Briefing on the EU Innovation Fund

and the Implications for CCUS Projects

1st Report of the Thematic Working Group on:

Policy, Regulation and Public Perception

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EU CCUS PROJECTS NETWORK (No ENER/C2/2017-65/SI2.793333)

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About the CCUS Projects Network

The CCUS Projects Network comprises and supports major industrial projects underway across Europe in the field of carbon capture and storage (CCS) and carbon capture and utilisation (CCU). Our Network aims to speed up delivery of these technologies, which the European Commission recognises as crucial to achieving 2050 climate targets. By sharing knowledge and learning from each other, our project members will drive forward the delivery and deployment of CCS and CCU, enabling Europe's member states to reduce emissions from industry, electricity, transport and heat.

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Executive summary

The Innovation Fund is a European funding program for the demonstration of low-carbon technologies. The fund is expected to amount to approximately €10 billion with the European Commission aiming to launch the first call in 2020, followed by regular calls until 2030. The revenues for the Innovation Fund are predominantly from the EU Emissions Trading Scheme (EU ETS) and the auctioning of 450 million allowances from 2020 to 2030 under this scheme. Some funding has also been made available from unspent NER300 programme allowances.

The Innovation Fund aims to be larger and more extensive than its predecessor, the NER300 Programme, as it is also open to projects from energy intensive industries. It aims to provide support more flexibly, defined on the cashflow needs of the project, and aims to have a simpler selection process with stronger synergies with other EU funding programmes.

The Innovation Fund will cover a variety of projects and focuses on:

- Innovative low-carbon technologies and processes in energy intensive industries, including products substituting carbon intensive ones;
- Carbon capture and utilisation (CCU);
- Construction and operation of carbon capture and storage (CCS);
- Innovative renewable energy generation; and
- Energy storage.

This report outlines the key modalities and procedures for the Innovation Fund, and focuses on the potential funding implications for CCUS projects. The assessment of the suitability of the Innovation Fund for CCS projects has been completed based on discussion during a workshop hosted by the EU CCUS Projects Network in October 2019. This session was part of the Network's Thematic Group on Policy, Regulation and Public Perception. The session was held according to Chatham House rules to allow the projects present to exchange viewpoints and ideas freely.

Broadly speaking, it is hoped that the Innovation Fund Call for Proposal documents expected in mid-2020, will provide more information on how applicants should approach some of the key evaluation criteria, namely, calculating emissions avoidance for part-chain CCS and CCU projects, demonstrating project maturity as well as project innovativeness. Furthermore, there remains a concern that the costs for developing sufficient contingent storage sites could be overlooked by the Innovation Fund, and EU policies directed towards CCS in general. Finally, whereas there does not seem to be any regulatory barriers to blending Innovation Fund financing with Member State subsidies, the asynchronous timing between the planned final investment decisions (FIDs) of some of the more advanced projects, and the outcomes of the Innovation Fund (expected in 2022), means that certain projects may not be able to benefit from this.

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1 Introduction

This report follows from discussions at the CCUS Projects Network second knowledge-sharing event for members, held in the Netherlands on 16th October 2019. Discussions in the thematic working group on CCUS Policy, Regulation and Public Perception suggested that a compilation of information on the Innovation Fund would be useful to project members, and for the future work of the thematic group.

Given the Innovation Fund has not yet launched its first call, this briefing is limited to the information currently available and should be seen as a starting point to which members of the thematic working group can gain insight on.

1.1 Objective and scope

The aim of this report is to summarise the current developments of the Innovation Fund to allow members an insight to the current remit of the fund and how it could help build a business case for their projects in the future.

1.2 Innovation Fund

The aim of the EU Innovation Fund is to help drive low-carbon technologies to market. The total fund will be at least 10 billion euros at current carbon prices and aims to support up to 60% of relevant costs related to individual projects which demonstrate low-carbon technologies. That equates to 1 billion per year, to be divided between 28 Member States and several technologies.

The fund aims to avoid emissions whilst boosting the ability for innovative technologies to compete at market. This includes funding for renewable energy, CCUS, energy storage and energy-intensive industries including the development of substitute products.

The first call for the Innovation Fund is expected in 2020 and will include regular calls up to 2030.

1.3 Report structure

This report consists of two main sections. The first outlines the information currently available on the Innovation Fund, detailing the plans for project selection criteria and funding milestones. This includes the objective of the fund, eligible technologies and the application process.

The second section of the report outlines how the Innovation Fund could be beneficial for CCUS projects and help develop a business case for future project development.

