration to make this happen.

SH added why companies like BP are slow on their own investments towards CCS, rather than waiting for funding schemes such as the Innovation Fund.

GS explained that it would be very helpful for OGCI to submit half a page on what the OGCI is providing to the clusters. **GS** also noted it would be useful if OGCI provided information on what it is they would like, and to hear how to narrative has evolved and to fill the gaps between its stakeholders.

Item 7: Norwegian Government update on London Protocol

SF gave an update on the London Protocol:

- The current prohibition of export of wastes for the purpose of injection or dumping at sea in the London Protocol, includes export of CO₂ for the purpose of permanent geological storage offshore, ref. article 6.
- In 2009, the parties to the Protocol adopted an amendment to article 6, opening up for CO₂ export for the purpose of permanent geological storage offshore. To enter into force, this amendment requires 2/3 of the parties to accept/ratify the amendment. To date, only six out of the currently 52 parties have accepted the amendment. These are the UK, the Netherlands, Norway, Finland, Iran and Estonia.

- With a view to find an interim solution to the lack of ratifications of the 2009 amendment, the Netherlands and Norway recently submitted a proposal for a resolution allowing provisional application, based on the Vienna Convention on the Law of the Treaties (VCLT) article 25.
- VCLT article 25, first paragraph, litra (b) allows for provisional application of "part of a treaty" where the "negotiating States have in some other manner so agreed".
- The proposed resolution is meant to be the "tool" that establishes such an agreement between the parties to the London Protocol, to the end that the 2009 amendment may be used provisionally by those parties that unilaterally declare intention to do so.
- Following this, two or more Contracting parties, having deposited such declarations, must then follow the requirements of the 2009 amendment (Article 6, second paragraph), and the guidelines established for the assessment of Carbon dioxide for disposal into sub-seabed geological formations adopted in 2012 (LC 34/15, annex 8).
- The aim is for the proposal to be adopted with consensus at the meeting of the parties October 2019. We believe that an open and transparent process in advance of the meeting of the parties will help us achieve this, we are therefore sharing and informing as broadly as we can.
- Bilateral contracts have been used, both directly to LC/LP contact points and CCUS contact points, as well as contacts through the Norwegian embassies in several of the parties.
- The Norwegian politicians always have speaking points on this when meeting relevant counterparts.
- Information has been shared through IEA GHG, ZEP, NSBTF government contact points and the Nordic/Baltic networking group on CCUS.
- The steps taken by the EU Commission are also very helpful in terms of securing support.

Note: the proposal will be discussed at the upcoming meeting of the parties on the **7th October**.

The proposal is based on the Vienna convention on the law of treaties

A treaty or part of a treaty is applied provisionally pending its entry into force if:

- a) The treaty itself so provides or:
- b) The negotiating states have in some other manner so agreed.

The resolution is meant to be the tool to establish an agreement to the negotiating parties to apply the amendment provisionally. To give effect to those that wish to apply – the 2009 amendment requires the permanent geological storage. This will be agreed or denied in the case of a vote by majority at the meeting of parties on 7th October.

If denied, plan b would be to work towards an adaptation for the next meeting of parties.

In terms of feedback, **SF** noted they have had no negative feedback yet, but they try to draw upon country representatives from the protocol for feedback and many parties are coming back to them.

Questions and Comments

FN questioned the 'provisional' context of the Vienna Convention. **SV** added it means a temporary solution to be in effect, but **GS** noted that this is based on events, rather than time.

SH asked about CO2 purity legislation in the London Protocol. **SV** added that guidelines are already in place from the 2009 amendment and in line with the European directive on CO2 purity.

LE noted that Germany is preparing to ratify. Friday 11th October we should know the outcome of the proposal.

Item 8: Business models for CCS and CCU: presentation and discussion on findings from the CCUS Advisory Group Report

Patrick Dixon worked on the 2012-2015 White Rose Competition. Started with 20, finished with 60 people. CAG had a narrow remit – how to do CCS and CCU from a business standpoint.

