STRATEGY CCUS

A viable solution for a sustainable future

DATA MANAGEMENT PLAN (initial version D6.4)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

DATA MANAGEMENT PLAN
(initial version)

Release Status: Deliverable D6.4 (initial version) – Public -
Author: Dr Romain Viguier, Scottish Carbon Capture & Storage, Edinburgh, EH1 1LZ, UK
Date: 26 June 2019
Filename and version: STRATEGY_CCUS_DMP v01
Project ID NUMBER 837754

STRATEGY CCUS (H2020-LC-SC3-2018-2019-2020/H2020-LC-SC3-2018-NZE-CC)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

Document History

Location

This document is stored in the following location:

Filename/location	STRATEGY_CCUS_DMP v01

Revision History

This document has been through the following revisions:

Version No.	Revision Date	Filename/Location stored:	Brief Summary of Changes
1	28 06 2019	STRATEGY_CCUS_DMP v01	First version

Authorisation

This document requires the following approvals:

AUTHORISATION	Name	Signature	Date
Project Coordinator	Fernanda de Mesquita Lobo Veloso		30 06 2019
WP6 lead	Romain F.H. Viguier		28 06 2019

Distribution

This document has been distributed to:

Name	Title	Version Issued	Date of Issue
Isabelle Czernichowski-Lauriol	Project Director	1	28 06 2019
Fernanda de Mesquita Lobo Veloso	Project coordinator	1	28 06 2019
Frédérique Mojon Lumier	Assistante projects	1	28 06 2019
Elisabeth Collot	Financial officer	1	28 06 2019
Julio Carneiro	WP2 lead	1	28 06 2019
Isaline Gravaud	WP2 co-lead	1	28 06 2019
Elisabeth Dütschke	WP3 lead	1	28 06 2019
Ana Prades	WP3 co-lead	1	28 06 2019
Li Chen	WP4 lead	1	28 06 2019
Pierre Collet	WP4 co-lead	1	28 06 2019
Paula Coussy	WP5 leal	1	28 06 2019
Roman Berenblyum	WP5 co-lead	1	28 06 2019
Diana Cismaru	WP6 co-lead	1	28 06 2019
Paula Canteli	Ebro basin	1	28 06 2019
Domagoj Vulin	Northern Croatia	1	28 06 2019
Constantin Sava	Galati	1	28 06 2019

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

Nikos Koukouzas	West Macedonia	1	**28 06 2019**
Krysztof Stańczyk	Silesia	1	**28 06 2019**
EC commission services			

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

Contents

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

1. The project

Countries bordering the North Sea (Norway, UK, the Netherlands) have already started to elaborate and jointly discuss strategic plans for CCUS development involving offshore storage in deep saline aquifers or depleted hydrocarbon fields under the North Sea. However, these countries represent only 15% of the CO_2 emissions included in the EU ETS. There is thus an urgent need for the rest of Europe to engage in strategic planning for CCUS development, giving priority to local solutions before looking at wider European connection schemes.

The objective of the STRATEGY CCUS project is to develop strategic plans for CCUS development in Southern and Eastern Europe in the short term (up to 3 years), medium term (3-10 years) and long term (more than 10 years).
Specific objectives are to:

- Develop local CCUS development plans, with local business models, within promising start-up regions;
- Develop connection plans with transport corridors between local CCUS clusters, and with the North Sea CCUS infrastructure, in order to improve performance and reduce costs, and contribute to build a Europewide CCUS infrastructure.

Eight promising regions, within seven countries representing 45% of the European industry and energy emissions in 2016, are studied in the STRATEGY CCUS project. They were selected according to criteria relevant for the development of CCUS in Europe: presence of an industrial cluster, possibilities for CO_2 storage and/or utilization, potential for coupling with hydrogen production and use, previous studies already carried out, and a political will.
They are listed below:

1. Paris basin in France
2. Rhône valley in France
3. Ebro basin in Spain
4. Lusitanian basin in Portugal
5. Northern Croatia
6. Galati area in Romania
7. West Macedonian area in Greece
8. Upper Silesia in Poland

As the STRATEGY CCUS project is a Coordination and Support Action, the work will build on past and ongoing projects and activities carried out at national and European levels then go further by developing and assessing integrated development scenarios. STRATEGY CCUS will map existing information and make forecasts for CCUS development based on jointly agreed methodologies and approaches, which will consider multidisciplinary aspects, such as technical issues, regulatory framework and local policies, as well as the needs and concerns of citizens, stakeholders and public authorities. Sharing and comparing the progress made in each promising

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

region will lead to mutual learning and to new innovative ideas for refining and improving each regional detailed plan and for boosting the deployment of the CCUS technology in Europe.