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2 The Innovation Fund

2.1 Objective of the Innovation Fund

The published Commission Delegated Regulation for the Innovation Fund (EU/2019/856), published on the 26th May 2019, states the following:

> *The objective of the Innovation Fund is to deliver successful demonstration projects for breakthrough low-carbon technology innovation. The Fund aims to select innovative and viable demonstration projects and contribute towards bridging their financing gap. The portfolio of the Innovation Fund is expected to represent broad technological and geographical coverage by 2030. The Innovation Fund will operate under effective, efficient and simple governance structure, ensuring accountability, transparency and knowledge sharing.*

It also states the following operational objectives:

> *(a) to support projects demonstrating highly innovative technologies, processes or products, that are sufficiently mature and have a significant potential to reduce greenhouse gas emissions;*
>
> *(b) to offer financial support tailored to market needs and risk profiles of eligible projects, while attracting additional public and private resources;*
>
> *(c) to ensure that the revenues of the Innovation Fund are managed in accordance with the objectives of Directive 2003/87/EC.*

2.2 Source of funding and interactions with existing EU financial support schemes

The Innovation Fund is financed by the revenues resulting from the auctioning of ETS allowance from the revenues of the EU Emissions Trading Scheme (EU ETS)[1]. The basic principle remains the same as for the Innovation fund's predecessor, the New Entrants Reserve 300[2], regarding the auctioning of ETS Credits.

It is envisaged to incorporate the Innovation Fund into a budgetary structure similar to other funds, such as the Connecting Europe Facility or the Modernisation Fund, for which the Commission assumes coordination and implementing tasks for financial contributions made by third parties. Funding from the Innovation Fund may become available in parallel with other European and national policy instruments. The Innovation Fund will be complementary to the Horizon Europe programme as it aims to further develop projects that were financed by Horizon 2020 at earlier stages of project development.

[1] Directive 2003/87/EC
[2] Commission Decision 2010/670/EU

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The Innovation Fund will work in synergy with infrastructure funds such as the Connecting Europe Facility (CEF) fund which is helping facilitate the development of CO_2 infrastructure by funding projects of common interest (PCIs). The funding of PCIs is designed to speed up and facilitate the development of important energy infrastructure which includes CO_2 transport networks to help the development of CCS.

The Innovation Fund will also operate in synergy with the InvestEU Fund[3] proposed by the Commission. The InvestEU Fund will be able to provide additional investment support (e.g. loan guarantees or equity contributions) to projects financed by the Innovation Fund. The Commission proposal for InvestEU foresees that the Innovation Fund will be able to contribute to blending operations under InvestEU (e.g. topping-up the risk-coverage provided by InvestEU).

The optimal combination of financing from the Innovation Fund, InvestEU Fund, other Union programmes, and the Member States is expected to ensure a large coverage of the additional costs and risks linked to the demonstration of innovative low-carbon technologies or products.

2.3 Eligible Technologies

The Innovation Fund categorises the eligible technologies by sector. The six sector categories, and the technologies they cover, are provided below:

- **Renewable Energy**: This includes wind (e.g. floating and next generation turbines), solar (e.g. flexible organic cells), geothermal, ocean (e.g. tidal and wave technology) and bio (e.g. biofuels) energy.
- **Energy Storage**: This sector includes product, process and system innovation. Large-scale demonstration of renewable hydrogen production and its use for energy storage (e.g. electrolysis of water coupled with storage) is also included under this sector.
- **Carbon capture and storage**: Including both full-chain projects, and part-chain projects, with secured storage contracts.
- **Carbon capture and utilization**: Capturing CO_2 and other carbon containing gaseous effluents and converting them to useable fuels or products.
- **Industry**: This includes coke, refine petroleum products, metal, cement, concrete, glass, clay, paper and chemicals manufacturing.
- **Cross-cutting Projects**: Any combination of the outlined sectors is also included e.g. carbon capture from several industrial plants, transport of CO_2, utilization and storage.

Although CCS is covered in an individual sector, there could be some overlap with the Industry and Cross-cutting projects categories. For example, CO_2 capture is relevant low-carbon technology for a number of industries such as primary steel production, cement, refining and hydrogen production.