The presentation involved 13 CAG variants of business propositions for CCS in the UK. This included scenarios under government, regulated asset base models and private unregulated models.

Lots of attempts to create business models for CCS but mostly high level in the UK. **PD** noted funding and financing and how many business models failed to differentiate between them. It has been suggested we should split the train between TS and C, regulated under a Regulated Asset Base.

It was questioned whether the team considered the CAG variant would be chosen depending on the broadest of policy outcomes under the commercial diagram. **PD** noted that if government do things, they can get things done faster, set against that is the private sector – variant 1 was the most popular variant.

Questions and Comments

LE questioned the use of biomass as a baseload. **PD** explained you need to be careful that there's total consensus.

FN asked about whether they discussed the business risks of CO2 leaking out of the sub-surface. **PD** explained they did. For transport and storage long-term failure of the T&S assets is extremely unlikely. BUT leakage is a bigger problem than first thought and, in most cases, there will be a heavy financial burden if leakage occurs so a remediation fund could be used to alleviate costs and would be suited to a government model. **GS** noted that in most cases people don't want to fund these things because they are scared of these events.

AM – How do you transfer the CfD noted under the business models to a non-market mechanism. **PD** notes that the price of carbon will never make CCU to be viable. But there are 2 ways to make it work. That is to make it mandatory that all products are low or zero emission. This is a subset of the second point which is an obligation to bury a proportion of CO2. There is also the role that hydrogen (and electrolysis) will play in the future development of the CCUS agenda. CAG2 will have to take on those.

AM asked how people feel about the shared business models. **PD** added that some are completely opposed to it, while others are open to collaboration.

SH discussed the role of emissions obligations and its effectiveness and other tax landscapes. (**PD**) Some discussion also arose around valuing negative emissions – it was concluded that valuing negative emissions is extremely hard. **PD** also Commented on a policy through which there is a tax on carbon being pulled from the ground – a current policy proposition used in the US whereby tax revenues flow to citizens. **PD** differentiated explained that this would be different to the obligation.

Item 9: Review of Network Work Programmes

The review of Network Programmes was skipped due to time constraints, but all available updates are highlighted in the pre-reads.

Network Policy and Economics update (see slides for more detail):

- TWG Policy and Funding
- TWG PCI's
- EU Taxonomy for Sustainable Finance

Network Technology update (see slide for more detail):

- TWG Collaboration across the CCS chain
- TWG CCU and Sink Factor Methodology

Action related to pipeline exclusion under ETS

Request to form new TWG

FN: there was a request and approval to form a new TWG which covers a third work stream, dealing with transport by pipeline – CCUS Pipeline Networks. The aim is to describe the current status of pipeline transport, knowledge experience and show that it can be done and is being done. As well as an overview of things that need to be investigated, including outflow of CO₂ mixture from high pressure pipeline. A table of contents containing potential workstreams could have been shown but there was not enough time.

GS noted this new TWG will be very helpful in the context of the gas package and granted permission to form this new TWG. **FN** noted that there is a need for experts on this: Kim ByeBruun and (Inaudible) offered to contribute. **GS** questioned whether there might be time to do a literature review of costs? It might be an idea to discuss technical costs. **FN** and **GS** to have a think on this.

Item 10: External Relations Group Update

GS gave a brief update on the ERG. **AG** asked about the ZEP conference in parliament requesting some further details and how people can play a closer role? **PG** highlighted that we are looking at a one-day CCS project showcase combined with a 3 hours event session and a reception in the European Parliament in December, with focus on energy transition, industry and innovation. **PG** referred to the pre-reads regarding the list of possible attendees to give presentations. The first step is to attract/secure MEPs as host and co-host for the event. He invited everyone interested to propose ideas for this event.

Item 11: AOB and Closing Remarks

Due to time constraints, pre-reads for agenda items 9 were taken as read.