2. Introduction

STRATEGY CCUS is committed to open data access, long-term archiving and availability after the funding period of the project has finished. The project is participating in the Pilot on Open Research Data in Horizon 2020, which aims to improve and maximise access to, and re-use of, research data generated by projects.

Partners are required to:

- deposit the data in a recognised research data repository
- as far as practicable, take measures to enable third parties to access, mine, exploit, reproduce and disseminate this research data.

Open data is data that is free to access, reuse, repurpose, and redistribute. The Open Research Data Pilot aims to make the research data generated by Horizon 2020 projects accessible with as few restrictions as possible, while at the same time protecting sensitive data from inappropriate access. This Data Management Plan (DMP) defines certain datasets to remain closed according to the principle "as open as possible, as closed as necessary". As part of making data findable, accessible, interoperable and re-usable (FAIR), this Data Management Plan includes information on:

- the handling of research data during and after the end of the project
- what data will be collected, processed and/or generated
- which methodology and standards will be applied
- whether data will be shared/made open access
- how data will be curated and preserved (including after the end of the project)

Overall data management for the project will be undertaken by UEDIN (UK) as lead of Communication Dissemination and Exploitation with support from the project co-ordinator and the co-ordination of data generated by individual work packages resting with individual work package lead organisations. Data manager for STRATEGY CCUS has responsibility for coordinating and managing the collation and archiving of STRATEGY CCUS data to ensure long-term data management complies with current best practice to allow continued data availability.
This Data Management Plan is an active document and will be updated over the course of the project as required. The data management plan will be discussed annually at General Assembly meetings, following which it will be revised as necessary to ensure it remains representative of the data management strategy for the project. The data manager may also attend work package meetings and Project Management Board meetings as necessary to discuss data management requirements with partners.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

For data management support and assistance with archiving data, contact the STRATEGY CCUS data manager, Romain Viguier: romain.viguier@ed.ac.uk.

3. Data summary

What is the purpose of the data collection/generation and its relation to the objectives of the project?
The purpose of the data collection/generation in STRATEGY CCUS is to provide trusted data, information, methods and recommendations regarding the planning of CCUS infrastructures in Europe.

What types and formats of data will the project generate/collect?
Will you re-use any existing data and how?
What is the origin of the data?
What is the expected size of the data?
To whom might it be useful ('data utility')?

Data management is part of each work package. A Data Management Questionnaire (DMQ), at the end of this document, will be sent to WP leaders to gather information on the data outputs. WP leaders are requested to forward to task and sub-task leaders as required. The DMQ is a data management planning tool to help identify data that are of long-term interest and to inform data management requirements.

The status of data will be declared as open access or confidential with any restrictions specified. The overall size of the data generated by the project is unknown at this early stage of the project. More information/detail will be added to the Data Summary and more information on specific data within the work packages will be known as the project progresses.

4. FAIR data

4.1. Making data findable, including provisions for metadata

Data should be discoverable, with fully searchable metadata to inform prospective users of the data prepared to recognised data management standards and published in data repositories.
A listing of datasets will be maintained on the STRATEGY CCUS website with links to the data, giving a central source of information describing data associated with the project. This will be coordinated between the data manager and the project dissemination team at the University of Edinburgh. Release of datasets will be made publicly known through the project website and social media accounts.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

4.1.1 Metadata

Datasets generated will be INSPIRE compliant, with full metadata conforming to Directive 95/46/EC of the European Parliament and DOI (Digital Object Identifiers) where appropriate. Metadata containing details of the dataset will be captured in a standardised discovery metadata format which complies with ISO standard 19115.

The Research Data Alliance provides a Metadata Standards Directory (http://rd-alliance.github.io/metadata-directory/)

Partners completing metadata should ensure that this is of high quality enabling users in future to find a dataset and determine if they wish to use it. Metadata must include a good explanatory title and an accurate concise description (e.g. what, where, when, how, why, who).

