



Horizon 2020
European Union Funding
for Research & Innovation

DELIVERABLE D1.3

DATA MANAGEMENT PLAN

DISSEMINATION LEVEL: PUBLIC

Grant Agreement (GA) N. 815284

Research and Innovation Actions (RIA) project

Granted by:

European Climate, Infrastructure and Environment Executive Agency
(CINEA)

Document Control Sheet

Project		BLAZE - Biomass Low cost Advanced Zero Emission small-to-medium scale integrated gasifier-fuel cell combined heat and power plant
Grant Agreement n.		815284
Document Title		Deliverable D1.3 Data Management Plan
Lead Beneficiary		P N°1 USGM
WP number		WP1
Type		Report
Dissemination level		P: Public
Version	Date	Description
1	26/07/2019	The Data Management Plan provides the main elements of the data management policy to be used by the Consortium regarding its complete research data cycle. It describes: types and formats of data to be generated or collected and how, the standards to be applied, the data-reservation methods, the data-sharing policies for re-use.
2	30/08/2019	The deliverable revised by EUBIA
3	23/10/2020	The updated DMP includes the Data Inventory table filled in with research data up to month 18
4	09/04/2021	The updated DMP includes the following modifications: - updated strategy for deliverables and research data from M18 on (paragraph 3.3) - updated list of publications and related repository links (paragraph 3.4) - updated data inventory table at M24 (Annex 1)
5	30/11/2021	The updated DMP includes the following modifications: - description of data management strategy and type of data including scientific publication - List of Open Air publications and data - updated data inventory table at M34 (Annex 1)
Date		30/11/2021
Number of pages		26 (including the annex)
Archive name		D1.3



<i>Authors</i>	Susanna Correnti (USGM)
<i>Contributors</i>	Federica Funghi (USGM), Enrico Bocci (USGM)
<i>Reviewer(s)</i>	EUBIA

TABLE OF CONTENT

1	EXECUTIVE SUMMARY.....	6
2	INTRODUCTION.....	7
2.1	OBJECTIVES AND SCOPE OF THE DOCUMENT.....	7
2.2	STRUCTURE OF THE DELIVERABLE.....	7
3	DATA SUMMARY.....	8
3.1	BLAZE DATA MANAGEMENT PLAN (DMP) GUIDING PRINCIPLES.....	8
3.2	BLAZE DATA MANAGEMENT STRATEGY AND TYPE OF DATA (M1 – M18).....	9
3.3	BLAZE DATA MANAGEMENT STRATEGY AND TYPE OF DATA UPDATING (FROM M18 ON).....	11
3.3.1	Scientific publications.....	13
4	FAIR DATA	15
4.1	MAKING DATA FINDABLE, INCLUDING PROVISIONS FOR METADATA	15
4.2	MAKING DATA OPENLY ACCESSIBLE	16
4.2.1	Open Air and other publications (including link to the corresponding Open Access repository) – M1 – M34.....	16
4.3	MAKING DATA INTEROPERABLE	18
4.4	INCREASE DATA RE-USE (THROUGH CLARIFYING LICENCES)	18
4.5	DMP REVIEW PROCESS & DATA INVENTORY	19
5	ALLOCATION OF RESOURCES.....	20
6	DATA SECURITY.....	21
7	ETHICAL ASPECTS	22
8	CONCLUSIONS.....	23
9	ANNEX 1 - DATA INVENTORY TABLE	24

LIST OF FIGURES

Figure 1. Open access to research data and publication decision diagram (from Guidelines to the Rules on Open Access to Scientific publications and Open Access to Research Data in Horizon 2020).....		9
Figure 2 Image taken at https://v2.sherpa.ac.uk/romeo		14



LIST OF TABLES

Table 1. BLAZE research data 11



1 EXECUTIVE SUMMARY

The BLAZE Data Management Plan follows the Horizon 2020 DMP template that was designed to be applied to any Horizon 2020 project that produces, collects or process research data. This first Data Management Plan describes the data management principles and strategies, tools and BLAZE data: data set, “Open Research Data Pilot” (ODRDP) and BLAZE Demonstrator that will be produced as part of the project activities and that are relevant to be included in the DMP. The consortium will also aim at open access when publishing papers and articles.

The DMP is a living document to be updated as the implementation of the project progresses and when significant changes occur.



2 INTRODUCTION

2.1 Objectives and scope of the document

The Data Management Plan (DMP) describes the data management life cycle for the data to be collected, processed and/or generated by BLAZE project, as a Horizon 2020 project. The DMP aims at defining the management strategy of data generated during the project with the purpose to making research data findable, accessible, interoperable and re-usable (FAIR).

