

Qualification Criteria

This document outlines the criteria to be satisfied by all members of the CCS Project Network, the Network's structure and governance and the application procedure for new members.

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Table of Contents

1. Introduction	4
2. Eligibility criteria.....	4
3. Commitment to Network goals	6
3.1 CCS public awareness.....	6
3.2 Knowledge sharing.....	7
3.3 Co-operation with partners outside EU.....	8
4. Commitment to network organisation and procedures.....	8
4.1 Structure of the Network.....	8
4.2 Role of the Steering Committee	10
4.3 Role of the Advisory Forum	11
4.4 Application process.....	11
4.5 Contribution to the Network	12
4.6 Online access.....	12
4.7 Progress and experience gathering	13
4.8 Resignation.....	14
4.9 Exit.....	14
5. Demonstration of project maturity and commitment – Project Management.....	14
5.1 Project scope and time management.....	14
5.1.1 Work Breakdown Structure (WBS) and associated schedule	14
5.1.2 Decision Gates and Level 1 and 2 Schedule Milestones	15
5.2 Financial commitment, overall financial plan.....	16
5.3 Permitting management plan	16
5.4 Project risk management plan, general	16
6. Demonstration of project maturity and commitment – Feasibility study.....	17
6.1 Cost estimate	17
6.2 Energy consumption	17
6.3 CO ₂ capture	17
6.3.1 CO ₂ Source.....	17
6.3.2 CO ₂ capture rate.....	17
6.3.3 Emissions.....	17

6.4 Transport.....	17
6.4.1 Ship transportation	18
6.4.2 Pipelines	18
6.5 Storage	18
7 Application Form.....	19
Signatory’s telephone number	20

1. Introduction

The EU aims to stimulate the construction and operation of up to 12 CO₂ Capture and Storage (CCS) demonstration projects in the period 2015-2018. The successful operation of these demonstration projects is seen as crucial for enabling widespread commercial application of zero emission power plants or industrial installations by 2020 to meet EU and global climate goals.

The European CCS Demonstration Project Network (hereafter referred to as "the Network"), initiated by the European Commission (EC) in the first instance¹, brings together the demonstration projects that are underway in Europe. The Network provides added value to European projects by:

- Facilitating the identification of good practices, lessons learned and recommendations with respect to large-scale CCS demonstration and enabling knowledge sharing amongst projects.
- Providing a common EU identity to Network members.
- Leveraging experience gained from projects and the evidence generated by them, in order to build public confidence about the feasibility and safety of CCS.
- Promoting CCS, EU leadership and cooperation potential to third parties/countries.

All projects that apply for membership of the Network should fulfil the eligibility criteria, provide evidence about the maturity of the project, commit to knowledge sharing and agree to the Network organisation and procedures (Section 4). These qualification criteria are described in Sections 2, 3, and 4. Details about the documents to be submitted in support of the application are provided in Section 5 and 6. However the Network steering committee reserves the right in certain circumstances to admit other projects which it deems to be of value to the Network.

2. Eligibility criteria

Projects in the Network shall have sound plans to demonstrate the full CCS value chain by 2018 and shall fulfil the following technical criteria:

- The CCS project shall for a fossil fuel-fired power plant have a minimum gross production of 250MWe before CO₂ capture and compression.
- The CCS project shall for an industrial plant realise a minimum of 500kt per year of stored CO₂.
- The CO₂ capture rate shall not be less than 85% of the treated flue gas stream.
- The project, i.e. the plant to which CCS is applied, shall be located within the European Economic Area (EEA)².

The Network will be open to all qualifying projects and will not distinguish between EU-funded and non-EU funded projects. In principle there is no limitation to the number of members.

¹ COM (2008) 13

² For reasons of promoting the cooperation potential in CCS to third parties/countries, applications may be considered from projects outside the EEA with which the EC has established particular collaboration and which fulfil the qualification criteria.

Each application will be assessed on its fulfilment of the following expectations of commitment and maturity:

- *Commitment to deployment of CCS*
Based on evidence of a commitment to a realistic and relevant CCS action, including a feasibility study and a financial plan.
- *Commitment to operation by end of 2018*
Based on credible plans for start of operation by this date, including work breakdown structure and schedule plans, including milestones and decision gates.
- *Project maturity level equal to completion of feasibility study*
This level of maturity will give confidence in the project plans and decisions. It is appreciated that some projects will enter the Network having already proceeded into FEED³ or development of design specifications for construction and procurement.
- *Commitment to knowledge sharing*
One of the core objectives of the Network is to facilitate knowledge sharing and formulate best practices. All participants should therefore commit to the principles and procedures of knowledge sharing in the Network.
- *Commitment to public awareness*
Another core objective of the Network is to enhance public awareness and confidence in the feasibility and safety of CCS. All participants should therefore commit to contribute to (1) the communication with the public and (2) the provision of consistent and collective information about project progress to the public.
- *Agreement with the organisation and procedures of the Network*
The organisation and procedures of the Network provide the basis for the effective operation of the Network, including conditions for entry and exit of members.

