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SUSTAINABLE JET FUELS FROM CO2 BY MICRO-ALGAL CELL FACTORIES IN A ZERO WASTE APPROACH

ALFAFUELS

D12.2 – Data Management Plan

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1. Executive summary

This document, *D12.2 – Data Management Plan*, (DMP) is a document open to public, describing the life cycle of data, the FAIR principles to be applied, data sharing and IPR management, allocation of resources, and data re-use, security, and preservation. The DMP will be a living document, and if necessary, it will be revised through updates as the project progresses and when significant changes occur regarding consortium policies and/or composition.

2. Scope and objective of the deliverable

The Data Management Plan covers all the data lifecycle steps of the research data generated in ALFAFUELS project and is an important tool to ensure sustainability and security. DMP is an important document for the smooth implementation of the project as well as for the dissemination and exploitation activities during and after the project because different datasets may require different sharing channels, different sharing practices, and different levels of confidentiality.

The DMP follows the EU commission guidelines regarding open access, FAIR principles and it is consistent with exploitation and Intellectual Property Rights (IPR) requirements and principles. At the same time the DMP is also in accordance with what has been agreed in the consortium agreement among ALFAFUELS beneficiaries. In that sense, the ALFAFUELS consortium might define certain datasets to remain closed for potential commercial exploitation according to the principle “as open as possible, as closed as necessary”.

The DMP includes the definitions of data types to be generated, information on whether and how these data will be shared, and on how the data should be processed and stored for future use and re-use. DMP will be used as a guideline document by all beneficiaries while generating, managing and sharing data following the FAIR principles.

3. Data lifecycle

The life cycle of data in ALFAFUELS include the steps of generation, processing, storage, and sharing.

Data generation is the first step of the data lifecycle. Data generation must be based on organised methodologies (lab notebooks, electronic notebooks, appropriate software (e.g. Excel, Sigmaplot, Word) according to the nature of data), and should contain all necessary information and metadata for their evaluation and use within the project and beyond.

Data processing consists of analysing, evaluating, and transforming raw data into forms that are meaningful for the project activities and dissemination purposes. To ensure scientific integrity and quality, the raw data have to be named and stored in a different secure folder before processing.

Data storage refers to the procedures and guidelines that will ensure the verification of data if needed and their re-use not only during the lifespan of ALFAFUELS project but also in the long term. The data needs to be organized by specifying and choosing the file formats, its access policy, its metadata and must also be deposited in an online (and local) repository (with respect to the confidentiality level and related IP requirements).

Data sharing is the last step of the data lifecycle and includes the dissemination activities related to these data, as well as their re-use by consortium members according to the IPR requirements.

4. Description of data generation and collection

4.1. Purpose

ALFAFUELS is an R&D project with the overall objective to enhance the upscaling potential of a technology for production of SAF from CO_2. The project develops a complete, zero-waste production approach based on the production of volatile hydrocarbons (isoprene) with decreased production costs, improved and proven sustainability along the value chain, and optimized processes at TRL5. Most of the activities in ALFAFUELS are experimental and therefore, so are the data that will be generated.

However, the project will also generate LCA and TEA models, market analysis data, as well as scenarios on CO_2 industrial streams generation and availability.

4.2. Types of data

Experimental data

Examples of experimental DATA include:

Data on cyanobacteria growth and isoprene production at lab and pilot scale

Data on Microalgae growth and production of H_2 and starch

Data on catalysts development and isoprene dimerization

Data on isoprene recovery

Mass balances

LCA and TEA data

Environmental data, Production data – inputs/outputs, energy use

Models

Process model to be used in LCA, TEA and Bioreactor design.

Scenarios

Environmental impact scenarios, technoeconomic scenarios, CO_2 distribution and availability scenarios

Characterization & Validation

Characterization and validation of fuel properties according to the international standards for the aviation fuels

Market analysis data

Alternative policy scenarios based on the enhanced Aviation model to evaluate decarbonization pathways and strategies for the aviation industry, series of scenarios on a comprehensive roadmap for the future market uptake of renewable fuels in the EU Member States

An indicative table with the different types of data that are going to be generated by the ALFAFUELS partners is provided in Annex 1.

4.3. Data standards

All partners that process personal data in the ALFAFUELS project will comply with the GDPR and the HORIZON EUROPE ethics standards. These standards are described in deliverable D12.3. Specific format standards and templates have been developed and shared with all ALFAUELS partners.