[3] COM(2018) 439

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2.4 Selection Criteria

Detailed information regarding the selection criteria will be given by the European Commission when a call for proposals is launched. The criteria currently published in the Innovation Fund delegated regulation are as follows:

- **Emissions avoidance:** effectiveness in terms of greenhouse gas emission avoidance potential, where applicable, compared to the benchmarks referred to in Article 10a(2) of Directive 2003/87/EC (the EU ETS Directive).
- **Degree of innovation:** degree of innovation of the projects compared to the state of the art.
- **Project maturity:** project maturity in terms of planning, business model, financial and legal structure as well as prospect of reaching the financial close within a predefined period of time not exceeding four years after the award decision.
- **Scalability:** technical and market potential for widespread application or replication, or for future cost reductions.
- **Cost efficiency**: efficiency in terms of the relevant costs of the project minus any contribution to those costs from the project proponent, divided by the total projected amount of greenhouse gas emissions to be avoided or energy to be produced or stored or CO_2 to be stored in the first 10 years of operation.

Additional criteria aimed at achieving a geographically balanced distribution of the Innovation Fund support may also be applied for the purposes of project selection.

A key focus for the Innovation Fund is the effectiveness in terms of greenhouse gas emission avoidance. The emissions avoidance potential, where applicable, will be compared to the EU ETS benchmarks for the period 2021-2025. It is not yet clear how to calculate CO_2 emission avoidance potential for the transport and storage elements of a project if applying separately from the capture aspect of a project. There is also no clear definition on how the cost efficiency will be assessed. This could be purely on the volume of CO_2 stored/avoided, the most financially efficient projects or the projects most efficiently avoiding emissions for the amount of energy produced.

More guidance is also required on how the degree of innovation compared to state of the art will be evaluated. This may be evaluated using Technology Readiness Levels (TRLs) or may require more qualitative descriptions.

Project maturity is likely to include an evaluation of the project's current permits, memorandums of understanding (MoUs), feasibility studies, stakeholder engagement plans and Front-End Engineering and Design (FEED) studies.

2.5 Funding Rate and Disbursement Milestones

The Innovation Fund will cover up to 60% of the relevant costs of the funded projects (in line with Article 10a(8) of the EU ETS Directive, 2003/87/EC). The "relevant costs" are defined in the Innovation Fund regulation (EU/2019/856) as:

> *"the additional costs that are borne by the project proponent as a result of the application of the innovative technology related to the reduction or avoidance of the greenhouse gas emissions. The relevant costs shall be calculated as the difference between the best estimate of the total capital expenditure, the net present value of operating costs and benefits arising*

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during 10 years after the entry into operation of the project compared to the result of the same calculation for a conventional production with the same capacity in terms of effective production of the respective final product."

The Innovation Fund will be provided in the form of a grant and will be disbursed upon reaching pre-determined milestones. For all projects, the milestones shall be based on the project development cycle and dependent on the technology deployed and specific circumstances. The minimum milestones will be the following:

(a) financial close;

(b) entry into operation.

Up to 40% of the total amount of the Innovation Fund support to a specific project, including project development assistance, shall be disbursed upon financial close or upon reaching a specific milestone preceding financial close where such a milestone has been determined.

As outlined in Figure 1, the remaining funding (60% or more) which has not been disbursed at specific milestones shall be disbursed after the financial close. It may be partially disbursed prior to the entry into operation and in annual instalments after the entry into operation. The amount of support released after financial closure will be dependent on the verification of GHG emissions avoided. This will be based on the submission of annual reports by the project following entry into operation for a period between 3 and 10 years.

The fund regulation states the following with regards to the emission reduction milestones not being met:

"Where the total amount of greenhouse gas emissions avoided during the entire reporting period is lower than 75% of the total amount of greenhouse gas emissions planned to be avoided, the amount paid or to be paid to the project proponent … shall be proportionally recovered or reduced.

Where the project fails to enter into operation by the pre-determined time or the project proponent fails to demonstrate any real avoidance of greenhouse gas emissions, the amount paid after the financial close … shall be fully recovered.

Where the situations occur due to extraordinary circumstances that are beyond the control of the project proponent and the project proponent demonstrates the project's potential to achieve an avoidance of greenhouse gas emissions beyond the reported amount, or where the project proponent demonstrates that the project can achieve significant low-carbon innovation benefits, the Commission may decide not to apply the recovery mechanisms."