The fulfilment of these criteria shall be substantiated and supported by a set of documentation which is to be enclosed with the application (see Table 1). This documentation shall consist of:

- An application form to be completed by the applicant (see Section 7).
- Excerpts from the feasibility study, the FEED study and/or design specifications, and project management plans/documents as appropriate.

The documentation shall serve the following purposes:

- Provide evidence of fulfilment of the above criteria.
- Provide baselines for project progress monitoring throughout the project duration, and thus help identify best practices.

Depending on the appropriate level of detail needed to support the different types of information in the application, two kinds of document are requested:

- **Complete Document** means the pertinent document in its entirety, responding to the requirements set forth in Sections 5 and 6. It is anticipated that by and large this could be fulfilled by an extract from the relevant sections of the feasibility study, the FEED study, design specifications and present versions of project management plans.
- **Summary** means a summary statement describing how the requirements set forth in Sections 5 and 6, including all mentioned processes, are/will be appropriately addressed in the project technical development and project management processes. Wherever possible the summary should be accompanied by a Table of Contents that provides an overview of the summarised documentation.

³ Front End Engineering Design (FEED) study. Equivalent to 'pre-engineering' study.

The above categories shall support the application and thus form the basis for the Commission's assessment. Expectations for these documents are summarised in the following sections.

The qualification criteria shall be understood to apply to the following categories of projects alike:

- CCS new-build projects; both those entirely newly built and those re-using existing infrastructure in parts of the project.
- CCS pilot plants with the aim to scale-up by the stipulated due date for operation at demonstration scale as defined in the technical criteria (Section 2, above).

The EC will review the criteria set forth in this document annually, and amend it as deemed appropriate, with respect to its suitability for promoting the overall objectives of the Network.

Ref.	Description	Complete Document	Summary
3	Network Goals	Statement of commitment	
4	Network Organisation and Procedures	Statement of acceptance	
5.1.1	Work Breakdown Structure & Schedule	X	
5.1.2	Decision Gates and Milestones	X	
5.2	Financial Commitment, Overall Financial Plan		X
5.3	Permitting Management Plan		X
5.4	Project Risk Management Plan, general		X
6.1	Cost Estimate		X
6.2	Energy Consumption		X
6.3	CO ₂ Capture		X
6.4	Transport		X
6.5	Storage		X

Table 1: Application Documents

In certain circumstances the Network members may consider an application to the Network which does not fulfil all of the criteria. In this case the project concerned must provide evidence of its benefit to the Network to be considered as a member or associate member. Projects which fall into this category should contact the Network secretariat to discuss its application.

3. Commitment to Network goals

3.1 CCS public awareness

The Network shall work to the benefit of the demonstration projects by undertaking actions to increase public awareness. This will be achieved by leveraging the experience gained from demonstration projects and the evidence generated by them in order to gain public confidence about the feasibility of CCS, taking into account the particular need to address the public perception of safety, long-term liability and environmental impact of CCS. The Network is therefore be in a strong position to engage in co-ordinated actions with other bodies, such as Non-Governmental Organisations (NGOs), to develop consistent and effective strategies for public engagement. Members shall commit to provide up-to-date and relevant information in a timely manner to facilitate the provision of consistent and collective information about project progress to the public. In the case of common activities organised by the Network to improve public perception and engagement, members shall agree to provide support in order to enhance the quality of the activity. This support could be in organisation, provision of information, dissemination of information, or attendance and participation in events.

3.2 Knowledge sharing

Knowledge sharing is of value to EU CCS demonstration activities to address four objectives:

1. De-risking of CCS with regard to scaling up to commercial size.
2. Acceleration of the deployment of CCS to support the achievement of the EU ambition of commercialisation of CCS by 2020.
3. Increasing the understanding of, and confidence in, CCS by the wider public.
4. Maintenance of a competitive market for the post-demonstration deployment of CCS technologies.

Applicants shall be committed to knowledge sharing, meaning that they are willing to participate in the Network knowledge-sharing activities, including but not necessarily limited to:

- Participation in information sharing events of various formats;
- Being open to identification of best practice and requests for lessons learned;
- Provision of contents (e.g. lessons learned, documents) to a knowledge-sharing website for Network members;
- Participation in online discussions.

The procedures and requirements for knowledge-sharing are outlined in a separate document, 'European CCS Demonstration Project Network Knowledge Sharing Protocol'. Commitment to knowledge sharing as defined by the Network criteria is thus the acceptance of the 'Knowledge Sharing Protocol', including the categories of knowledge to be shared and the procedure for approval of publication of shared information. A brief summary of the principles is presented below.