5. FAIR principles

ALFAUELS adopt FAIR principles for data generation and management in order to make the generated research data findable, accessible, interoperable and re-usable (FAIR). The application of these principles is an integral part of the process of open science and research. Making research FAIR data is part of Responsible Research and Innovation (RRI) principles and enables both scientific research and society to leverage the benefits of such data and make a significant contribution to economic and social growth and prosperity. FAIR data support the discovery of knowledge and innovation by academics, stakeholders and the public, allow data and knowledge integration support, facilitate sharing and data re-use, support data and metadata to be machine-readable, and allow data discoveries through the harvest and analysis of multiple datasets.

5.1. Findable data

5.1.1. Identification (file names)

ALFAFUELS project adopts a standard identification of files using the same structure in both the active and backup data. For the identification of data files, it is recommended to use a descriptive name, reflecting the contents of the file and a date in a standard format (e.g. “YYYYMMDD”). We propose following file name convention for ALFAFUELS data:

Example:
“20240330_ALFA_RISE_cyanobacteria_cultivation_reactor12L_v1.0.xlsx”

Date (in this example: “20240330”)

Prefix to specify ALFAFUELS data (in this example: “ALFA”)

Partner name (in this example: “RISE”)

Intuitive title (in this example: “cyanobacteria_cultivation_reactor12L”)

For each new version, specify the version number (in this example: “v1.0”)

The file format (in this example: ".xlsx")

5.1.2. Metadata

Data generated in ALFAFUELS project should provide the following metadata:

Metadata	***Description***
Research Data Name:	Descriptive title of the research data
Data Type	MS office (xls, word, etc) or other
Responsible Partner	Partner generated the data
Description of procedures followed to obtain those results and purpose of the research data	Short description about data generation method and purpose
Version	Indication of draft, final, raw etc
Keywords	Keywords that can help future use of the data
Access level & rights	Level of confidentiality and access rights

5.1.3. Storage and data security

To make research data easily findable and identifiable by all consortium partners, ALFAFUELS partners will keep active backups and will deposit the research data in a data repository. For the short-term storage of the data (during the lifespan of the project), a shared folder has been created linked to a "partners-only" storage area on the project website, accessible by all consortium partners, where all our data will be kept. The coordinator (RISE management team) is responsible for data safety at the "partner-only" storage area. The data shared by all partners are kept in RISE server which uses a "two-factors identification" (microsoft multi-factor autentification (MFA) and therefore, only authorized people (in this case ALFAFUELS partners) have access. In the shared folder, deliverables and milestones will be shared among ALFAFUELS partners, unless a written and justified and reasonable objection to that is expressed by any party). Each partner takes care of the local data storage. Source data should be always kept separate from the on-going work or final data. The research data need to be stored during the period of the project and will be preserved for at least 5 years after the end of the project. The long-term storage is described below under the "Re-use" principle.

5.2. (openly) Accessible Data

By default, all data produced and/or used in the project will be made openly available. However, data do not need to be open if there are good reasons such as privacy concerns, or foreseen exploitation activities (patent issues or commercial interests). The rules and procedures regarding access and re-use will be shared with all consortium members.

A certified repository (supporting open access) will be chosen, and non-sensitive data will be deposited there. Appropriate arrangements need to be explored once the repository is identified concerning potential restriction on use, methods or software tools needed to access data, the need for a data access committee, description of conditions for access (i.e. a machine-readable license) and how the identity of the person accessing the data should be ascertained.

Metadata need to be recoverable and accessible through identifiers using a standardized communication protocol that needs to be open and free allowing authentication and authorization procedures.

5.3. Interoperable data

The data produced in the project must be interoperable to allow data exchange and re-use between researchers, institutions, organisations, countries, etc. To that end, research data and metadata need to adhere to standards for formats, and as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins.

Interoperability will be ensured by carefully selecting the right formats, the right software applications for accessing them, and the right structure for metadata. Research data and metadata must use a formal, accessible, shared, and widely applicable language for knowledge representation and should have vocabularies that follow the FAIR data principles (if necessary, generate project specific ontologies or vocabularies, as well as related mappings). The choice of an accessible format is also very important, as it allows their preservation, easy access and share with third parties (if applicable). All data should include qualified references to other research data or metadata and must be recorded using digital and user-friendly format. In ALFAFUELS project, we will prefer formats that have most of the following characteristics: are non-proprietary, have no encryption, are

uncompressed, open and documented by the community, have common character encoding and are adapted for the data type.