4.1.2 Digital object identifiers (DOIs)

It is recommended that Digital Object Identifiers (DOIs) are applied to archived datasets where appropriate to enable citation of the information, particularly when data are referenced in a publication. This is a pre-requisite of leading science journals.
The DOI:

- allows data to be cited in the same manner as a scientific journal article
- enables credit to be assigned the dataset creators
- recognises the value of the data
- and the effort that has gone into its creation
- ensures the discoverability, permanence and stability of the dataset

A DOI can be assigned before the dataset is released so that it can be referenced in the associated publication and the dataset can be released, when notified, at the time as the publication. Datasets can be cross-linked back to the article.
Data can be archived without a DOI as not all data are appropriate for a DOI. For a dataset to be assigned a DOI, it must be provided to the data repository in good condition, with appropriate metadata and of a suitable level of technical quality. The data depository will be responsible for ensuring the data meets the required level of quality.
A DOI gives assurance to future users that the dataset is:

- Stable
- Complete
- Permanent
- Of good technical quality

The data repository is giving its stamp of approval, saying that the dataset is complete and that all the necessary metadata are available.

4.1.3 Data access statement

Partners must include a statement in their publication(s) describing how to access the data (or a statement explaining why access to underlying data has been restricted). If data are openly

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

available, the name(s) of the data repositories should be provided, as well as any persistent identifiers (e.g. DOI) for the dataset.

4.2. Making data openly accessible

Due to the high level of public and industry interest in the potential impacts of shale gas and CCS, the default position for the project will be for all finalised datasets to be open access. It is a requirement that all open data are accessible for the long-term. This makes the research process more robust by enabling validation of results and maximising the value obtained from publically-funded data. All public (written) deliverables should also be also archived.

Data should be archived as open access which:

- underpins a publication
- has long-term interest with potential for re-use (including currently unforeseen uses)
- validates research findings
- is worth keeping

Benefits of open access:

- Accelerations of the research and discovery process
- Avoidance of the duplication of research efforts
- Enhanced opportunities for collaborations
- Broader and faster opportunities for the adoption and commercialisation of research findings

4.2.1 Categorisation of data access

However, not all data generated by STRATEGY CCUS must be open. The need to balance openness and protection of scientific/commercial information should be taken into account and certain datasets may need to remain closed according to the principle "as open as possible, as closed as necessary".

Project datasets should therefore be categorised. It should be carefully considered which data can be made public (open access) from the onset, which should be placed under temporary embargo (< 2 years) before open release and which must remain confidential. WP leaders should discuss with their work package participants/task leaders to determine this.

There is not a need for a separate data access committee, but this will be an item for discussion on Project Management Board meetings.
Examples of data which could be closed or restricted:

- Confidential information
- External industry data
- Commercial sensitivity/interest (e.g. new tools being developed with potential for patenting)
- Data with IPR issues
- Sensitive data containing personal information

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

Participant consent may also need to be obtained. This should be agreed during early stages of the project.
IPR and innovation for the project should be considered to ensure there are no conflicts between data sharing and these.
If certain datasets cannot be shared (or need to be shared under restrictions) the restrictions associated with the data must be valid/reasonable. Metadata should include a statement specifying any restrictions.
For confidential data, it is recommended that a discovery metadata record is published to signpost that the data exists without necessarily archiving the data. This should contain a brief description, which directs any potential user to the data owner contact if more information is required or to discuss the possibility of data access, which could lead to future collaborations. It should be discussed with the participants if they wish to advertise their (confidential) data in this way or if they prefer to make no information available in some cases.

4.3. Making data interoperable

- Data produced in the project should be interoperable and standard open formats should be used to allow data re-use.
- Data should be usable without the need for communication with the data creator.

4.3.1 Data formats

- The format must be well documented and conform to widely accepted standards.
- The format must be readable by tools that are freely available now and are likely to remain freely available in the future.

4.3.2 Data files

Parameters in data files should either be labelled using an internationally recognised standard, or by local labels that are accompanied by clear, unambiguous plain text descriptions.

- Data must be accompanied by sufficient usage metadata to enable its reliable reuse. Some of this may be embedded within the data files. If not it should be included as additional documents.
- Data should be quality controlled by the data creator before archiving.