Item 12: AOB

N/A

Actions

Item	Action	Owner
1.	CCUS projects network to be invited to future AC meetings	Sec
4./5.	Sustainability criteria in the Innovation Fund and the Clean Hydrogen Partnership should be consistent with the Sustainable Taxonomy	Sec to check with EC
5.	Further clarity is needed on where climate change mitigation fits into the five missions in the upcoming Horizon Europe	Sec to check with EC
5./10.	Prepare an update of the ZEP work plan and messages for discussion and approval at the ACEC on 22 October	Sec
9.	Formation of new TWG under NWT: CCUS Pipeline Networks	NWT, Sec
9.	Possible literature review of technical costs of transport pipeline – preliminary discussion	GS, FN

Advisory Council Executive Committee

Draft Minutes: Conference call – 12nd November 2019

Draft Minutes

Attendance

Graeme Sweeney	ZEP Chairman (proxy Rob van der Meer)
Lamberto Eldering	Equinor
Kim Bye Brunn	Shell
Jonas Helseth	Bellona (proxy Frederic Hauge)
Marie Bysveen	Sintef (proxy Nils Røkke)
Charles Soothill	ZEP
Arthur Heberle	Mitsubishi
Filip Neele	TNO
Rob van der Meer	Heidelberg Cement
Luke Warren	ZEP Secretariat
Per-Olof Granström	ZEP Secretariat
Charlie Garner	ZEP Secretariat

1. Introduction and general update (open session)

GS introduced the call.
September **AC60** draft minutes were approved.

2. European Updates (open session)

PG gave an update on the European Green Deal and highlighted the outcomes of AC60, noting the need for a stronger communication strategy to maintain contact and build relationships with stakeholders. PG highlighted the need for an improved narrative and story to drive the potential of CCS and CCU in the urgent climate change agenda. **PG** stressed the need for stronger coordination in the Networks, requiring the recruitment of greater competencies across the board.

On the networks, there is a need to restart the work in NWPE, possibly by breaking down into two groups, to tackle issues such as legislation. NWT may need to complete short reports with less notice, in addition to its original work. A stronger link with NWT and ERG I required to build concise narrative around CCS. ERG must also continue to introduce longer and face-to-face meetings. Moving forward, the overall structure of the groups may need a re-visit.

Funding Opportunities

There is a programme available for us to take leadership in this space, but our budget is limited. We need to avoid dipping into our reserves and seek supportive funding for additional resources and diversified expertise. To do this we need increased communication and greater involvement with members. There may be an opportunity to increase funding through both new and existing memberships, perhaps through the O&G community; for e.g. Equinor have offered to step up contribution to the ERG. **MB** also noted there may be potential for increased funding for Norwegian Ministry and Gassnova. There is also a need to shift responsibility and participation within ZEP so that different members hold greater responsibility and leadership across the board. This creates the

case for a much broader membership. It was mentioned that we must be watchful of the oversubscription of O&G members in ZEP.

Update from the SET-Plan

LW and **GS** gave an update on the SET-Plan and highlighted the need to revisit the SET-Plan targets. There is a proposal for a Storage Atlas to be produced and the IOGP presentation to be featured in the next AC61 meeting.

3. Priority Discussion Items

3.a NWT CO2 Storage Costs North Sea

FN noted there have been reports of people talking about extremely high CO2 storage costs of excess of EUR400 per tonne. There is a need for ZEP to respond with a message that is in line with the 2011 and 2016 storage cost reports to prevent ZEP's original messages from being nullified. The proposal is to produce a brief 1 page note to clarify this; O&G representatives within ZEP are requested to contribute to this short report. **LE** has already provided an extended quote from the Northern Lights Project which can be integrated into this note. Other O&G representatives are invited and urged to contribute. It was discussed that there may also a need for a more substantive document that could be used thereafter for more detailed clarification on this. This would require the preparation of a literature review from the last decade, highlighting that the position of the Northern Lights is much the same as it was 10 years ago.

There was also an ask to produce a short tweet for ZEP to communicate this immediately. This tweet will be endorsed by the group.

3b ZEP Proposal to participate in Hydrogen for Europe Study

This agenda item was approved as read, and permission given for NWT to proceed on this matter granted.