The most used formats, according to the European data portal: CSV, TXT, HTML, JSON, PDF, XLS and XML must be preferred.

5.4. Re-usable data

Data will be kept visible and findable after the project end. Therefore, ALFAFUELS partners are considering using Zenodo[1] for open data at later stage of the project.

Data and metadata must have a plurality of precise and relevant attributes.

Data and metadata must be released with a clear and accessible data usage license.

Data and metadata need to be associated with their origin.

Data and metadata must be aligned with the community standards and relevant to their domain.

The general assembly should define for how long it is intended that the data remains reusable.

The general assembly should define and describe data quality assurance processes.

6. Exploitation and IPR management

As agreed in the consortium agreement, which was signed by all consortium partners, in ALFAFUELS, research data will be owned by the one who generated them. We will maximize our efforts to make the generated data publicly available and easily findable, as early in the project as possible, targeting maximum publicity and visibility as soon as possible. Considering all confidentiality issues and respecting all potential exploitation opportunities and commercialization possibilities, visibility will boost the exploration of ALFAFUELS results, the long-term impact and allow researchers in the scientific community to use them.

Interoperability and data re-use must be provided following the FAIR data principles. Non-confidential research data should be shared in an easy and transparent way to ensure that it can be understood and accessed by other researchers, institutions, and organisations, along with the metadata and

available documentation. In the case of sensitive data coming from previous consortium members experiments or from their partners, specific rules will apply: This highly sensitive data will not be shared, even within the consortium. If such data is of particular importance for a member of consortium, we will determine case by case how to share the data (anonymized, mean value, etc...).

ALFAFUELS partners have agreed that where necessary, all partners shall cooperate in order to enable one another to fulfil legal obligations arising under applicable data protection laws (the Regulation (EU) 2016/679 of the European parliament 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 relevant national data protection law applicable to said party)[2] within the scope of the performance and administration of the project and of the Consortium Agreement (signed by all parties).

All information in whatever form or mode of communication (including deliverables and milestones generated in ALFAFUELS), which is disclosed by a party (the "Disclosing Party") to any other party (the "recipient") in connection with the project during its implementation and which has been explicitly marked as "confidential" at the time of disclosure, or when disclosed orally has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 calendar days from oral disclosure at the latest as confidential information by the disclosing party, or that has been acquired during hosting periods at the premises of any party is "Confidential Information".

During the project and for a period of 1 year after the end of the project, the dissemination of own results by one or several parties including but not restricted to publications and presentations, shall be governed by the procedure of article 17.4 of the grant agreement and its annex 5, Section dissemination, subject to the following provisions.

Prior notice of any planned publication shall be given to the other parties at least 45 calendar days before the submission. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the coordinator and to the party or parties proposing the dissemination within 30 calendar days after receipt of the notice. If no

objection is made within the time limit stated above, the publication is permitted.

Access rights to results if needed for exploitation of a party's own results shall be granted on fair and reasonable conditions. Access rights to Background if needed for exploitation of a party's own results, shall be granted on fair and reasonable conditions. A request for access rights may be made up to twelve months after the end of the Project or (as described in Section 9.7.2.1.2 of the consortium agreement), after the termination of the requesting party's participation in the project.

7. Conclusions

The DMP details what kind of data the project is expected to generate, whether and how these will be exploited or made accessible for verification and reuse, and how they will be curated and preserved. The rules and directives mentioned here follow HORIZON EUROPE principles and what was agreed in the consortium agreement and the ALFAFUELS grant agreement, both signed by all partners. Provisions have been made to make the data open and available so long as their exploitation is not prevented. The different kinds of DATA to be generated during the project are listed in annex 1 at the end of this document. The DMP will serve as a guide for all partners regarding the DATA handling and will be a living document that could be updated according to the needs of the project.

8. References

[1] https://zenodo.org/

[2] https://eur-lex.europa.eu/eli/reg/2016/679/oj

9. Annex 1

Table showing the different types of data that are going to be generated by the ALFAFUELS partners.