2.2 Structure of the deliverable

The document is structured following the guideline of H2020 programme on FAIR Data Management in Horizon 2020 including the following information:

- Data Management Plan (DMP) guiding principles and strategy
- Description of BLAZE type of data
- Description of FAIR DATA characteristics including DMP Review Process & data inventory
- Allocation of resources
- Data Security
- Ethical Aspects
- Conclusions



3 DATA SUMMARY

The BLAZE Data Management Plan (DMP) aims to provide a strategy for managing key data generated and collected during the project and optimize access to and re-use of research data. The DMP is intended to be a ‘living’ document that will outline how the BLAZE research data will be handled during and after the project, and so it will be reviewed and updated at regular intervals.

All European Union funded projects must try to disseminate as much information as possible and on top of that the BLAZE project was signed up to the “Open Research Data Pilot” which means that we are committed to give open access to data generated during the project unless it goes against our legitimate interests. In this regard, the main purpose of the DMP is to ensure the accessibility and intelligibility of the data generated during the BLAZE project in order to comply with the Guidelines of the “Open Research Data Pilot”. Each data set created during the project will be assessed and categorized as open, embargo or restricted by the owners of the content of the data set.

All the data sets, regardless of their categorization, will be stored in each of the participant entities databases and in the Google Drive folder created as internal database of the partners. In addition, those categorized as open or embargo will be publicly shared (in the case of embargo, after the embargo period is over) through the public section of the project website and **ZENODO** (<https://zenodo.org/>).

ZENODO is an open access repository for all fields of science that allows uploading any kind of data file formats, which is recommended by the Open Access Infrastructure for Research in Europe (OpenAIRE).

3.1 BLAZE Data Management Plan (DMP) guiding principles

The Data Management Plan of BLAZE is realized within the Work Package 1.

The BLAZE project data management plan follows the principle of Open Access according to the Horizon 2020 guideline summarized in the diagram here below.

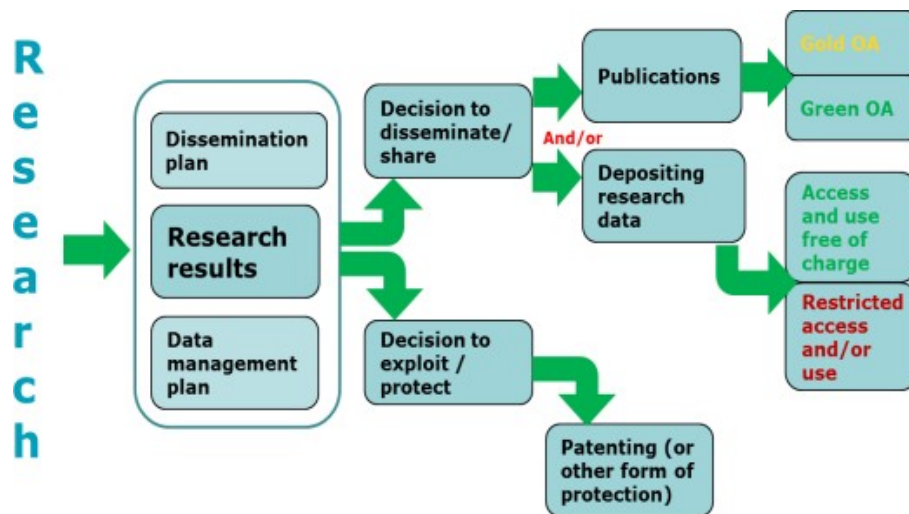


Figure 1. Open access to research data and publication decision diagram (from Guidelines to the Rules on Open Access to Scientific publications and Open Access to Research Data in Horizon 2020)

The others main principles for the BLAZE project DPM are the following:

- I. This Data Management Plan (DMP) has been prepared by taking into account the template of the “Guidelines on Data Management in Horizon 2020” http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf
- II. The DMP is an official project Deliverable (D1.3) due in Month 6 (August 2019), but it will be updated throughout the project. The first initial version will evolve depending on significant changes arising and periodic reviews at relevant reporting stages of the project.
- III. The consortium complies with the requirements of Regulation (EU) 2016/679 and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). Guidance on how these regulations interact with open-access data policy can be found here: <https://www.openaire.eu/ordp/>
- IV. Type of data, storage, confidentiality, ownership, management of intellectual property and access: procedures that will be implemented for data collection, storage, access, sharing policies, protection, retention and destruction will be in line with EU standards as described in the Grant Agreement and the Consortium Agreement.