Key outputs of knowledge sharing are anticipated to be:

- Dissemination of new knowledge generated by the projects in the course of their implementation, and collected by the Network, in the areas of:
 - Technical set up and performance.
 - Cost levels.
 - Environmental impact.
 - Health and safety.
- Identification of good practices, lessons learned (both positive and negative) and recommendations for implementing large-scale CCS projects in the above areas and also:
 - Project management, including:
 - Planning.
 - Application of legislative procedures.
 - Public communication and engagement strategies.
 - Selecting, characterising, modelling and monitoring of storage sites.
 - Risk management (including corrective measures and financial security).
- Contributions to the development of CO₂ composition and transport standards and infrastructure strategies.

The objective is that through the Network, relevant knowledge shall be made available at an appropriate level of detail to demonstration projects, the EC, researchers and the wider industry in the form of best practices, lessons learned and recommendations. Relevant knowledge shall be made available to the public in order to keep the public as informed as possible about the progress of the demonstration projects, including full transparency regarding HSE knowledge that arises from the projects.

It should be noted that whereas intellectual property (IP) shall be respected, the experience with and the performance of the IP contents as implemented by a project could be subject to knowledge sharing. The Knowledge Sharing Protocol document sets out further details about the data-handling responsibilities of the Network. The Network Secretariat, Network members and the EC shall not disclose information provided to the Network for sharing without prior consent of the information

provider, except in the case of categories of information assigned as available to non-members in accordance with the Knowledge Sharing Protocol.

Progress and experience gathering will be amongst the means of identifying best practices. Members shall agree to provide information at regular intervals in an electronic format on the categories defined in the Knowledge Sharing Protocol. As project development progresses this could thus include, for example, progress against the schedule/milestones and decision gates passed, CO₂ captured, permits obtained/unobtained, capital and operational expenditure, changes in estimates/update of baselines. Where analysis is performed on this information, tabulated results will be generated as the basis for identification of best practices.

3.3 Co-operation with partners outside EU

There are clear benefits to the united presentation of European CCS demonstration projects internationally. Members shall agree to the promotion of the Network by the Network Secretariat. This primarily involves the representation of the Network by the Network Secretariat at meetings and events involving industrialised countries, emerging economies and other non-governmental international entities working on CCS demonstration. It will be enhanced by occasional participation of members in these activities. The level of international engagement is determined by the SC as being beneficial to EU economic and environmental goals, and in accordance with the Knowledge Sharing Protocol.

4. Commitment to network organisation and procedures

4.1 Structure of the Network

In order to run an effective and efficient operation, the Network recognises the following roles:

- **The European Commission (EC).** The EC provides overall coordination and context to the actions of the Network, and retains a seat on the Steering Committee. It will provide guidance on the execution of activities, the application of the Qualification Criteria, the content of the Knowledge Sharing Protocol, its expectations with respect to knowledge sharing, and the annual agenda of activities adopted by the Steering Committee.
- **Members.** Members are limited to CCS demonstration projects that fulfil the criteria set out in this document, or other projects which do not fulfil the criteria but are deemed valuable to the Network and their consortium partners. Each member nominates a liaison as a contact for the Network Secretariat to deal with practicalities (e.g. website access and content, event registrations etc.) and a representative to the Steering Committee. Where projects are organised as consortia, it is anticipated that they will be represented by project owners/developers/operators with assistance and support from all consortium partners. Members are further encouraged to establish agreements with their suppliers and sub-contractors to involve them in knowledge-sharing activities to maximise the value of Network discussions without regard to intra-project interfaces and company boundaries, and without compromising sensitive information between competing parties involved in the individual projects.
- **The Steering Committee (SC).** The SC is composed of representatives of each of the members and the EC. Each member nominates an appropriate representative to sit on the SC. The SC proposes Network activities that best support the EU ambitions and are in line with the interests of members and other key stakeholders. It is responsible for agreeing the annual agenda of activities with the EC, sanctioning the accession of new members, and resolving issues within the Network to ensure delivery of the objectives.

- **The Advisory Forum (AF).** The AF comprises representatives of national administrations and other key stakeholder organisations, for example research organisations, the European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP), NGOs, potential project developers, geological research institutes and international bodies involved in cooperation on CCS demonstration. The purposes of the AF are to provide guidance on knowledge-sharing themes and objectives, to provide oversight of Network progress in line with the policy objectives and to maintain strong links with the wider CCS community.
- **The Network Secretariat.** The Network Secretariat is responsible for the following actions.
 - Organising, facilitating and reporting on annual and interim events, including SC meetings;
 - Managing the knowledge-sharing agenda.
 - Managing the websites.
 - Collecting and analysing information for publication of progress reports and thematic reports.
 - Supporting members with the identification of good practices and use of enabling tools to bridge gaps between 'knowledge donors' and 'knowledge recipients'.
 - Communicating and promoting the Network to the global CCS community and the general public.

The actions of the Network Secretariat shall be made available to the Members by the EC.