Responsible Partner	Dataset name	Dataset description & Purpose	Type of data	Format	Access level and provisions	Access software	Intended use	Data generator/ collector	Quality assurance procedures	Archiving space	Archiving period	Archiving associated costs
RISE Processum	Cultivations of cyanobacteria in photobioreactor	Experimental results from cultivation in 12L photobioreactor including growth parameters and conditions, achieved yields and productivities of biomass and/or isoprene	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, photo-viewer	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
RISE Processum	Cultivations of microalgae in photobioreactor	Experimental results from cultivation in 12L photobioreactor including growth parameters and conditions, achieved yields and productivities of biomass	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, photo-viewer	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
RISE Processum	Hydrolysis of cell debris from cyanobacteria	Experimental results from enzymatic hydrolysis trials including hydrolysis conditions, parameters, sugar yields	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, photo-viewer	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
RISE Processum	Hydrolysis of cell debris from microalgae	Experimental results from enzymatic hydrolysis trials including hydrolysis	Experimental	Word, Excel, Images	Restricted to consortium members,	Word, Excel, photo-viewer	For Project purposes, only internal use and publication or patent	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees	Over 5 years, or until the data is made public or	Included in overhead

		conditions, parameters, sugar yields			keep private/restricted until publication or patent application		application upon agreement with consortium members			working on ALFAFUELS	published in the scientific journals	
RISE Processum	Reactor design & construction	P&IDs for the monomer separation system, the photochemical reactor, and the dimer recovery system.	Design data	Word, pdf	Restricted to consortium members, keep private/restricted until publication or patent application	Acrobat, MS office	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
RISE Processum	Initial operation of dimerization reactor	Operational conditions and product data (SKY).	Experimental data	Excel, pdf	Restricted to consortium members, keep private/restricted until publication or patent application	Acrobat, MS office	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
RISE Processum	Long-time validation of dimerization reactor	Process evaluation. Process modelling follow-up (IDE).	Experimental data	Excel, pdf	Restricted to consortium members, keep private/restricted until publication or patent application	Acrobat, MS office	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	RISE Processum	Procedures will follow RISE guidelines	RISE server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
KU Leuven	Wild type Synechocystis growth	Experimental results from lab-scale bioprocesses to study the growth behavior of the wild type Synechocystis and its metabolism	Experimental	.xlsx, .docx	Restricted to consortium members, keep private/restricted until publication or patent application	Excel, Word	Construction of bioprocess models and optimisation of the bioprocess	KU Leuven	According to KU Leuven guidelines	Shared OneDrive folder	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead

KU Leuven	GMO Synechocystis growth and isoprene production	Experimental results from lab-scale bioprocesses to study the growth and isoprene production behaviour of the genetically modified Synechocystis and its metabolism	Experimental	.xlsx, .docx	Restricted to consortium members, keep private/restricted until publication or patent application	Excel, Word	Construction of bioprocess models and optimisation of the bioprocess	KU Leuven	According to KU Leuven guidelines	Shared OneDrive folder	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
KU Leuven	Model-based offline optimization	Computer code that calculates the (pareto front of) optimal operating conditions of isoprene production by Synechocystis based on the process model that is developed in this project.	Computer code	.py	Restricted to consortium members, keep private/restricted until publication or patent application	Python	Determination of optimal conditions for isoprene production	KU Leuven	According to KU Leuven guidelines	Shared OneDrive folder	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
KU Leuven	Model-based online optimization	Computer code that calculates the optimal operating conditions of isoprene production by Synechocystis based on the process model and online measurements of the bioprocess.	Computer code	.py	Restricted to consortium members, keep private/restricted until publication or patent application	Python	Implement online control for isoprene production	KU Leuven	According to KU Leuven guidelines	Shared OneDrive folder	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
KU Leuven	Isoprene production under optimised conditions	Experimental results from a lab-scale bioprocess that has been optimised to produce isoprene by genetically modified Synechocycstis	Experimental	.xlsx, .docx	Restricted to consortium members, keep private/restricted until publication or patent application	Excel, Word	Validation of the optimised conditions for isoprene production at lab scale	KU Leuven	According to KU Leuven guidelines	Shared OneDrive folder	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
SIE	Software tools to reach dissemination targets	Website, videos and other digital tools developed to reach the WP target.	Documents	PPT, PDF, JPEG, PNG, video, website	Partners within the consortium and targeted audiences. Open access.	Word, Adobe Reader, photo-viewer,	To ensure that that main project outputs are correctly disseminated to the key audiences.	SIE	SIE validates the content with the consortium.	Dynahosting server, RISE server, YouTube	During the project lifetime plus two extra years once is	Website server: 100€ /year Microsoft 365:

						video-viewer.				and Google.	project is finished.	4752,00€ /year
SIE	Personal data for newsetter	Email addresses are collected for newsletter subscription through the ALFAFULES website	Contact information	Audience list	Partners within the consortium. Information can not be shared outside the consortium and it can be only used for project dissemination purposes.	Excel	To ensure that that main project outputs are correctly disseminated to the key audiences.	SIE	N/A	Mailchimp	During the project lifetime plus two extra years once is project is finished.	N/A
SIE	Exploitation Plan Questionnaire	This dataset includes all the questionnaires answered by each partner in the consortium for the information about the KERs, market analysis, and exploitation	Documents		Remain confidential only for the consortium	Word	To ensure accurate information about the results that will be further exploited during the project	SIE	Internal review process	SurveyMonkey	During the project lifetime plus two extra years once is project is finished.	N/A
SIE	KER table	This table includes all the collected insights regarding Key Exploitable Results that will be exploited after the project development.	Documents	Excel	Remain confidential only for the consortium	Excel	Same as above	SIE	Internal review process	Internal sharepoint	During the project lifetime plus two extra years once is project is finished.	N/A
SIE	Market Assessment Questionnaire	This dataset includes all the questionnaires answered by each partner in the consortium for the information about the market research, current state-of-the-art of potential applications in the hybrid storage system	Documents	Word	Remain confidential only for the consortium	Word	To gather and collect market-wise insights about consortium partners and further develop finest analysis	SIE	Internal review process	SurveyMonkey	During the project lifetime plus two extra years once is project is finished.	N/A

SIE	Exploitation Workshop	This dataset includes all PowerPoint files that were developed by SIE to conduct the exploitation workshops to be the groundwork for the KER exploitation and IPR strategy discussions.	Documents	PDF	Remain confidential only for the consortium	PDF	Same as exploitation questtionaire	SIE	Internal review process	Internal sharepoint	During the project lifetime plus two extra years once is project is finished.	N/A
SIE	IPR Matrix	This dataset includes the background and foreground data that were developed by SIE to conduct the IPR strategy. All partners contributed to complete and fill the excel file with relevant insights about their initiatives and willigness to protect their results	Documents	Excel	Remain confidential only for the consortium	Excel	To conduct a Intellectual Property management that will safeguard all the results that are envisaged to be protected	SIE	Internal review process	Internal sharepoint	During the project lifetime plus two extra years once is project is finished.	N/A
UP	Metabolic engineering strategies	Collection of metabolic engineering strategies for the different biotech objectives	Modeling	Excel	Restricted to consortium members, keep private/restricted until publication or patent application	Excel	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UP	Procedures will follow UP guidelines	UP server	10 years, according to the UP rules for project data storage	Included in overhead
UP	Gene regulatory networks	Collection of gene regulatory interactions for Synechocystis and Chlamydomonas reihardtii	Modeling	Excel	Restricted to consortium members, keep private/restricted until publication or patent application	Exce.	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UP	Procedures will follow UP guidelines	UP server	10 years, according to the UP rules for project data storage	Included in overhead

DTU	Analysis of cyanobacteria and microalgae before biorefining	Results of protein and lipid analysis, results of pigment analysis	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	DTU	Procedures will follow DTU data management guidelines	DTU server (O-drive) with limited access to employees working on ALFAFUELS only	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
DTU	Biorefining of cyanobacteria	Experimental plans detailing processing conditions and parameters and corresponding experimental results of biorefining of cyanobacteria. This includes yields, purity and composition of lipid and protein fractions	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	DTU	Procedures will follow DTU data management guidelines	DTU server (O-drive) with limited access to employees working on ALFAFUELS only	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
DTU	Biorefining of microalgae	Experimental plans detailing processing conditions and parameters and corresponding experimental results of biorefining of microalgae. This includes yields, purity and composition of lipid and protein fractions and yield of starch	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	DTU	Procedures will follow DTU data management guidelines	DTU server (O-drive) with limited access to employees working on ALFAFUELS only	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
E3-Modelling	CO2 production	Availability, production pathways and prices for CO2 and their development for 2025-2050	Modelled projection	Excel	Restricted until publication	Excel	For project related use	E3-Modelling	Procedures will follow E3-modelling quality control process	E3-Modelling server with access limited to	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead

E3-Modelling	Sustainable aviation fuel (SAF) production and use	SAF production and use per pathway and per EU Member State for 2025-2050 for the baseline and alternative ALFAFUELS scenarios	Modelled projection	Excel	Restricted until publication	Excel	For project related use	E3-Modelling	Procedures will follow E3-modelling quality control process	E3-Modelling server with access limited to	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
E3-Modelling	Sustainable aviation fuel (SAF) costs	CAPEX and OPEX costs for SAF and their development for 2025-2050	Modelled projection	Excel	Restricted until publication	Excel	For project related use	E3-Modelling	Procedures will follow E3-modelling quality control process	E3-Modelling server with access limited to	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
E3-Modelling	Impacts of ALFAFUELS innovations on the aviation system	Impacts in terms of GHG emissions, overall costs and activity for the aviation system in the baseline and alternative ALFAFUELS scenarios for 2025-2030	Modelled projection	Excel	Restricted until publication	Excel	For project related use	E3-Modelling	Procedures will follow E3-modelling quality control process	E3-Modelling server with access limited to	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
IDENER	Output data of simulating of cyanobacteria cultivation	Results of mass and energy balance after running simulations	Simulation result	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, Openoffice	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	IDENER	Procedures will follow IDENER guidelines	IDENER server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
IDENER	Output data of simulating of microalgae cultivation	Results of mass and energy balance after running simulations	Simulation result	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, Openoffice	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	IDENER	Procedures will follow IDENER guidelines	IDENER server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead

							For Project purposes, only internal use and publication or patent application upon agreement with consortium members					
IDENER	Output data of simulating separation steps	Results of mass and energy balance after running simulations	Simulation result	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, Openoffice	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	IDENER	Procedures will follow IDENER guidelines	IDENER server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UCPH	Life cycle data	Collection of foreground and background data needed for building an inventory of the ALFAFUELS industrial ecology system.	Primary data from partners, secondary data from existing literature or databases	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication	Word, Excel	For Project purposes, only internal use and publication upon agreement with consortium members	UCPH	ISO 14040 and 14044 standards	UCPH server and ALFAFUELS sharepoint	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UCPH	Economic data	Collection of life cycle cost data and relevant market price data of relevance to the ALFAFUELS industrial ecology system.	CAPEX and OPEX	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication	Word, Excel,	For Project purposes, only internal use and publication upon agreement with consortium members	UCPH	Established guidelines for TEA	UCPH server and ALFAFUELS sharepoint	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
SkyNRG	Report on jet fuel quality	Report on the performance and suitability of ALFAFUELS jet product as a drop-in sustainable aviation fuel	Report on analysis	Word	Restricted to consortium members.	Word	For project purposes, only internal use.	SkyNRG	Procedures will follow SkyNRG guidelines	SkyNRG server with limited access.	For 5 years, or until data is made public.	Included in overhead.

UU	Cultivation of cyanobacteria in lab scale	Experimental results from cultivation in small lab scale, including growth parameters and conditions, achieved yields and productivities of biomass and/or isoprene	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, photo-viewer	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good research practice	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UU	Engineered strain information	Description of gene modifications introduced in engineered strains	Descriptive information	SnapGene, Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, SnapGene	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good research practice	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UU	Cultivation of microalgae in lab scale	Experimental results from cultivation in small lab scale, including growth parameters and conditions, achieved yields and productivities of biomass and/or starch/H2	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel, photo-viewer	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good research practice	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UU	Engineered strain information	Description of gene modifications introduced in engineered strains	Descriptive information	SnapGene, Word, Excel, Images	Restricted to consortium members, keep private/restricted	Word, Excel, SnapGene	For Project purposes, only internal use and publication or patent application upon	UU	Procedures will follow rules and guidelines at UU, and be	UU server with limited access to employees	Over 5 years, or until the data is made public or	Included in overhead