3.2 BLAZE Data Management strategy and type of data (M1 – M18)

As a project participating in the Open Research Data Pilot (ORDP) in Horizon 2020, the DMP’s Data Management strategy of BLAZE project is focused on the observation of FAIR (Findable, Accessible, Interoperable and Reusable) Data Management Protocols. This document addresses for each data set collected, processed and/or generated in the project the following elements:



Dataset reference and name: Internal project Identifier for the data set to be produced. This will follow the format:

PNumber_TaskNumber__PartnerName_DataSubset_DatasetName_Version__DateOfStorage, where the project name is BLAZE, the Partner Name represents the name of the data custodian (WP Lead/ Task Leader).

Dataset description: description of the data generated or collected, including its origin (in cases where data is collected), nature and scale and to whom it could be useful, and whether it underpins a scientific publication. Information on the existence (or not) of similar data and the potential for integration and reuse.

Standards and metadata: reference to existing suitable standards. If these do not exist, an outline on how and what metadata will be created.

Data sharing: description of how data will be shared, including access procedures, embargo periods (if any), outlines of technical mechanisms for dissemination and necessary software and other tools for enabling reuse, and definition of whether access will be open or restricted to specific groups. Identification of the repository where data will be stored, if already existing and identified, indicating the type of repository (institutional, standard repository for the discipline, etc.). In cases where the dataset cannot be shared, the reasons for this will be stated (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related).

Archiving and preservation (including storage and backup): description of the procedures to be put in place for long-term preservation of the data, including an indication of how long the data should be preserved, the approximate end volume, associated costs, and how these are planned to be covered.

Among project datasets and deliverables, following categories of outputs are declared “ORDP” that will be made “Open Access” (to be provided free of charge for public sharing). These will be included in the Open Research Data Pilot and thus be managed according to the present DMP:

- Project deliverables: D2.2, D3.2
- Articles published in Open Access scientific journal
- Conference and Workshop abstracts/articles

Once generated (or collected), these data will be stored in several formats, which are: Documents, Images, Data, and Numerical codes.

In particular the following project deliverables are relevant:

D.2.2. "Bio-syngas composition and contaminants that affect SOFC and related gasifier parameters and bed materials to reduce SOFC hazardous effects"

Bio-syngas composition and contaminants that affect SOFC operation, and related gasifier parameters and bed materials to reduce SOFC hazardous effects. It refers to Task 2.2. Identify the operating conditions in terms of S/B, ER, olivine/dolomite ratios and amounts of sorbents to be added in order to obtain at the exit of the gasifier the produced gas with the best characteristics, i.e. the highest CGE and carbon conversion (90%), as well as the lowest contents of tar (a few grams/Nm³dry) and inorganic contaminant vapours (tens of ppm) connected to the use of in-bed additives. [ENEA – M12]

D.3.2 "Report summarising the literature review"

This report aims to select, via literature review, the most representative syngas composition and contaminants. The indicators of success are the identification of at least 5 experimental and 5 simulative international peer reviewed papers on gasifiers/hot gas conditioning systems within select (possibly experimental data) at least 2 representative compositions and 2 organic and 3 inorganic representative contaminants levels (with the respective gasification and hot gas conditioning systems) that can feed the SOFC with acceptable SOFC efficiency, power density and durability [SP_YV –M6].

Summarising, BLAZE generates and collects the following research data relevant for the DMP:

TITLE	WP No	LEADER	NATURE	DISSEMINATION
D2.2. Bio-syngas composition and contaminants that affect SOFC and related gasifier parameters and bed materials to reduce SOFC hazardous effects	WP2	ENEA	data sets, microdata, etc.	Public
D3.2 Report summarising the literature review	WP3	SP	ORDP	Public
Articles published in Open Access scientific journal	WP8	EUBIA	Articles/ Research data	Public
Conference and Workshop abstracts/articles	WP8	EUBIA	Articles/ Research data	Public

Table 1. BLAZE research data

3.3 BLAZE Data Management strategy and type of data updating (from M18 on)

Different levels of confidentiality are considered within the BLAZE consortium:

- *Confidential to partner.* This option is applied when, regardless of the long-term value and scope for wider use, the dataset contains data that can be shared only between a limited number of partners in the consortium (for instance non complete datasets or datasets that have to be generated in a

collaborative experiment). Data expected to be included in patent applications, if any, will be shared between partners at this level;

- *Confidential to consortium*. This option is applied for data not yet published in peer-reviewed scientific papers or that are intended to be published before they are made public available or data to be restricted to the consortium;
- *Public*. This option is applied to most BLAZE datasets. Furthermore this option can be used as a shorter version of the *Confidential to consortium* dataset and documents in order to make them partially publicly usable.