4. Networks & Temporary Working Groups:

a. Network Technology

4.a.i TWG CCU and Sink Factor Methodology

RM gave an update on the TWG on CCU, highlighting the meeting held on Oct 8th with discussion on the CCS/CCU assessment paper.

4.a.ii Capture Rates Policy Brief

We are very close to holding the technical ability to capture up to (99.99%) 100% of CO2. However, as ZEP must stress that we should still begin to implement CCS projects, even if the capture figures sit well below these figures. This work on capture rates must be highlighted in the ZEP modelling, and the capture rates must feature in our consultation on the reference scenarios. CG to speak to LW to ensure this is included.

4.a.iii ToR CO2 Pipeline Networks

FN to speak with GS to clarify the definition of transport in the new network. We need to ensure the words risk and cost are carefully included to stop them from being negatively construed.

The request to form a new TWG on Hydrogen was approved.

b. Network Policy & Economics

4b. Update on London Protocol

LE gave an update on the London Protocol, highlighting that the Protocol has been lifted.

4b. ii Innovation fund

Following the innovation fund workshop, questionnaires and feedback were assembled. An extended summary of the workshop was included in the pre-reads. The feedback will now be reviewed by a consultant, who after which will reach out to test methodologies and base-case scenarios to help design the first call of the Innovation Fund

Temporary Working Group Sustainable taxonomy

The Sustainable Taxonomy consultation response to the TEG report was submitted in mid-September. We have a series of technical responses to make in response to this consultation to be completed by the end of this week.

There is a need to ensure that 'transportation' includes ships and trucks. There is also a need to define 'small plants' – strengthening the rigor of the methodology is required to clarify this. **CS** noted that 50MW is what was always used in '*small plants*' definitions. Charles to send **GS** a reference on the 50MW small plant.

The matter of unabated gas

The question around whether unabated gas is consistent with net zero 2050 and the 2030 targets remains unanswered. However, there is no obvious evidence that unabated gas to this level is consistent with these targets. The taxonomy would require gas to be abated if it were to be consistent with it. ZEP needs to develop some messaging around this to clarify our position.

c. External Relations Group

JH and **PG** gave an update on the ERG, highlighting the feedback from the Industrial Decarbonisation event, and the European Parliament hearings of the new commission. The next event will be on gas – there may be a link to give an update on upstream industry. There is also an event in December which looks at CO2 capture from the atmosphere which ZEP could contribute to.

JH gave feedback from IOGP CCS/CCU campaign meeting 11th October. IOGP will come back with a firmer campaign programme for us to look at this.

Received a mapping of stakeholders in the EU bubble. ERG will see if we can use this as a basis for the extensive engagement plan.

5. AC61 Draft Agenda

- It was decided that It would be premature for the new commission to attend.
- We should ask for IOGP to represent their NECP presentation
- We will invite the CCUS Network to present each of the meetings in future
- De-brief from the SET-Plan as a matter of routine.
- An update on the Industrial Strategy from Peter Horvath would be useful
- It would be good to discuss the road map

Dates

Potential for physical meeting on the 12th November for the ACEC.

Proposed draft dates for AC and ACEC meetings 2020 were circulated for approval. See below:

Proposed Advisory Council and ACEC meetings 2020 (morning)			Comments
Wednesday 29 January	ACEC		
Wednesday 19 February	ACEC		
Tuesday 17 March	ACEC dinner		
Wednesday 18 March		AC	
Tuesday 21 April	ACEC		
Tuesday 19 May	ACEC		
Tuesday 9 June	ACEC dinner		
Wednesday 10 June		AC	
Tuesday 14 July	ACEC		
Wednesday 12 August	ACEC		
Tuesday 22 September	ACEC dinner		
Wednesday 23 September		AC	
Wednesday 21 October	ACEC		
Tuesday 17 November	ACEC		
Tuesday 15 December	ACEC dinner		
Wednesday 16 December		AC	

6. Finance

This item was noted as read.