4.3.3 Naming conventions

Partners are encouraged to use data and metadata vocabularies, standards and methodologies where these exist to make data more interoperable. Data should conform to INSPIRE where appropriate or other appropriate international standards.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

4.4. Increase data re-use (through clarifying licenses)

4.4.1 Data licensing

Data will be licenced to permit the widest re-use possible. The Creative Commons Attribution (CC-BY) licence with the appropriate acknowledgement is recommended for maximum dissemination and use of open access data. This licence lets others use the data for any purpose, as long as the data creator and the STRATEGY CCUS project is acknowledged.

The EU funding acknowledgement: "European Union (EU)" & "Horizon 2020" should be included. An example acknowledgment statement is provided below.

This data set is available under CC-BY Licence, subject to the following acknowledgement: "Data supplied by permission of Edinburgh University and funding provided by "European Union (EU)" and "Horizon 2020" under the STRATEGY CCUS project.

The appropriate licence must be specified when data is deposited. See https://creativecommons.org/licenses/ for more information on the CC-BY license and other types of Creative Commons licences.

For more information on data licences, refer to Ball, A. (2014). 'How to License Research Data'. DCC How-to Guides. Edinburgh: Digital Curation Centre. Available online: http://www.dcc.ac.uk/resources/how-guides/license-research-data.

4.4.2 Embargos

Research data will be made available as soon as possible. Data received by a data repository as open access will be made available for re-use without delay once the data and metadata have been verified and archived in the system.
Datasets may be deposited in a data repository with an embargo if necessary in order to exploit data, publish results or seek patents, after which the data will be released as open access. The duration of the embargo or a release date must be specified. This should be no longer than 2 years in order to make the data available as soon as possible. If necessary, a review date can be set rather than automatic release and the depositor will be contacted at that time. Please notify the data manager if data can be released before the embargo has passed (e.g. when the related paper is published). During the embargo a metadata record will be visible but not the data.

4.4.3 Ensuring long-term usability

Data will be archived for the long-term and it is intended that it remains re-usable for as long as possible. Data repositories used must have measures in place to ensure data does not become obsolete or unusable.

4.4.4 Quality assurance

Quality assurance processes should be part of the metadata. Any laboratory data should meet appropriate QA standards.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

5. Allocation of resources

Data management costs as covered as part of the grant. WP6 lead will cover data manager role and the project co-ordinator, Brgm has allocated data storage resources to ensure long-term data management complies with current best practice to allow continues data availability.
Beyond the end of the project, data archived in the repositories will be preserved and maintained for the long term using the data repository resources. The costs associated with this will not be substantial.

6. Data security

Sensitive data should be encrypted when transferring.

7. Ethical aspects

All data must conform to the EU General Data Protection Regulation (GDPR) when personal information is involved. Data can be anonymised if needed.
There may be sensitives with some data which means it is unsuitable for sharing. This should be decided by the data generator in discussion with the WP lead and Coordinator.

8. Derivation

- **Article 29.3** of the Grant agreement – open access to research data
- **Guidelines on FAIR Data Management in Horizon 2020** are available in the online manual - http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm
- **FAIR data principles** (FORCE11 discussion forum) - https://www.force11.org/group/fairgroup/fairprinciples
- **FAIR principles** (article in Nature) - https://www.nature.com/articles/sdata201618

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

DATA MANAGEMENT QUESTIONNAIRE

In order to refine the STRATEGY CCUS Data Management Plan it would assist if you could complete this questionnaire and return to romain.viguier@sccs.org.uk.

This will help identify and categorise project data and any potential problem areas.

1. Work package:

2. Task:

3. Contact: Name

   Organisation

   Email

4. Project timescale of data collection/production, from ____ to ____

5. Where will you deposit data for long-term archiving?

6. When do you expect to deposit data?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

7. Specific datasets

8. All data will not necessarily be appropriate for long-term preservation with a data repository. Which of the above datasets may not be appropriate to deposit?

9. Will you be providing any software?

   a. If yes, please provide more details

   b. Are there likely to be any licensing requirement?

10. Are you using any existing data from project partners?

    a. If yes, please provide some details

11. Are you using any external third party data?

    a. If yes, please provide some details

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

12. Does data require an embargo before open access release?

a. If yes, please provide some details

13. Is any data confidential or restricted?

a. If yes, please provide some details

14. Are there any intellectual property rights or commercial sensitivity issues that will restrict access to data?

a. If yes, please provide some details

15. Please add any other comments or issues regarding data and data management

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754

This project has received funding from the European Union's Horizon 2020
research and innovation programme under grant agreement No 837754

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 837754