- **The Wider CCS Community.** Communication of lessons learned and results from the demonstration projects to other bodies that are active in CCS research and demonstration will be ensured so that subsequent research and investment decisions are well-informed. Researchers, non-member CCS projects, international organisations, national governments and CCS supply chain companies will be targeted in this regard in accordance with the Knowledge-Sharing Protocol. Several of these will also be contributing parties to Network activities either through the Advisory Forum or participation on specific themes as agreed by the SC.
- **Public.** It is to be ensured that the general public have access to a range of information on the demonstration projects, freely and openly, to be able to make up their own minds on the benefits and issues surrounding CCS. Public and NGOs with a high level of interest in CCS could be engaged in Network activities such as the annual Network event, and activities on public engagement in order to add value to discussions.

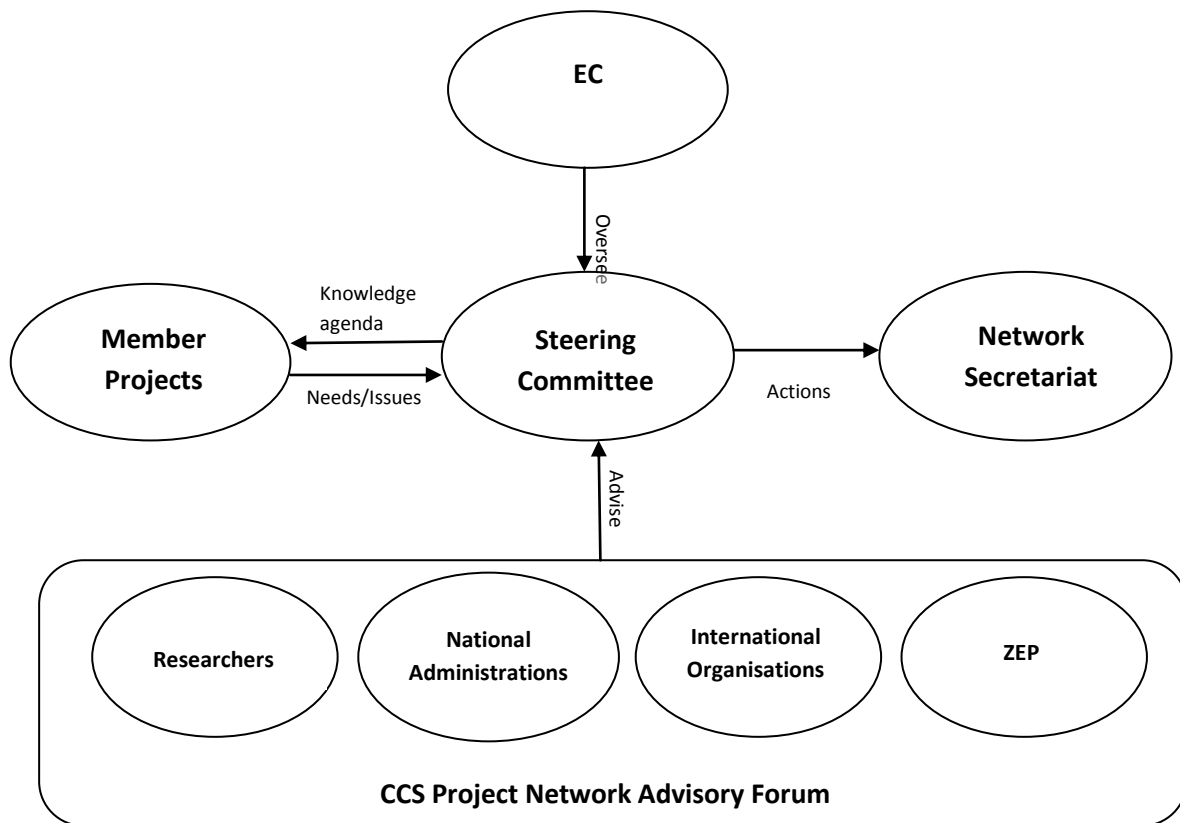


Figure 1: The figure shows an overview of the organisational structure of the Network.

The level of participation of each of these roles in the knowledge-sharing process is detailed in the Knowledge-Sharing Protocol document. Further roles and additional roles may be defined by the SC in collaboration with the EC, for example by facilitating interaction between members and non-member industrial actors who may contribute detailed insights and be able to improve their own technology.

4.2 Role of the Steering Committee

The SC is the body that guides the activities of the Network and the preparation and publication of information.

The SC meets at least annually and will be involved in the ongoing decision-making processes of the Network operations in accordance with the publications procedure laid out in this section.

The annual meeting should review the previous year's activities and reports and agree on the next year's agenda.

Exchange of knowledge is most effective when it is by mutual consent. To achieve the highest levels of sharing and trust between members of the Network, joint decisions will be taken on the basis of agreement between members of the SC. Issues requiring such decisions include:

- Agreement of the annual knowledge-sharing themes and agenda based on proposals by the Network Secretariat and the Advisory Forum.
- The publication of material arising from Network activities in accordance with the publication procedure outlined in the Knowledge Sharing Protocol.
- The agenda and minutes of Steering Committee meetings.
- Adjustments to Network internal procedures.