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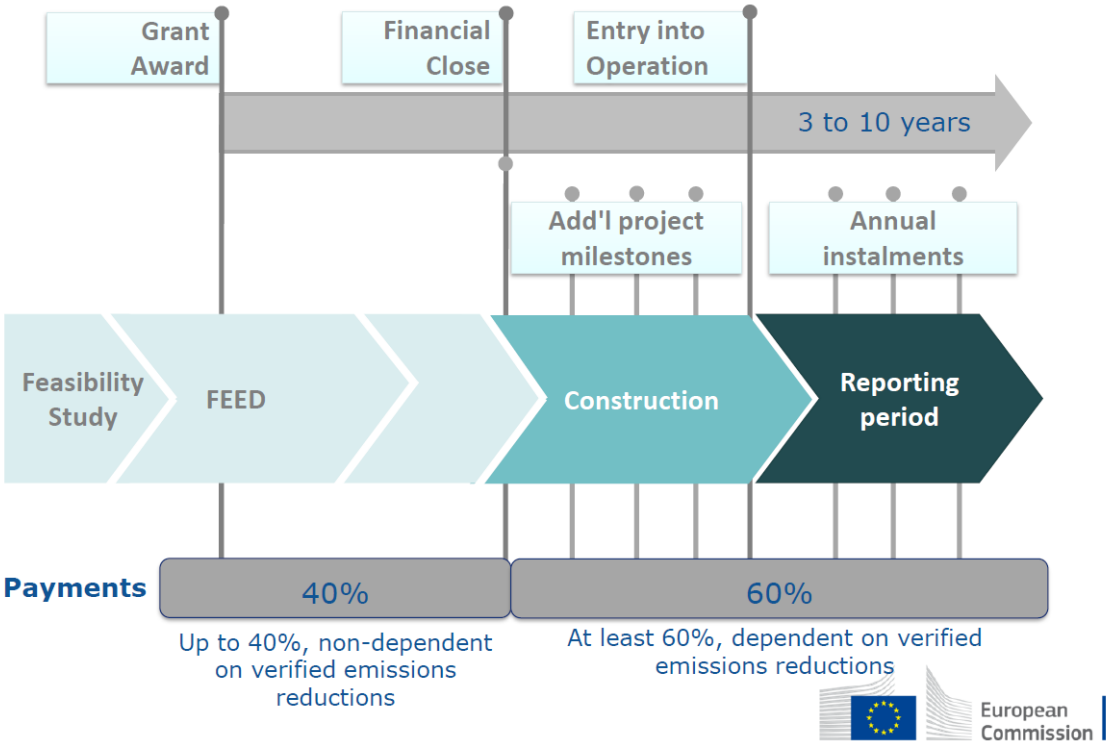

Figure 1: Example of the Innovation Fund's proposed support across a project's lifecycle (Source: DG Clima Presentation at the Innovation Fund Stakeholder Workshop for CCS, September 2019)[4].

2.6 Application Process

Preparations are currently underway for the first call of the Innovation Fund, with industry workshops for each sector initiated by the European Commission to gather industry viewpoints on the final application procedure. The first call for expressions of interest is expected to be launched in the second half of 2020.

The application will consist of a two-phase selection process starting with an expression of interest before a full application is then required. The process is outlined in Figure 2.

The two-phase application procedure aims to simplify and speed up both preparation for applicants and allow for the identification of mature project proposals upfront. There is also the possibility that a specific application procedure may be established for small-scale projects in the call for proposals.

At the full application phase the project will be required to submit a detailed description and all supporting documents including a knowledge sharing plan. More details will be available when the first call for proposals is launched.

[4] Minutes for this workshop are available here: https://ec.europa.eu/clima/sites/clima/files/innovation-fund/0609-zep-minutes_en.pdf