While datasets “*Confidential to partner*” will be safely stored by the developing partner; dataset “*Confidential to the consortium*” will be stored in the cloud area of the project, public data will be shared via Zenodo platform. The partners can store confidential data also in Zenodo by using the more restrictive options (see below).

Since there is no precise disciplinary repository (or procedures are too complex to be followed) nor all partners have access to an institutional one, Zenodo ensures unified management procedures for both data and publications. In order to facilitate deposit, update, and management, a project community will be setup and linked to project website: <https://zenodo.org/communities/>. Partners wishing to deposit new datasets or publications can access the upload URL (https://zenodo.org/login/?next=%2Fdeposit%2Fnew%3Fc%3Dh2020_wedraw) that will automatically add new records to the community. Aside to the project one, additional communities should be indicated in the uploading phase to increase the document visibility: these should include at least the “European Commission Funded Research (OpenAIRE)” curated by Zenodo (<https://zenodo.org/communities/ecfunded?page=1&size=20>).

In line with Zenodo policies, when uploading public datasets BLAZE partners will chose among three main options:

- **Open Access**. This is the highly recommended option which provides free access and rights to data
- **Embargoed Access**. This option will be applied in case of data underpinning publications. Data will indeed be deposited as soon as possible but open access will be provided only once such data have been published in a scientific paper to preserve the authorship of all authors involved. In such case, information about data will be published and details of when the data will become available will be included in the metadata.
- **Restricted Access**. This option, although not recommended, will be adopted for those data whose access should be monitored and approved by the depositor if certain requirements to be defined are met.
- **Closed Access**. This option will be adopted for all datasets whose confidentiality is limited to

consortium and EC services.

Although the embargoed or closed access option provided by Zenodo could be a valid option, the consortium agrees that research data linked to exploitable results will not be deposited to avoid compromising their protection or commercialization prospects. Visibility and access to publicly shared datasets will be facilitated by Zenodo metadata and search facility as well as to the automatic link to both OpenAIRE and project Cordis project page (link).

3.3.1 Scientific publications

Providing open access to peer-reviewed scientific publications can be ensured either by publishing in green or gold open access journals with or without author processing fees. Any peer-reviewed open access scientific publications from BLAZE and the related bibliographic metadata must be made available as open access and announced on the project website (www.blazeproject.eu) and for the dataset as well as in the OpenAIRE portal (<https://www.OpenAIRE.eu/>) and the R&I Participant Portal (<https://ec.europa.eu/research/participants>).



Self-archiving (green open access): editorial layout version or post-print are uploaded in a repository connected with OpenAIRE. Maximum 6 month embargo for STEM and 12 month for SSH. The author need to check editorial policies and potential embargo periods. The latter can be checked on Sherpa Romeo (<https://v2.sherpa.ac.uk/romeo/>).



Gold Open Access: no embargo and immediate access. The article is published directly in OA on the publisher's website. If there are APCs, it is possible to ask for reimbursement (if the costs have been budgeted).

For finding suitable gold open access publishers, researchers are encouraged to consult the **Directory of Open Access Journals** (<https://doaj.org/>), a service that indexes high quality, peer-reviewed open access academic journals that use an appropriate quality control system.

To automate the process of reporting scientific publications and related research data in OpenAIRE, the publication should be deposited in an OpenAIRE-compliant repository, either by the authors of the publication (green open access) or by a scientific publisher (gold open access). While additional forms of disseminating open access papers, including academic social network sites such as ResearchGate

(<https://www.researchgate.net/>) are possible, an electronic copy of the publication has to be deposited in suitable open access repository in the first place. According to the European Research Council’s Guidelines on Open Access¹, “Venues such as Research Gate or Academia.edu that require users to register in order to access content do not count as repositories. The posting of publications on a personal, institutional or project specific webpage or the deposit in a publically accessible Dropbox account is not sufficient to satisfy the requirements either.”

If the chosen repository is not fully OpenAIRE complaint, the publications or data must be linked at <https://www.openaire.eu/participate/claim> with the respective funding agency (European Commission). Green open access journals or gold open access journals without author processing fees should be preferred for disseminating BLAZE’s scientific publications. Nevertheless, the journal’s visibility and prestige (translated in the Impact Factor) of the journal, together with the speed of publication, should be considered when choosing a journal for publication of a manuscript. According to the EC recommendation, authors of the publication are encouraged to retain their copyright and grant adequate licences to publishers. The image below describes the publication process cycle.