4.3 Role of the Advisory Forum

The AF should meet annually, and should be kept regularly informed of Network progress and be able to propose themes for knowledge sharing to the SC. The AF therefore plays a consultative role in the annual agenda-setting process of the Network.

Engagement with governments of Member States and non-EU countries with member projects on their territory builds on the foundations of the ZEP Government Group and the Berlin Fossil Fuels Forum. The experience, expertise and broader constituency of ZEP will be represented in the AF.

Research organisations that can contribute to building further knowledge on CCS, but are not directly involved in project consortia, are a key audience for knowledge generated by the Network. The AF is the body through which they are engaged in Network activities. Likewise, exchange of experience and information arising from demonstration efforts in other countries will be highly valuable to the worldwide acceleration of CCS deployment. Interaction with these projects, and other networks, is to be developed by the Network Secretariat, in consultation with the SC, to facilitate such exchanges. Representatives of international knowledge-sharing forums that may arise are to be invited to participate in the AF.

. Meetings of the AF take advantage of the existing structure of the ZEP Advisory Council to ensure the engagement of the appropriate personnel and their participation, for example by holding back-to-back meetings with a proposed co-chairing of meetings by ZEP and the EC. The AF has a different composition to the ZEP Advisory Council to reflect its specific purpose.

4.4 Application process

The application process for membership of the Network is designed to be as simple and transparent as practicable, but sufficiently robust to ensure that all members are suitable projects at a similar level of maturity.

1. Applicants (developers of CCS demonstration projects, on behalf of all consortium members) submit the requested documentation to the Network Secretariat to demonstrate that they fulfil the criteria or provide sufficient added value to the Network. Applications will be shared with the EC and treated as commercial in confidence⁴. The address for submission is detailed on the website www.ccsnetwork.eu. The applicant is notified of receipt of the application.
2. The Network Secretariat performs an evaluation of whether the application fulfils the criteria or will add value to the Network, making use of an opinion from the EC services and informing the EC of their evaluation. This usually will take no longer than 30 days dependent on the number of applications to be assessed, the quality of the applications submitted and the other commitments of the EC services.
3. The EC takes the final decision on endorsement of the application to the SC on the basis of the evaluation. When the SC decision is positive, the project coordinator, on behalf of the project owner(s)/consortium signs an accession form that is annexed to the CCS Project Network Membership Agreement, as established between existing members at that point in time, that they will respect the goals, organisation and procedures of the Network⁵.

⁴ The Network Secretariat is committed by the confidentiality clause of EC service contract ref TREN/300-1/C3/2008/S12.518806.

⁵ This is to a mutual agreement between the projects that are members of the Network.

4. If the application does not demonstrate fulfilment of the criteria in the view of the Network Secretariat, the applicant is notified by the Network Secretariat of their decision and the rationale. If it is considered that the rejected application is from a project that is in general sufficiently advanced and suited for the Network and that a revised application could satisfy the criteria, the applicant will be informed accordingly and invited to consider resubmission of its application.

Project developers may submit applications at any time.

Project developers should ensure that all consortium members are equally committed to meeting the Network qualification criteria. Contribution by project developers and consortium members to Network goals and activities is expected regardless of the project ownership configuration. CCS demonstration projects that are beneficiaries of funding under the European Energy Programme for Recovery (EEPR), the New Entrants Reserve (NER300) or any other EC programme that obliges membership of the Network are not required to additionally submit applications for Network membership. Their membership shall be recommended to the Steering Committee directly by the EC. They shall nevertheless be expected to provide the items listed in Section 4.7 of this document, as they are prepared, in order to inform the Network of progress against schedule.

4.5 Contribution to the Network

In the course of the Network's operation, members are asked to update the information provided with their application and provide the supplementary information as outlined in Section 4.7. Projects may also be expected to supply additional information that will enable the Network to execute its core functions: learning of best practices, promotion of the projects to third parties/countries, provision of information about project progress to the public. The documentation, information and plans which the member is required to submit will serve as a basis for analysis and evaluation of status/progress. In order to enable this, members should report consistently with the baseline information.

Furthermore, members are expected to participate in and contribute to events and activities organised by the Network, especially in those areas outlined in Sections 3.1, 3.2 and 3.3. Participation in Network activities should be by the appropriate lead and authoritative technical, managerial, legal, communication, commercial or other project staff. Members should be prepared for the Network Secretariat to represent the Network to external parties.

Members are required to make use of the common identity of the Network. For example, this shall include the use of the Network logo in presentations and public documents. This will be valuable in ensuring the recognition and success of the Network. Members are required to provide a point of contact for the Network coordinating team. This person will be available to manage contact between the Network and the member. Any changes in contact details are to be promptly notified to the Network Secretariat. Similarly, a designated member of the Network Secretariat is assigned to each member as a liaison.