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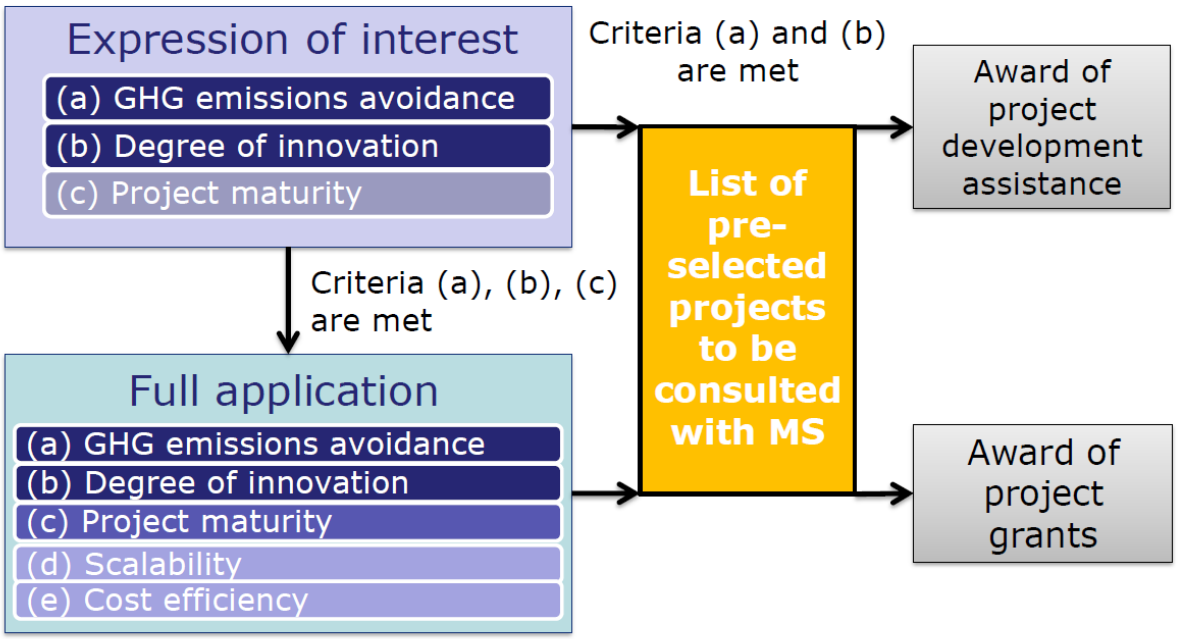

Figure 2: Diagram of the Innovation Fund Application Process

2.7 Knowledge Sharing Requirements

The innovation fund will also require successful projects to partake in knowledge sharing activities. Projects will be expected to provide targeted information to multiple audiences, including the media and the public. The projects should publish information on their websites, including an explicit reference to the support provide by the Innovation Fund. Furthermore, the projects are required to acknowledge the support provided by the Innovation Fund on all project related communication and knowledge sharing related to the project. Finally, the implementing body of the Innovation Fund, yet to be decided, will have the obligation to organise specific seminars, workshops or other types of activities to facilitate exchanges of experience, knowledge and best practices as regards the design, preparation and implementation of projects as well as on the effectiveness of the financing provided through project development assistance projects.

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3 Implications for CCUS Projects

This part of the briefing aims to document and analyse discussions that took place during the second knowledge sharing workshop of the EU CCUS Projects Network, in October 2019. The Innovation Fund is an important potential source of funding for the realisation of the first wave of European CCUS projects, and a number of the Network's members are considering applying to the fund. The discussion focused on two key areas:

1. The suitability of the Innovation Fund for supporting CCUS, based on the Commission Delegated Regulation EU/2019/856, which outlines the key modalities and procedures for the fund. This also included raising any questions and clarifications sought regarding the regulation.
2. The interaction of the Innovation Fund with other European and national subsidy schemes for CCUS, such as the ability to 'blend' funding streams to further improve business cases, and issues regarding timing between the schemes and the ambitions of planned CCUS projects.

3.1 Suitability of the Innovation Fund

In general, the structure of the Innovation Fund was welcomed by all members. It is clear that the European Commission has acted on some of the challenges faced by the NER300, launched in 2011, which failed to support any CCUS projects through to implementation. For example, the Innovation Fund allows up to 40% of funding to be provided during the design, engineering and construction phase of the project, supporting the cash flow of projects during their development. Furthermore, a two-stage proposal process has been introduced, meaning that potential projects can submit an initial expression of interest which is expected to be considerably less arduous than the immediate submission of a full proposal.

However, despite the many improvements over the NER300, members did have a few concerns and points for clarification.

3.1.1 Questions and concerns regarding the application process

GHG emissions avoidance

A project's expression of interest will be evaluated against three criteria (see points a, b and c in Figure 2). Although further guidance is expected from the Commission before the launch of the Innovation Fund in 2020, members raised the importance of developing clear methodologies for calculating the GHG emissions avoidance for CCU and part-chain CCS projects. For example, whereas calculating the GHG emissions avoided from an integrated full-chain CCS project may be relatively simple, how would you calculate emissions avoided for a stand-alone pipeline or a storage site? The regulation stipulates that 'part-chain CCS projects, with secured storage contracts', which is interpreted as transport infrastructure, are eligible for funding. In this instance, it is important to clarify on what basis the GHG emissions avoidance for such a project would be based upon: would it be based upon the secured storage contracts, or the total transport capacity?

CO_2 capture, transport and storage benefit from existing guidelines for calculating GHG emissions avoidance through the monitoring, reporting and verification guidelines of the EU ETS (Commission Regulation No. 601/2012). However, there are as yet, no guidelines for calculating GHG emissions

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avoidance from CCU technologies. Information on the environmental performance of CCU technologies is currently limited and scattered. The wide range of possible CCU processes means that it will be challenging to develop methodologies for all potential CCU applications. This issue has been raised by the Group of Chief Scientific Advisors to the European Commission through the Scientific Advice Mechanism (European Commission, 2018). This same advice document provides a methodology with a number of fundamental components. It will therefore be important that there is enough clear guidance on what methodology CCU projects can use in order to calculate their GHG emissions avoidance when applying to the Innovation Fund.

Degree of innovation

Criteria b) of the application process to the Innovation Fund concerns the degree of innovation. Article 11(b) of the Innovation Fund regulation states that the degree of innovation should be compared to the state of the art. It was generally agreed amongst Network members that any fully integrated industrial CCS project being developed in Europe could be considered innovative, as it would be a first-of-a-kind project. Members struggled with how different applications could be objectively evaluated on the degree of innovation. Technology Readiness Levels (TRL) were considered, however this is a system to evaluate how close a technology is to market readiness. Many CO_2 capture technologies are already market ready, but using TRLs would mean they score less on innovation. Some ideas may be very innovative, but be based on immature technology, creating a trade-off with other evaluation criteria (see below). For the development of large-scale CCS projects in Europe, these could be considered as first-of-a-kind, and therefore score highly on innovation, even though the technologies deployed could be relatively mature. There was a view, in the expression of interest phase at least, that having a project deemed 'innovative' should be sufficient for it to progress, so long as it meets the other criteria. In any case, a number of key points were raised that could be considered when evaluating the innovativeness of projects:

- Resource efficiency – using less energy
- Integration into existing processes
- Smart retrofitting
- Developing other capture technologies other than amine-based
- Emission free capture
- Possibility of re-using infrastructure
- Deployment is challenging processes or industries (i.e. chemicals/refineries)

There was also general consensus amongst members that the criteria of scalability (Article 11(d)) is perhaps more important than degree of innovation (b), as technologies that can be scaled-up and replicated can have the greatest impact on overall carbon abatement. However, the criteria of Article 11(d), which refers to the criteria for 'technical and market potential for widespread application or replication, or for future cost reductions', will apparently not be evaluated in the initial expression of interest phase, but only in the full proposal phase.

Project maturity

Criteria c) of the application to the Innovation Fund concerns project maturity. Article 11(c) of the Innovation Fund regulation states that project maturity will be evaluated in terms of planning, business model, financial and legal structure, as well as the prospect of reaching the financial close within a pre-defined period of time not exceeding four years after the award decision. There was

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general consensus amongst Members that additional guidance would be useful regarding the way in which applicants can demonstrate project maturity to the evaluators. For example, guidance could be provided on the evidence that should be submitted, such as engineering feasibility studies, FEED studies, MoUs between investing parties, permits or permit applications, etc. It was agreed that it would be a good idea to ask projects to provide an implementation plan to show how the project will advance from grant agreement to operation. This plan could include engineering, financial, regulatory and public outreach milestones.

Funding for storage site development and operation

A general concern raised was that funding for CO_2 storage seems to be overlooked by current European policies for CCS development. Whereas the Innovation Fund appears to have a focus on full-chain and part chain projects (including storage contracts), and the TEN-E regulations cover CO_2 transport (cross-border), there are no policies to incentivise the preparation and operation of CO_2 storage sites. In order for full-chain, and part-chain projects to gain access to storage sites, potential storage sites must be characterised, prepared and permitted. Of course, these storage sites have to have an entity that is willing to invest in and operate a site. Whereas a fully integrated oil and gas company, such as Shell, BP or Equinor, may have the expertise and ability to realise a full capture, transport and storage project, this is unlikely to be the case for a steel or cement plant owner. Therefore, some prospective CO_2 capture sites will be dependent on a third-party service provider to transport and store the CO_2.

Members raised the point that storage sites take multiple years to reach permit approval, and multiple sites may be required to be developed in parallel to meet demand or to provide operational flexibility. The representative from the European Commission stated that the transport and storage costs, if not directly part of the project application, can be included in the OPEX of a prospective CO_2 capture project. However, this still remains somewhat unclear about how such costs can be derived, and whether these tariffs will represent the full cost of developing a storage site. It was suggested that if the Innovation Fund does not properly account for the development of CO_2 storage reserves, a bespoke fund could be considered.

Timing of the call

The expression of interest phase for the Innovation Fund is expected to open in the second half of 2020. It was the opinion that, for the more advanced infrastructure projects such as the Northern Lights project in Norway, and the Dutch Porthos project in Rotterdam, the timing of the funding presents problems. These projects expect to take a Financial Investment Decision in 2020 and 2021 respectively, meaning that each project's business case must be finalised by that point.

An official from the European Commission stated that it would be expected that the evaluation of the full proposals for the Innovation Fund could take up to 12 months. Factoring in both the expression of interest phase, and the proposal development time to be given to applicants, the results of the first round of the Innovation Fund may not be known until 2022. Therefore, it is likely that the Innovation Fund financing will not be taken into account for these two flagship infrastructure projects, at least at FID stage. However, it must be made clear that although the Innovation Fund financing may come too late for the infrastructure projects, the potential users of the infrastructure (i.e. emitters in Rotterdam and Norway), may take a FID for their CO_2 capture systems at a later date, meaning that the Innovation Fund financing could play an important role. It was recognised by all members that delays in the

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Innovation Fund proposal appraisal and financing procedure should be avoided if CCUS is to support the EU decarbonisation targets by 2030.

3.2 Interaction of national funding with the Innovation Fund

In recent years there has been a lack of funding for large-scale deployment of CCU projects. The last round of the NER300 projects was in 2013, and there have been no structural policies made available in Member States, with the exception of the Norwegian government funding of Technology Centre Mongstad, which opened in 2012. Recently however, the governments of both Norway and the Netherlands have made it clear that considerable national funding will be made available to support the implementation of CCS projects. During Network discussions, questions were raised regarding the interaction between European and national funding schemes for CCUS, both in terms of possible 'blending' or 'stacking' of funds, but also timing. These aspects are further discussed below.

3.2.1 Interaction with national funding schemes

A number of European countries, such as Norway, the Netherlands and the UK, have identified CCUS as a particularly important carbon abatement technology, and previously made considerable funding available for the demonstration of CCUS. Given that EU funding, through the Innovation Fund, will soon be made available to successful projects, how national and EU funding streams interact with one another raises questions. One concrete example of national funding for CCUS stems from the Netherlands, which is covered in detail below.

In Q4 2019, the Dutch government announced the inclusion of funding for CCS in the national feed-in tariff scheme, called the SDE++[5]. The SDE formerly focused on supporting the roll-out of renewable energy technologies, by providing project developers with a fixed amount of subsidy per MWh. In 2020, the SDE will be expanded to include a subsidy per tonne of CO_2 capture and stored. This subsidy would guarantee the operator of a CCS plant a guaranteed subsidy per tonne of CO_2 captured and stored for a period of 15 years. Given that the cost of capturing CO_2 varies across different industrial processes, the system recognises four categories of CO_2 capture each with a specific subsidy rate. The SDE++ is expected to cover 100% of a project's cost for a period of 15 years.

Table 1: CO_2 capture subcategories and subsidy amounts from the Dutch SDE++ policy (Noothout & Lensink, 2019)

Capture subcategory	Possible applications/sectors	SDE++ amounts (€/ton CO_2 avoided)
Additional CO_2 storage from existing capture installations	Existing capture at hydrogen and biomass plants, ethylene oxide	35

[5] SDE is an abbreviation for stimuleering duurzaam energieproductie, or stimulating sustainable energy production. The plusses denote that this is the third variant of the scheme since its inception in 2008.

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Capture subcategory	Possible applications/sectors	SDE++ amounts (€/ton CO_2 avoided)
Concentrated CO_2 sources	Hydrogen, ammonia and steel	67
CCS at waste incinerators	Waste incineration	91
CCS at refineries	Refineries	139

The SDE++ is expected to be launched by mid-2020, with applicants expected to be given 4 months to complete the application process. The evaluation process will take 8 weeks. Therefore, the applicants will be informed of the outcome of their proposal by the start of 2021.

Both representatives of the European Commission and of the Dutch Government have informed the Network that in principle, there are no restrictions in combining funds from the SDE++, and the Innovation Fund, so long as the subsidy given does not cover more than 100% of a projects total cost. In theory, the funding from the Innovation Fund could enable Dutch applicants to the SDE++ to request a lower subsidy amount, potentially increasing their probability of success. However, the asynchronous timing between the Fund and SDE++ represents challenges, as the first applicants to the Innovation Fund will not know the outcome of their full proposal until 2022. This means, for the first wave of CCS projects in the Netherlands that apply for SDE++, that they will not be able to include Innovation Fund grants in their business cases prior to SDE++ application. Whether Dutch projects can apply to the Innovation Fund, and then if successful, retroactively adjust their SDE++ requests remains to be seen. The Network intends to follow these developments closely throughout 2020.