Figure 2 Image taken at <https://v2.sherpa.ac.uk/romeo>

In case the copyright policy proposed by editor violates the contract signed with the European Commission that is funding your research, the researchers can require a change of the contract using the below model amendment to publishing agreements:

https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/oa-pilot/h2020-oa-guide-model-for-publishing-a_en.pdf

¹ https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/oa-pilot/h2020-hi-erc-oa-guide_en.pdf

4 FAIR DATA

4.1 Making data findable, including provisions for metadata

Metadata is data on the research data themselves. It enables other researchers to find data in an online repository and is, as such, essential for the reusability of the dataset. By adding rich and detailed metadata, other researchers, can better determine whether the dataset is relevant and useful for their own research. Metadata (type of data, location, etc.) will be uploaded in a standardized form. This metadata will be kept separate from the original raw research data.

As described in the project Grant Agreement (Article 29.2), the bibliographic metadata include all of the following:

- the terms “European Union (EU)” and “Horizon 2020”;
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable
- a persistent identifier

BLAZE open data will be collected in an open online research data repository: **ZENODO**. Its repository structure, facilities and management are in compliance with FAIR data principles. ZENODO is an OpenAIRE that allows researchers to deposit both publications and data, providing tools to linking them to these through persistent identifiers and data citations. ZENODO is set up to facilitate the finding, accessing, re-using and interoperating of data sets, which are the basic principles that ORD projects must comply with. Zenodo repository is provided by OpenAIRE and hosted by CERN. Zenodo is a catch-all repository that enables researchers, scientists, EU projects and institutions to:

- Share research results in a wide variety of formats including text, spreadsheets, audio, video, and images across all fields of science.
- Display their research results and get credited by making the research results citable and integrating them into existing reporting lines to funding agencies like the European Commission.
- Easily access and reuse shared research results.
- Integrate their research outputs with the OpenAIRE portal.

Search keywords

Zenodo allows to perform simple and advanced search queries on Zenodo using the keywords. Zenodo also provides a user guide with easy to understand examples.

Naming conventions

Files and folders at data repositories will be versioned and structured by using a name convention consisting as follow: **BLAZE_Dx.y_YYYYMMDD_Vzz.doc**



Version numbers

Individual file names will contain version numbers that will be incremented at each revision (Vzz).

4.2 Making data openly accessible

In order to maximise the impact of BLAZE research data, the results are shared within and beyond the consortium. Public data and results will be shared with the scientific community and other stakeholders through publications in scientific journals and presentations at conferences, as well as through open access data repositories.

The BLAZE project datasets are first stored and organized in a database by the data owners (personal computer, or on the institutional secure server) and on the project database (project website). All data are made available for verification and re-use, unless the task leader can justify why data cannot be made openly accessible. To protect the copyright of the project knowledge, Creative Commons license will be used in some cases. The BLAZE dataset deliverables are both public (data access policy unrestricted) and they will be accessible by:

- BLAZE project web site
- Partners database
- OpenAIRE
- ZENODO (<https://zenodo.org>) for ORDP data and datasets
- Open access journals

All data deposited on ZENODO are accessible without restriction for public. For other data, potential users must contact the IPR team or the data owner in order to gain access. If necessary, appropriate IPR procedure (such as non- disclosure agreement) will be used.

4.2.1 Open Air and other publications (including link to the corresponding Open Access repository) – M1 – M34

Here below the list of the BLAZE project publications done until month 34 (including details on the publication title, DOI, journal etc.) and the related IO dataset.