4.6 Online access

Information is to be uploaded by members to the Network website. This website will have various levels of confidentiality:

- Area accessible to the individual member. Logon controlled access.
- Area accessible to all Network members, the Network Secretariat, and the EC. Logon controlled access.

- Area accessible to the public (projects outside the Network, other networks, authorities, NGOs, society at large).

The public website contains relevant news and information on each of members, where elements of submitted information are used in communication with third parties and the public. This is with prior consent of information providers.

Each member can also have a subspace on the public website with a memorable address. The members-only website is for the support of online discussions and document exchange. IP and commercially sensitive know-how shall be duly considered.

4.7 Progress and experience gathering

The CCS Project Network aims to maintain a good understanding of the progress of the projects. During the preparation and construction phases it is important to ensure that members continue to be on schedule and that the status of each project is accurately communicated, both within the Network and externally.

At the time of application, members will submit their schedules and anticipated milestones (see Section 5.1). During operation of the Network these will be kept updated by members as and when baselines are revised and additional documentation will be provided by members to enable progress and experience gathering, and to provide a basis for identification of best practice. This is to include:

- *Project Organisation Development Plan.*
The principles for the main organisational transitions shall be addressed, e.g. the transition from the front-end engineering design phase to the design and construction phase, the transition from the commissioning phase to the operation phase.
- *Integration/Interface Management Plan.*
There will be several types of interfaces that need to be considered in a CCS project. In addition to the interfaces stemming from the technical integration of the full value chain a project is likely to have different legal entities constructing and operating different parts of the value chain. Interfaces could be design, construction and other physical interfaces, connections, or supply points, or documentary and liability interfaces such as contractual agreements with external operators.
- *Technical and Technology Risk Management Plan.*
A CCS value chain includes several new technology elements that are generally not adequately covered by established codes and procedures. New technology elements, inter alia, shall be identified and given specific attention with respect to risk management.
- *Health Safety and Environment (HSE) Risk Management Plan.*
An overall safety and integrity management philosophy for the integrated CCS system over its entire life cycle, i.e.; from initial concept through to final de-commissioning, should address the specific considerations for CO₂ related risks. The environmental impacts associated with the development and operation of an integrated CCS project shall be identified and assessed with respect to risk reducing measures. Health impact aspects, both in relation to the public health and in relation to occupational health and working environment of project employees, shall be identified and assessed with respect to risk reducing measures. Finally, this plan shall document that the HSE standards of the project will conform, as a minimum, to all relevant national and EU legislation, directives, regulations etc.
- *Public Communication Plan.*
This plan shall present a brief outline of activities to address public awareness on a national/local level and mechanisms for return communication. The plan shall include

both regular communication as well as communication in connection with major changes, special findings and incidents or emergencies. It is emphasised that it is crucial to building credibility to practice the highest possible level of transparency on HSE issues. Furthermore, it shall include processes for monitoring of public awareness/perception of CCS on national/local level and a schedule of purposeful activities for public engagement.

- **Storage: Site Selection report including Monitoring Strategy**
Applicants shall have selected at least one feasible storage site location for further site characterisation. The choice of storage site(s) shall be consistent with the findings of the screening report. This report shall include a description of a monitoring strategy for the selected site based on the monitoring objectives. It is appreciated that the final decision on storage site may not have been made at the time of application.
- **FEED Study**
It is expected that members will already be progressing with preparation of a FEED study at the time of membership. Completion of a FEED study is not a condition of membership but a timetable for completion of FEED study should be presented as part of the project schedule. Timely completion of a FEED study should be planned to progress towards demonstration in the 2015 to 2018 period. The full documents are not required. Members agree to provide summaries of each document (including tables of contents) once they are prepared, in accordance with the corresponding milestones (Section 5.1).

4.8 Resignation

In the event that a member resigns from the Network, the member's dedicated area on the website will be withdrawn. The knowledge contributed by the member to the Network and already processed through Network activities remains with the Network for continued sharing and as a basis for identification/formulation of best practice. Reciprocally, the knowledge already received through Network activities may be further used by the exiting member.

4.9 Exit

The success of the Network in advancing CCS deployment rests on the participation of its members. Knowledge sharing, especially, is a give-and-get process. In exceptional circumstances, projects that do not continue to demonstrate an adequate level of commitment to the objectives of the Network may be excluded from the network. Decisions on exclusions from the Network are taken primarily on the basis of demonstrated commitment to knowledge-sharing and progress against project milestones. In the event of exclusion, the project's dedicated area on the website will be withdrawn. The knowledge contributed by the project to the Network and already processed through Network activities remains with the Network for continued sharing and as a basis for identification/formulation of best practice. Reciprocally, the knowledge already received by the project through Network activities may be further used by the project. Detailed information submitted to the Network and not yet processed through Network activities remains the property of the excluded project.