7. Any other business

N/A

Actions

Actions		Owner	Timescale
1	All to respond to proposed meeting dates 2020	All	November
2	Hold a face to face meeting to discuss ZEP messaging	Secretariat	November
2	Propose that IOGP to present at the next AC61 meeting	Secretariat	Next AC61
3	ERG to prepare a draft 1-page report responding to storage costs in the North Sea	ERG	October/ November
3	NWT to prepare a literature review from the last decade to clarify CO2 North Sea storage costs in more extensive detail (in addition to a tweet)	NWT	November

3	ZEP proposal to participate in Hydrogen for Europe study and form TWG approved. NWT to proceed in setting this up.	NWT, Secretariat	November
4.a. ii	Ensure that capture rates feature in the ZEP consultation on reference scenarios.	Secretariat	This week
4.b	Charles Soothill to send GS a reference on the 50MW small plant.	CS, GS	October
4.b	LS to begin to work on unabated gas position in ZEP	LS	October/ November
5	Additions to the AC61 agenda	Secretariat	October
	Everyone to respond to physical ACEC meeting	All	October

Advisory Council Executive Committee

Draft Minutes: Meeting – 12th November 2019

Draft Minutes

Attendance

Graeme Sweeney	ZEP Chairman (by phone)
Lamberto Eldering	Equinor
Kim Bye Brunn	Shell
Jonas Helseth	Bellona
Marie Bysveen	Sintef (by phone)
Nils Røkke	Sintef (by phone)
Helen Bray	Shell
Filip Neele	TNO
Rob van der Meer	HeidelbergCement
Luke Warren	ZEP Secretariat
Per-Olof Granström	ZEP Secretariat
Charlie Garner	ZEP Secretariat
Judith Shapiro	ZEP Secretariat
Giorgia Bozzini	ZEP Secretariat

1. Introduction and general update

GS introduced the call. **LE** is vice-chairing the session.

The agenda is adopted and the October **ACEC** draft minutes are approved.

2. Networks & Temporary Working Groups

2.a. NWT update

LE introduced item 2.a, updates from the Network Technology. After going through the many comments received by the ZEP secretariat, the ZEP report on storage risks is ready to be released after screening by **LW**. The comments that were received focused mainly on regulatory issues. It was noted that the insurance industry is very interested in the ZEP report on storage risks.

The ERG would like to see the report before it is published. **JH** stresses that phrasing is essential. Once the report is finalised, the ERG should receive a final version with the highlighted changes for approval.

GS states that if the network experts and the ERG are in disagreement, the ERG or the AC must consider the differences and make a statement. He acknowledges the importance of having a complete report and asks the ERG to prioritise the task.

2.a.i. NWT 28th November preliminary draft agenda

It is mentioned that the TWG Hydrogen will meet on 28 November 2019 in Brussels.

- Many comments were raised around the role of ZEP, talking about natural gas. The ACEC acknowledges the importance of keeping contacts with other stakeholders and involve as many as possible in the ZEP network.

- It is reiterated that ZEP's approach is wide and broad and that technology solutions are broader and detached from political economy.
- CCS was included in the hydrogen plan and the hydrogen narrative has changed a lot over the years, also thanks to member states.
- **RvdM** asks if ISOTC265 is working on carbon capture. The French ISO committee has asked ZEP for support. The policy framework is at the centre of the debate between the many European national committees and the US committee. **LE** highlights that ZEP could be the facilitator. ZEP can facilitate and host a meeting. It was also highlighted that ISO standards can be ignored but not the EU standards.
- **PG** highlighted the interest from French EDF to join ZEP.

Action: **RvdM** to make contact. After that, ZEP can set up a meeting and be the facilitator.

2.a.ii IEAGHG Capture Rates Policy Brief final document

The ACEC examines the question of how ZEP will communicate about the carbon rates.

- The European Commission has closed the consultation on factors for modelling the reference scenarios. ZEP has replied and also highlighted the capture rate report and content. Today the EC is holding a consultation seminar on the modelling issue. There was a comment that a lot of the figures in the consultation were wrong, for example regarding hydrogen and cement.

2.a.iii ToR CO2 Transport Networks

The document on the Terms of Reference for CO2 transport network has already been approved.

2b) Network Policy & Economics (Lamberto Eldering / Kim Bye Bruun / Jonas Helseth)

2.b.i. NWPE 24th October draft minutes

Following up on 24th October meeting, it is noted that the CCUS projects network is focusing on similar priorities as the SET-Plan action on CCUS. ZEP can collaborate more on issues and provide policy input. Coordination is needed.

2.b.ii. ZEP Horizon Europe Partnership consultation response

- London protocol: the ACEC notes that the decision on cross border CO2 transport is better than we initially thought. Any country that has signed up to London Protocol will be able to sign an agreement and import and export CO2 across borders regardless of if they have ratified the amendment from 2009 or not. Very positive.

Action: **LE** will see if he can get ahold of the final document.

- It was highlighted that Germany is in the process of ratifying the London Protocol together with a number of other countries.

There was a short debate around the added value for ZEP to push for further ratification of the London protocol. For CCS there is no additional gain in ratifying, but there is a political gain and visible proof that the development is going in the right direction. It is in the interest of the CCS community to show that countries are progressing, and that interest is growing in exporting/importing CO2.

- There are a number of consultations and high activity levels. More consultations are expected.
- **LE** proposes to close the TWG on PCIs, because their work is covered by other working groups. A proposal will be sent to AC in December.

2.b.iii. ZEP Response to EU Reference Scenario Assumptions

This was already discussed earlier in the meeting.

2.b.iv. Sustainable Taxonomy TWG response to DNSH comments for TEG

- **GS** gave an update to the work on sustainable taxonomy. Life-cycle emissions are important for the CCU community. The taxonomy will adopt LCA position and submit to the European Commission.
- **GS** received a request to find academic experts on chemical manufacturing for the conversation on academic benchmarking. **GS** asked **KBB** whether Shell could make a recommendation for a speaker. **GS** mentioned a second request for an international perspective on DAC and concluded that he would redirect the request.
- We are awaiting a new timeline for the taxonomy work.
- **JH** highlighted concerns over misrepresentation of air capture (being negative emissions as such) in recent articles.

c) External Relations Group Jonas Helseth / Helen Bray

- There was a short update on the recent events and activities, for example , that the ENVI Committee approved two positive amendments on CCS in the EP COP25 resolution, that ZEP has communicated regarding the cost of transport and storage for CO2 and that a longer communication on this is being prepared by the ZEP.

3. Strategic workshop

On Tuesday 12th November 2019, the ERG organised a strategic and messaging workshop in Brussels together with the members of the ZEP ACEC. The aims of the workshop were twofold:

1. To update the core objectives of ZEP;
2. To draft a messaging model.

The workshop was needed in order to align ZEP's objectives and messaging model to a new political context in Europe. We are witnessing an increased interest in the topic of climate change and in the transition to net-zero GHG emissions, involving many stakeholders: industries, societal groups and NGOs, academia. Thus, a redesign of ZEP's core objectives and messages was needed.

A two-hour discussion focussed on the drafting of new core objectives for ZEP. After careful considerations, the objectives and the messaging model were agreed upon and updated. The outcome of the workshop will be forwarded for comments to the ERG, the ACEC members and ultimately to the AC in December.

4. AC61 Agenda

The AC agenda was largely approved. Some timings may need adjusting.

5. Finance

No further updates. **LW** is awaiting an update on expenditures.

6. Any other business

KBB informs the ACEC that he will move to a new position within Shell and he will step down as the chair of NWPE. John McArthur will step down as AC member. **KBB** will advise on future Shell representation at the AC61 meeting in December.

Actions

Agenda Item	Actions	Owner	Timescale
2.a..iii.	Make contact and after that ZEP can set up a meeting and be the facilitator	RvdM	
2.b.	Get ahold of the final document (agreement between Norway and UK)	LE	
2.b	Decide on closing the TWG on PCIs	AC	December