n.	Type	Title	Title of the Journal/ Proc./ Book	DOI	Open Access (ZENODO)/ Repository Link	data DOI	DATA Open Access /Repository Link (ZENODO)
1	Project deliverable	Biomass Low cost Advanced Zero Emission small-to-medium scale integrated gasifier-fuel cell combined heat and power plant	/	https://zenodo.org/badge/DOI/10.5281/zenodo.3822063.svg	https://zenodo.org/record/3822063#.X5WJFVhKjIU	/	/
2	Article in Journal	Development of a Chemical Quasi-Equilibrium Model of Biomass Waste Gasification in a Fluidized-Bed Reactor by Using Aspen Plus	Energies	https://doi.org/10.3390/en13010053	https://zenodo.org/record/4249472#.YF8h9FVKjIU	https://zenodo.org/badge/DOI/10.5281/zenodo.5763622.svg	https://zenodo.org/record/5763622#.Ya8wetDMKUK
3	Article in Journal	Evaluation of sorbents for high temperature removal of tars, hydrogen sulphide, hydrogen chloride and ammonia from biomass-derived syngas by using Aspen Plus	International Journal of Hydrogen Energy	https://doi.org/10.1016/j.ijhydene.2019.12.142	https://zenodo.org/record/4249420#.YF8hulVKjIU	https://zenodo.org/badge/DOI/10.5281/zenodo.5761645.svg	https://zenodo.org/record/5761645#.Ya4SDtDMKUK
4	Article in Journal	Experimental Procedures & First Results of an Innovative Solid Oxide Fuel Cell Test Rig: Parametric Analysis and Stability Test	Energies	https://doi.org/10.3390/en14082038	https://zenodo.org/record/5763507#.Ya8mxdDMKUK	https://zenodo.org/badge/DOI/10.5281/zenodo.5763484.svg	https://zenodo.org/record/5763484#.Ya8r49DMKUK
5	Article in Journal	Biomass Steam Gasification, High-Temperature Gas Cleaning, and SOFC Model: A Parametric Analysis	Energies	https://doi.org/10.3390/en13225936	https://zenodo.org/record/5764084#.Ya9gVdDMKUK	https://zenodo.org/badge/DOI/10.5281/zenodo.5764110.svg	https://zenodo.org/record/5764110#.Ya9iG9DMKUK
6	Article in Journal	Triple-mode grid-balancing plants via biomass gasification and reversible solid-oxide cell stack: Concept and thermodynamic performance	Applied Energy	https://doi.org/10.1016/j.apenergy.2020.115987	https://zenodo.org/record/4077441	https://zenodo.org/badge/DOI/10.5281/zenodo.4522164.svg	https://zenodo.org/record/4522164#.Ya4EadDMKUK
7	Project deliverable	System models considering component operating windows and plant chp operating scenarios	/	https://zenodo.org/badge/DOI/10.5281/zenodo.4494082.svg	https://zenodo.org/record/4494082#.YF8IXVVKjIU	/	/
8	Article in Journal	Low cost energy from biomass	Il sole 24 ore, Platinum	/	https://platinum-online.com/pubblicazioni	/	/
9	Article in Journal	Techno-economic optimization of an integrated biomass waste gasifier - solid oxide fuel cell plant	Front. Energy Res. - Process and Energy Systems Engineering	https://doi.org/10.3389/fenrg.2021.665585	https://zenodo.org/record/5764005#.Ya9Z2tDMKUK	https://zenodo.org/badge/DOI/10.5281/zenodo.5764026.svg	https://zenodo.org/record/5764026#.Ya9co9DMKUK

4.3 Making data interoperable

Partners will observe OpenAIRE guidelines for online interoperability, including OpenAIRE Guidelines for Literature Repositories, OpenAIRE Guidelines for Data Archives, OpenAIRE Guidelines for CRIS Managers based on CERIF-XML. These guidelines can be found at: <https://guidelines.openaire.eu/en/latest/>. Partners will also ensure that BLAZE data observes FAIR data principles under H2020 open-access policy: http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-datamgt_en.pdf

In order to ensure the interoperability, all datasets will use the same standards for data and metadata capture/creation.

As the project progresses and data is identified and collected, further information on making data interoperable will be outlined in subsequent versions of the DMP. In specific, information on data and metadata vocabularies, standards or methodology to follow to facilitate interoperability and whether the project uses standard vocabulary for all data types present to allow interdisciplinary interoperability.

4.4 Increase data re-use (through clarifying licences)

Creative Common Licensing will be used to protect the ownership of the datasets. Both Share-Alike and NonCommercial-ShareAlike licenses will be considered for the parts of datasets for which the decision of making that part public has been made by the Consortium.

However, an embargo period may be applied if the data (or parts of data) are used in published articles in “Green” open access journals. The recommended maximum embargo period length by European Commission is 6 months.

For datasets deposited on a public data repository (ZENODO) the access is unlimited.

Restrictions on re-use policy are applied for all protected data (see Figure 1: Open access to research data and publication decision diagram), whose re-use will be limited within the project partners.

Other restrictions could include:

- the “embargo” period imposed by journals publication policy (Green Open access);
- some or all of the following restrictions may be applied with Creative Commons licensing of the dataset:
 - o Attribution: requires users of the dataset to give appropriate credit, provide a link to the license, and indicate if changes were made.
 - o NonCommercial: prohibits the use of the dataset for commercial purposes by others.



- ShareAlike: requires the others to use the same license as the original on all derivative works based on the original data.

Internal process of Quality evaluation is activated throughout the entire project duration to assess both project data /products and project process (See the D1.2 Quality Assurance Plan and Report for project monitoring and risk management). An internal peer review is performed for the main project deliverables to guarantee the deliverable is developed with an high level of quality. Each WP leader has to submit all the produced documents to another partner assigned as internal reviewer to check for the quality of the documents produced.

The project data will remain re-usable for at least 1 year.

4.5 DMP Review Process & data inventory

Internal process of quality evaluation and reporting is activated throughout the entire project duration to assess both project data /products and project process (See the D1.2 Quality Assurance Plan and Report for project monitoring and risk management). Results data will be also analysed and collected throughout the project entire duration. To this purpose the Dissemination and Communication Report (See the D8.3 Communication and Dissemination Plan) will also be filled in by each partner about every six months: it includes the description of articles, papers and scientific publications too. Thus, all research data generated and publications will be analysed and described by using the Data Inventory Table (Annex I), WP leaders and partners authors of publications are required fill in periodically.

Further updating of the Data Management Plan will include the eventually updating of online research data repository where data are collected and shared and the data the description of dataset and research data gradually generated and collected.

The data Inventory table herewith attached summarises the main research data until project month 34 (from month 24 and 34 none relevant data are included).



5 ALLOCATION OF RESOURCES

Costs related to open-access to research data in Horizon 2020 are eligible for reimbursement under the conditions defined in the H2020 Grant Agreement, in particular Article 6 and Article 6.2.D.3, but also other articles relevant for the cost category chosen. Project beneficiaries will be responsible for applying for reimbursement for costs related to making data accessible to others beyond the consortium.

The costs for making data FAIR includes:

- Fees associated with the publication of scientific articles containing project's research data in "Gold" Open access journals. The cost sharing, in case of multiple authors, shall be decided among the authors on a case-by-case basis.
- Project Website operation: to be determined
- Data archiving at ZENODO and on other on line data base: free of charge
- Copyright licensing with Creative Commons: free of charge

The project member of General Assembly are also responsible of the Data Management of BLAZE dataset and research data in accordance with each organization internal Data Protection Officer (DPO).

Each partner is responsible for the data they produce. Any fee incurred for Open Access through scientific publication of the data will be the responsibility of the data owner (authors) partner(s).



6 DATA SECURITY

The following guidelines will be followed in order to ensure the security of the data:

- Store data in at least two separate locations to avoid loss of data;
- Encrypt data if it is deemed necessary by the participating researchers;
- Limit the use of USB flash drives.
- Label files in a systematically structured way in order to ensure the coherence of the final dataset.

All project deliverables and data will be stored and shared in the Google Drive folder restricted to the project consortium. As an initial step, only the Consortium Partners will have access to the cloud storage where dataset and metadata are filed. Following, scientific publications and articles, the dataset deliverables and the final demonstrator research results will be shared through ZENODO and other database to promote the data making FAIR.



7 ETHICAL ASPECTS

The work package 9 aims at to ensuring that ethical requirements are met for all research undertaken in the project, including data management aspects, in compliance with H2020 ethical standards. All partners will assure that the EU standards regarding ethics and data management are fulfilled in compliance with the ethical principles (see Article 34) and confidentiality (see Article 36 as set out in the Grant Agreement). In addition:

1. In accordance with the General Data Protection Regulation 2016/679, the data controllers and processors are fully accountable for the data processing operations.
2. Templates for informed consent forms and information sheet are also available. More details in relation to Ethics (and Security) in relation to Data Management can be found in Section 5 of the Grant Agreement.
3. The BLAZE consortium also includes the Switzerland as Non-EU consortium member and project data will be exchanged between the partners at all times during the project.

See the following deliverables for more details:

- D.9.1 H - Requirement No. 1
- D.9.2 POPD - Requirement No. 2
- D.9.3 EPQ - Requirement No. 3



8 CONCLUSIONS

This document describes the main principles and guidelines for the Data Management for the BLAZE project. As a living document, it will be updated throughout the project lifetime. Further updating of the Data Management Plan will include the eventual updating of an online research data repository where data are collected and shared and the data description of datasets and research data gradually generated and collected.



9 ANNEX 1 - DATA INVENTORY TABLE

BLAZE Project 815284

Research Data (Month 34)												
Dataset Code/N. (WPnTn_DataN)	Dataset Name	Open/ Restricted	Data Types	New/ Existing data	File Formats	Method of Data capture	Availability	Size	Data Utility- who outside of the project consortium might use the data?	Type of IP/ protection sought	How will data be re-used?	Ethical issues? Y/N
WP2T1_DataN1	Biomass Supply (USGM)	open	Biomass availability and price	New	csv/xlsx	Literature	28/2/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The data is included as part of the project results which are published in research open journals and / or open database	N
WP2T2_DataN2	Feedstock characterisation (ENEA)	open	Input / output of the biomass characterizations	New	csv/xlsx	Experimental	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The data is included as part of the project results which are published in research open journals and / or open database	N
WP2T3_DataN3	Screening of tar catalysts for catalytic filter (UNIVAQ)	open	Input / output data from the experimental tests	New	csv/xlsx	Experimental	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The data is included as part of the project results which are published in research open journals and / or open database	N
WP2T3_DataN4	Gasification tests with catalytic filter (UNIVAQ)	open	Input / output data from the experimental tests	New	csv/xlsx	Experimental	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The experimental methods and results are published in research journals, and the data associated to it appropriately described. If appropriate, data shared in Zenodo or other repository.	N
WP2T4_DataN5	Selection of trace element sorbents (UNIVAQ)	open	Input / output data from the experimental tests	New	csv/xlsx	Experimental	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The experimental methods and results are published in research journals, and the data associated to it appropriately described. If appropriate, data shared in Zenodo or other repository.	N
WP3T3_DataN1	SOFC syngas contaminants	Restricted	SOFC syngas contaminants data	New	csv/xlsx/ jpg	Literature review	31/8/2019	1 MB/1 GB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The data is included as part of the project results which are published in research open journals and / or open database	N
WP3T3_DataN1	SOFC button cell tests under representative fuels	Restricted	Fuel cell test data (long term operation, impedance spectroscopy, post mortem analysis, introduction of contaminants)	New	csv/xlsx/ jpg	Experimental and modelling	31/8/2020	1 MB/1 GB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The data is included as part of the project results which are published in research open journals and / or open database	N
WP3T4_DataN2	SOFC stack tests under representative fuels	Restricted	Fuel cell test data (long term operation, impedance spectroscopy, post mortem analysis, introduction of contaminants)	New	csv/xlsx/ jpg	Experimental and modelling	31/8/2020	1 MB/1 GB	Scientific community / sector stakeholders	Creative Commons CC-BY-NC-SA	The data is included as part of the project results which are published in research open journals and / or open database	N
WP4T1_DataN1	Aspen Plus BLAZE plant modelling	Open	Input / output data from the plant model	New	csv/xlsx	Modelling	30/4/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY	The modelling approach will be published in research journals, and the data associated to it appropriately described. If appropriate, data shared in Zenodo or other repository.	N

WP4T3_DataN2	CFD gasifier modelling	Open	Input / output data from the gasifier model	New	csv/xlsx	Modelling	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY	The modelling approach will be published in research journals, and the data associated to it appropriately described. If appropriate, data shared in Zenodo or other repository.	N
WP4T4_DataN3	Anode off-gas recirculation device tests	Open / Restricted	Input / output data from the experimental tests	New	csv/xlsx	Experimental	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Patent / Creative Commons CC-BY	There is the possibility of patenting. The experimental approach can be published in research journals, and the data associated to it appropriately described. If appropriate, data shared in Zenodo or other repository.	N
WP4T5_DataN4	Optimum designs of BLAZE plant	Open	Input / output data from the plant optimisation	New	csv/xlsx - cad/dwg/visio	Modelling	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY	The modelling approach will be published in research journals, and the data associated to it appropriately described. If appropriate, data shared in Zenodo or other repository.	N
WP6T1_DataN1	Gas analysis results	Restricted	Input / output data from the experimental tests	New	csv/xlsx	Experimental	31/8/2020	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY	The experimental approach can be published in research journals, and the data associated to it appropriately described. Data will serve as input for system design.	N
WP4T6_DataN5	BLAZE pilot plant design	Restricted	Final plant layout	New	PFD / Visio	Experimental and modelling	30/4/2021	1-10 MB	Scientific community / sector stakeholders	Patent	Will be used to manufacture components	N
WP5T3_DataN3	Mechanical design BLAZE pilot plant components	Restricted	Prototype plant layout	New	Solid Works, DWG	modelling	30/9/2021	1-10 MB	Scientific community / sector stakeholders	Patent	Will be used to manufacture components	
WP5T6_DataN2	BLAZE pilot plant realisation	Restricted	Prototype plant layout	New	Photo	Experimental	31/12/2021	1-10 MB	Scientific community / sector stakeholders	Patent	Will be used to evaluate the pilot plant	N
WP5T4_DataN4	Bill of Materials	Restricted	Prototype plant layout	New	xls	Experimental	31/10/2021	1-10 MB	Scientific community / sector stakeholders	Patent	Will be used to buy components	
WP6T1_DataN1	Gas analysis results	Restricted	Input / output data from the experimental tests	New	csv/xlsx	Experimental	28/2/2022	1-10 MB	Scientific community / sector stakeholders	Creative Commons CC-BY	The experimental approach can be published in research journals, and the data associated to it appropriately described. Data will serve as input for system design.	N