5. Demonstration of project maturity and commitment – Project Management

5.1 Project scope and time management

5.1.1 Work Breakdown Structure (WBS) and associated schedule

Applicants are to submit project plans confirming that the project will be in operation by 2018, in the form of work breakdown structure or process chart and associated schedule showing the following level of detail:

1. The highest breakdown/planning level shall show main processes and milestones for each of capture, transport, storage, and project management parts of the project, e.g.
 - Completed FEED study or equivalent (e.g. design specifications).
 - Detail design, including storage site(s) characterisation.
 - Fabrication, manufacturing.
 - Construction, installation, integration.
 - Commissioning, testing.
 - Operation.
2. An additional level of planning detail is requested, where each of the above is broken down one level further to address:
 - Main systems.
 - Main civil facilities/sites.
 - Selected project management processes e.g. permitting.
 - Identification and assessment of interdependencies between scope elements of the plans.
 - The potential schedule impact of long lead items, especially those for which there are a limited number of suppliers.

Projects of this magnitude are expected to be planned through 4 or 5 levels of breakdown. The requested detail is expected to correspond to Levels 1 and 2. Projects may apply different breakdown principles, however the information to be provided shall be of equivalent level of detail, with the top-level breakdown according to the above description. Applicants may use their ordinary planning tool to produce the documentation, although it is expected that the work breakdown structure would be presented as a tree-structure, and the schedule as a Gantt bar chart diagram.

In order to show fulfilment of the principles set out above, applicants shall submit:

- Work Breakdown Structure, including a brief description of the breakdown elements.
- Schedule showing the above details, consistent with the WBS.

5.1.2 Decision Gates and Level 1 and 2 Schedule Milestones

To enable evaluation of the maturity of the project plans, projects' key decision gates and schedule milestones should be listed.

Decision gates should be accompanied by a brief statement of the decision criteria. Milestones are generally discrete points in time by which important processes shall have been completed, events shall have occurred, achievements have been made etc, e.g.; funding secured, permits granted, long-lead items received/installed.

It is important to include information on the dates by which the documents required by the Network will be available (See Section 4.7). Milestones for the following are therefore requested to enable progress and experience gathering, and to provide a basis for identification of best practice:

- Project Organisation Development Plan.
- Interface Management Plan.
- Technical and Technology Risk Management Plan.
- HSE Risk Management Plan.
- Public Communication Plan.
- Storage: Site Selection report including Monitoring Strategy.
- FEED Study.

In order to show fulfilment of the principles set out above, applicants shall submit:

- Definition of key decision gates.
- Milestones, including dates of completion and of key project management documentation to be submitted to the Network (see Section 4.7).

5.2 Financial commitment, overall financial plan

Applicants shall document financial commitment to project realisation, including an outline of the schedule for securing investments. An indication of the various categories of planned financing sources (e.g. venture capital, other investors, EU funds, national funds, grants etc), and their planned shares of the total investment for the complete demonstration period will be useful for judging whether projects are at the appropriate level of maturity and feasibility. Where governmental funds are not yet secured, or some finance sources remain confidential, any such assumptions or qualifications should be noted.

In order to show fulfilment of the principles set out above, applicants shall submit:

- Summary and outline of the overall financial plan.

5.3 Permitting management plan

Several parts of the integrated project will require permits from various authorities. These may relate to, inter alia, area disposition, construction and operation permits for plant and pipelines, routing of pipelines, ship traffic and lanes, drilling activities, geological data acquisition (e.g. seismic surveys), storage site activities (e.g. injection into depleted oil/gas reservoirs).

Permitting processes may be subject to strict procedures and be critical to progress and schedule. A permitting plan will thus be one of the documents most useful for judging project maturity, and comparing project progress in the early phases of the Network. It should contain at least:

- Complete list of permits required (emissions permits, storage permits, etc.);
- Identification of responsible authorities;
- Identification of permit hierarchies/interdependencies;
- Dates when permits need to be achieved in order to maintain progress towards operation by 2018.

It is appreciated that some permits may be related to legislative elements that are not yet fully implemented. The permitting plan should address the processes of managing risks associated with the permitting process.

In order to show fulfilment of the principles set out above, applicants shall submit:

- A summary of the permitting management plan.

5.4 Project risk management plan, general

Project risk management includes the processes concerned with conducting risk management planning, identification, analysis, responses, and monitoring and control on a project. A CCS demonstration project will be exposed to a number of project risks of various natures. A risk management plan shall demonstrate that adequate processes are formulated for risk identification and handling. The plan shall show the sequence of inherent processes/sub-processes, including development of risk acceptance criteria, and stipulation of recurrence/looping intervals.

In order to show fulfilment of the principles set out above, applicants shall submit:

- A summary of the project's approach to risk management.

6. Demonstration of project maturity and commitment – Feasibility study

A CCS demonstration project ought to demonstrate a degree of maturity corresponding at least to feasibility study level, in order to qualify for joining the Network. A feasibility study is a collection of documents, consisting of the design basis, the facility description, design and dimensions, and the technical and operational requirements that document whether a project is technically and operationally feasible. (For clarity, feasibility study shall in this context be understood as the last study prior to the decision to realise the project, whereby a FEED shall be understood to be part of the project itself.) This level of maturity will be assessed against relevant international standards and best practices where available.