					until publication or patent application		agreement with consortium members		performed according to standard good research practice	working on ALFAFUELS	published in the scientific journals	
UU	Development of isoprene dimer production with g-CN in lab scale	Experimental results from g-CN materials synthesis and characterization, as well as yields and products characterization from photochemical experiments on dimer formation.	Experimental	Word, Excel, Spectra, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, excel, Origin, Specific spectra software	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good research practice	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UU	Development of isoprene dimer production with QDs in lab scale	Experimental results from preparation of sensitizer-decorated QDs and characterization, as well as yields and products characterization from photochemical experiments on dimer formation.	Experimental	Word, Excel, Spectra, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, excel, Origin, Specific spectra software	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good research practice	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UU	Development of isoprene dimer production sensitizer coated inert particles	Experimental results from preparation of sensitizer-decorated inert particles and characterization, as well as yields and products characterization from photochemical experiments on dimer formation.	Experimental	Word, Excel, Spectra, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, excel, Origin, Specific spectra software	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead

									research practice			
UU	Scale-up of selected methodology for isoprene dimer production in pilot scale	Experimental results scale-up experiments	Experimental	Word, Excel, Spectra, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, excel, Origin, Specific spectra software	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UU	Procedures will follow rules and guidelines at UU, and be performed according to standard good research practice	UU server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
ENI SPA	Optimization of photo bioconversion of CO2 to isoprene by generated strains and valorization of CO2 industrial streams	Supply of industrial CO2 streams to test and optimize the photoconversion of CO2 to isoprene. Two streams will be tested ranging from 3% CO2 to 20% CO2 (Possibly from boilers and biogas)	Experimental	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	Uppsala Universit et	Procedures will follow ENI guidelines	ENI server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
ENI SPA	Feasibility Study	Feasibility study, based on the Italian scenario, for the realization and implementation of SAF production technology on a large scale.	Report	Word, Excel, Images	Restricted to consortium members, keep private/restricted until publication or patent application	Word, Excel,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	ENI SPA	Procedures will follow ENI guidelines	ENI server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UNIFI	Photobioreactor design	Technical drawings needed for the photobioreactor construction (support to F&M activity)	Technical	Images, CAD, Sketchup, PDF	Restricted to consortium members	photo-viewer, AUTO CAD, Sketchup	For Project purposes, only internal use and publication or patent	UNIFI	Procedures will follow UNIFI guidelines	UNIFI server with limited access to employees	Over 5 years, or until the data is made public or	Included in overhead

					keep private/restricted until publication or patent application		application upon agreement with consortium members			working on ALFAFUELS	published in the scientific journals	
UNIFI	Cultivations of cyanobacteria in small scale laboratory photobioreactors	Experimental results from cultivation in small scale laboratory photobioreactor including growth parameters and conditions, achieved yields and productivities of biomass and/or isoprene	Experimental	Word, Excel, images, PDF	Restricted to consortium members keep private/restricted until publication or patent application	Word, Excel, photo-viewer,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UNIFI	Procedures will follow UNIFI guidelines	UNIFI server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
UNIFI	Cultivations of cyanobacteria in the pilot-scale photobioreactor	Experimental results from the scaled-up photobioreactor including growth parameters and conditions, achieved yields and productivities of biomass and/or isoprene (support to F&M activity)	Experimental	Word, Excel, images, PDF	Restricted to consortium members keep private/restricted until publication or patent application	Word, Excel, photo-viewer,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	UNIFI	Procedures will follow UNIFI guidelines	UNIFI server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
F&M	Photobioreactor design	Technical drawings (P&ID, 3D MODELS) needed for the photobioreactor construction.	Technical	Images, CAD, Sketchup	Restricted to consortium members keep private/restricted until publication or patent application	photo-viewer, AUTO CAD, Sketchup	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	F&M	Procedures will follow F&M guidelines	F&M server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead
F&M	Pilot scale trials	Experimental results from pilot scale trials including growth data and isoprene collection	Experimental	Word, Excel, Images	Restricted to consortium members keep private/restricted until publication or patent application	Word, Excel,	For Project purposes, only internal use and publication or patent application upon agreement with consortium members	F&M	Procedures will follow F&M guidelines	F&M server with limited access to employees working on ALFAFUELS	Over 5 years, or until the data is made public or published in the scientific journals	Included in overhead