Norway's government is also expected to play a large role in funding the country's plans for a full-scale CCS project, which involves collecting CO_2 from two sources in the Oslo region, and transporting it for storage off the Norwegian west coast. Again, the FID for this project is expected to happen in 2020, considerably earlier than the outcomes of the first round of the Innovation Fund. The Innovation Fund could however play a role in Northern Lights project, initiated by Equinor, Shell and Total. The Northern Lights project focuses on the establishment of a transport and storage infrastructure in Norway, to accommodate CO_2 captured from other European countries, having established MoUs to cooperate with industrial partners in the UK, Ireland, Belgium and the Netherlands. The Northern Lights project is also a registered EU Project of Common Interest (PCI), meaning that it could receive up to 50% of investments costs from the Connecting Europe Facility.

3.2.2 Interaction with other European subsidies

In addition to the Northern Lights projects, there are currently five CO_2 transport infrastructure projects that are recognised as PCIs under the EU's Trans-European Energy Infrastructure Regulation (TEN-E). The list of CO_2 transport PCIs, recognised for the period 2020-2022 include:

- ERVIA Cork CCUS (Ireland)
- CO_2 transports (the Netherlands)

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- CO_2 Sapling transport infrastructure project (UK)
- North Lights (Norway)
- ATHOS (the Netherlands)

From 2020, these projects will be eligible to request grants for preparatory studies, or for works (i.e. project CAPEX). A number of the PCIs have been registered in the previous PCI period, from 2017-2019, and have received grants from the CEF for preparatory studies, including FEED studies. A number of these projects have also indicated that the Innovation Fund is an interesting potential source of funding, however the timing of the CEF is potentially more favourable for projects looking to take an FID prior to 2022. It has been made clear by the European Commission that Innovation Fund financing and funds from the CEF cannot be stacked for individual investments. On the other hand, PCIs could apply for funds for preparatory activities from the CEF, and project development assistance from the Innovation Fund so long as the activities are clearly distinguishable.

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4 Summary and conclusions

This report has provided an overview of the most relevant modalities and procedures for CCUS projects looking to apply for Innovation Fund financing. Based on a discussion with members of the EU CCUS Projects Network, all members consider the Innovation Fund an important and broadly suitable policy mechanism, which has been improved from previous schemes to support the technology. Nevertheless, there are a few areas of the scheme that remain unclear, in addition possible shortcomings due to the timing of the scheme.

Broadly speaking, it is hoped that the Innovation Fund Call for Proposal documents expected by mid-2020, will provide more information on how applicants should approach some of the key evaluation criteria, namely, calculating emissions avoidance for part-chain CCS and CCU projects, demonstrating project maturity as well as project innovativeness. Furthermore, there remains a concern that the costs for developing sufficient contingent storage sites could be overlooked by the Innovation Fund, and EU policies directed towards CCS in general. Finally, whereas there does not seem to be any regulatory barriers to blending Innovation Fund financing with Member State subsidies, the asynchronous timing between the planned FIDs of some of the more advanced projects, and the outcomes of the Innovation Fund (expected in 2022), means that certain projects may not be able to benefit from blending such financing sources.

4.1 Next steps

This report will be provided to the Commission and the EU CCUS Projects Network intends to discuss the key viewpoints and remaining uncertainties during the forthcoming project review meeting. The responses from the Commission will then be shared with Network members where appropriate. Unresolved issues will remain on the agenda of the Thematic Group on Policy, Regulation and Public Perception and the Network Secretariat will takes efforts to address them.

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5 Glossary and abbreviations

CAPEX	capital expenditure
CCS	carbon capture and storage
CCU	carbon capture and utilisation
CCUS	carbon capture utilisation and storage
CEF	Connecting Europe Facility
CO_2	carbon dioxide
DG Clima	Directorate General for Climate Action
ETS	Emissions Trading Scheme
EU	European Union
FEED	Front-End Engineering and Design
FID	final investment decision
GHG	greenhouse gas
MoU	memorandum of understanding
MWh	mega-watt hour
NER300	New Entrants Reserve
OPEX	operating expense
PCI	project of common interest
SDE	Stimulering Duurzaam Energie
TEN-E	trans-European networks for energy
TRL	technology readiness level

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