Information from the feasibility study (or otherwise, as appropriate) should be supplied to cover at least the criteria described below.

6.1 Cost estimate

The feasibility study shall contain an estimate of the additional costs attributable to CCS, in the form of capital expenditure (CAPEX) and operational expenditure (OPEX), on an aggregated basis per each of the stages of capture, transport and storage⁶.

6.2 Energy consumption

The introduction of CCS to a power plant or an industrial source will be associated with an energy penalty. The additional energy consumption incurred by CCS will arise from all parts of the CCS value chain, although the major energy losses are related to the capture process, including the compression of CO₂ to transport delivery pressure. Projects shall provide estimates of the energy consumption of the complete value chain from capture to storage of CO₂ expressed as energy consumed per tonnes CO₂ stored.

6.3 CO₂ capture

6.3.1 CO₂ Source

The CO₂ source is considered to be the process from which the captured CO₂ derives, for example oxyfuel coal combustion for power generation, or blast furnace operation for steel manufacture. The type of CO₂ capture, e.g. amine scrubbing or liquid ammonia, should be documented.

6.3.2 CO₂ capture rate

CO₂ capture rate, defined as the fraction of the formed CO₂ which is captured, shall not be less than 85 % of the treated flue gas stream.

6.3.3 Emissions

A summary table of the expected emissions to air and water from the capture facility, originating from the use of solvents, catalysts or other chemical substances associated with the CO₂ capture facility shall be provided.

6.4 Transport

Transporting CO₂ from a capture site to a storage site may be by ship transport, pipelines onshore/offshore (single line or network), or other transportation facilities (e.g.; rail, truck).

⁶ The estimate may be given in deterministic terms as a range between lower bound and upper bound values. For feasibility studies the range may vary but is typically within +/- 30-40%. Alternatively, the estimate may be given in probabilistic terms (as a most probable cost and a probability distribution).

General criteria for shipping and pipelines are given below, other transport solutions should be documented in a similar manner.

It should be documented that transportation capacity and characteristics are harmonised with the connected capture and storage facilities. If an intermediate storage of CO₂ at the capture site or before reaching the final storage site is foreseen to be necessary, the capacity should be documented.

6.4.1 Ship transportation

When ships are to be used as part of the CCS value chain, they have to fulfil the requirements given by the flag state, port state and relevant class notations. The requirements imposed by these bodies will guarantee a suitable feasibility and safety level. The project's requirements regarding size, composition and availability of the proposed shipping fleet should be documented through the feasibility study.

6.4.2 Pipelines

A feasible pipeline route should be identified where appropriate. A plan of the pipeline route should be provided. Any plans for obtaining land-use rights for these routes should be noted, along with confirmation that any specific considerations, such as passage through Natura 2000 sites, have been considered and can be appropriately managed.

6.5 Storage

Applicants shall document a feasible geological storage solution based on the results of an initial site screening process. The screening process should establish a list of candidate storage sites that are highly likely to have sufficient capacity, injectivity and containment for the volumes and rates of CO₂ produced from the capture plant and should be consistent with the criteria in Annex I of the European CCS Directive. The type of data that was used in the screening exercise should be noted.

7. Application Form

Project title

Project location

Statements of commitment according to the Qualification

Criteria

Signed as agreed

Network goal - Knowledge Sharing

Network goal - CCS Public Awareness

Network goal - Cooperation with partners outside EU

Network Organisation and Procedures

Document included with application	Full Document or Summary	Signed as included with application
Work Breakdown Structure and schedule	Full document	
Decision gates and schedule milestones	Full document	
Financial commitment, overall financial plan	Summary	
Permitting management plan	Summary	
Project risk management plan	Summary	
Feasibility Study		
Cost estimate Summary	Summary	
Energy consumption Summary	Summary	
CO ₂ capture Summary	Summary	
Transport strategy Summary	Summary	
Storage Strategy	Summary	

Technical eligibility criteria	Values	Signed as based on feasibility study
Capacity of plant (MWe) ¹ .	<value>	
CO ₂ stored per year (tCO ₂) <value>	<value>	
Capture rate (%) <value>	<value>	

1) The output of the plant to which CO₂ capture process is applied

Name of signatory

Signatory's organisation

Signatory's position

Signatory's function in project

Signatory's email address

Signatory's telephone number



The European CCS Demonstration Project Network was established in 2009 by the European Commission to accelerate the deployment of safe, large-scale and commercially viable CCS projects. The Network that has been formed is a community of leading demonstration projects which is committed to sharing knowledge and experiences, and is united towards the goal of achieving safe and CCS. The learnings that are gained will be disseminated to other projects, stakeholders and public to help gain acceptance of the technology –and support CCS to achieve its full potential as a vital technique in our fight against climate change.

Network support provided by:

