

STAR-ProBio

**Sustainability Transition Assessment and Research of Bio-based
Products**

Grant Agreement Number 727740



**Deliverable D10.2
Data Management Plan
(updated version)**

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www.star-probio.eu



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1.1	Inclusion of the key information tables of datasets in Annex I and Informed Consent form in Annex II
1.4	Further update to the datasets in Annex I
1.6	Final draft for review by selected partners
2.0	Final updated DMP



Abstract

The STAR-ProBio updated Data Management Plan focusses on the supporting data that underlying the project deliverables and scientific articles. It aims at providing the consortium partners with a harmonized strategy to implement the Horizon 2020 principle “as open as possible, as closed as needed”, while offering flexibility for deviations if properly justified. 26 datasets have been identified and are described individually in the Annex. This document provides guidance on identifying and publishing datasets produced by the project and a way of tracking the publication of datasets.

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Introduction

Projects participating in the Horizon 2020 Open Research Data Pilot are required to elaborate several versions of a Data Management Plan (DMP), with the aim to improve and maximise access to and re-use of research data generated by Horizon 2020 projects. This document fulfils this requirement and aims to provide the STAR-ProBio consortium members with a harmonized approach and guidance to data management. The DMP is intended to be a living document in which information can be made available on a finer level of granularity through updates as the implementation of the project progresses and when significant changes occur. The current document represents a planned update for Month 18, the grant agreements foresees a final update in Month 36.

The initial version of the STAR-ProBio Data Management Plan (DMP) provided the members of the consortium with a unified approach to data collection, curation and publication, focusing on the supporting data that will be generated by implementing the various STAR-ProBio Work Packages and task. This update to DMP builds on the experiences so far to refine and improve the guidance and approach for the datasets, and in Annex I a description of each of the 26 datasets is now provided.

The [H2020 Online Manual](#) provides key information on the scope of the DMP:

“Research data is information (particularly facts or numbers) collected to be examined and considered, and to serve as a basis for reasoning, discussion or calculation.”

“The Open Research Data Pilot applies primarily to the data needed to validate the results presented in scientific publications. Other data can also be provided by the beneficiaries on a voluntary basis.”

The STAR-ProBio project performs multidisciplinary research aimed at contributing solutions to real-life gaps and problems in sustainability certification of bio-based products. As such, the main sources of research data are existing literature and experts. The STAR-ProBio research data forms the basis for articles and deliverables such as reports. Most of these will be made public, as set out in the Grant Agreement. The main project outputs are in the form of scientific publications, reports and other project deliverables. The Data Management Plan focusses on the research data underlying these deliverables; the supporting data gathered in order to enable the elaboration of the STAR-ProBio deliverables.

This DMP follows the H2020 Template for the Data Management Plan v1.0, 13/10/2016 and draws on the [Guidelines on FAIR Data Management in Horizon 2020](#) (v.3, 26/07/2016).



1 Data summary

1.1 Purpose of data collection and relation to the project objectives

The overarching objective of STAR-ProBio is to develop sustainability assessment tools for bio-based products, in order to support a sustainably growing market for these products. In order to reach the objective, a set of 7 work packages (WPs 1 to 7) providing in-depth literature research, expert consultations and interviews and other data collection, feeding into sustainability assessment toolbox development and recommendations for their implementation (WPs 8 and 9).

The multidisciplinary project STAR-ProBio integrates the scientific, engineering and social sciences approaches of fifteen consortium partners. The data generated during the project will span a varied array of research fields. For this reason, a default STAR-ProBio data management approach is described in this document, which applies to all datasets that the project will generate. However, deviations from the default approach will be needed for some datasets, due to reasons such as confidentiality of data or embargo periods related to IPR or scientific publication. Such deviations are possible, as long as they are well explained and documented in a future update of this DMP.

Furthermore, whenever possible, datasets should use the metadata, standards and/or repositories of their specific scientific field, in case those exist. Cross-project consistency is important, but less important than facilitating the use of public STAR-ProBio data in its own scientific discipline.

1.2 Types and formats of the data

The data that STAR-ProBio will generate is primarily sourced from existing relevant knowledge from (scientific and non-scientific) publications and experts. In most cases, the collected data will be organized in a spreadsheet, which besides some numerical data will typically contain short or long text entries.

These spreadsheets will have the .xlsx (Microsoft Excel) format.

Further envisioned data formats are text: documents (.pdf and .docx)

Some complementing formats for graphical and audio-visual data may be generated. Some examples include but are not limited to:

- .jpg (images);
- .ppt (Microsoft PowerPoint);
- .avi (video).

Lastly, in case specific software or models such as for Life Cycle Analysis (LCA) will be used, datasets may be stored in formats specific software or models. However currently only Excel spreadsheets are foreseen for this type of data.



1.3 Re-use of existing data and its origin

Literature research and expert consultations are the main origins for the research data generated in this project. This includes scientific articles, other scientific and non-scientific reports, documentation of existing schemes and standards, databases for Life Cycle Analysis (LCA), interviews and other communication with experts. The data sources will primarily be full-text rather than numbers, except for specific databases. The majority of types of source data will either be gathered directly by the researchers or are publicly available, either for free or behind a pay wall. In some exceptional cases the consortium will buy existing data (currently considered in WP6) or receive data confidentially from the data owners (currently under preparation for the case studies) or are otherwise granted access to confidential data. Independently of the data source, the consortium will ensure that all relevant licences are respected and will maintain clear source referencing. Furthermore some important source data, from for example FAOSTAT is freely available under a licence that does not allow commercial use. Some of the datasets foreseen for STAR-ProBio will be enrichments of selected FAOSTAT data, so will be published under a similar licence. STAR-ProBio datasets will provide clear references to its source data, whether and how the source data itself is made public is up to those who own the rights to this data.

1.4 Size of the data

STAR-ProBio does not foresee generation of data in large experiments or models, or through data-intensive techniques or formats. So far, all datasets have been manually collated, large data gathering exercises are not foreseen, and as such are expected to have maximum file sizes in the tens of megabytes range.

1.5 Potential users of published research data

Datasets generated by STAR-ProBio can be interesting for:

- Members of the scientific community;
- Professionals with a link to bio-based product sustainability;
- Those active in the specific research field to which the dataset contributes;
- Other research projects that can continue to build on or combine their work with STAR-ProBio datasets.

A distinction can be made between research datasets supporting peer reviewed academic publications and datasets forming the basis on which the project deliverables are elaborated. The research data underlying project deliverables requires a big investment in terms of human resources, therefore the main aim of making this data public is for others to use and build on this data, preventing duplication of work and improving efficiency, quality and speed of research. This also holds true for scientific publications, but for these validation and reproducibility are key consideration as well.



2 FAIR (findable, accessible, interoperable and reusable)

2.1 Making data findable, including provisions for metadata

2.1.1 Discoverability of data (metadata provision)

A multi-disciplinary project such STAR-ProBio requires a broad, commonly used standard that is not restricted to a specific research area. The default option in STAR-ProBio is to apply the [DataCite Metadata Schema](#). This standard compatible with the OpenAIRE platform (see sections 2.1.2 and 2.2) and the project's use of [Zenodo](#).

However, some specific STAR-ProBio datasets may be of interest to a scientific discipline for which a dedicated metadata protocol exists. Usage of a dedicated metadata standard is preferred over the broad protocol, therefore for each dataset the [Research Data Alliance's Metadata Standards Directory](#) should be consulted, in order to determine the best metadata standard. At the time of writing (M18), no such dedicated metadata standard was found for any of the project's datasets, therefore likely all published datasets will follow [DataCite Metadata Schema](#). In case a dataset consists of multiple files a readme.txt is included explaining the intention of each included file and the relevant metadata. The selected metadata standard is recorded per dataset in the key characteristics tables in the Annex.

Similarly, data findability can in some cases be enhanced by depositing the dataset in a repository, which is specific to the discipline. Therefore, for each dataset the [Registry of Reseach data Repositories \(www.re3data.org\)](#) should be consulted, in order to determine most appropriate repository. At the time of writing (M18) no such dedicated metadata standard was found for any of the project's datasets. The selected repository is recorded in key characteristics table in the Annex.

2.1.2 Identifiability of data

The STAR-ProBio datasets (see section 2.2) that will be published as part of the data management approach form the supporting data for scientific manuscripts and project deliverables. In order to establish a clear link between the supporting data and the documents based on them, a broadly used identifier is needed. Each published STAR-ProBio dataset will have a unique Digital Object Identifier (DOI) attributed to it. The DOI will be generated using the OpenAIRE platform, and link to the [Zenodo](#) repository.

2.1.3 File naming convention and versioning

In order to ensure transparency of file contents and versioning, the following naming convention is to be used for files generated during the project:

STAR-ProBio_D[x.y]_v[Version]_[Short Title]_[Type]_[Date]_[Status]_[Free].[extension]

It consists of:

STAR-ProBio	Project name, fixed
D[x.y]	Deliverable identifier, if relevant
V[Version]	Version number in x.y format, should match a version number with a short description inside the document, such as the Document History table in this document
[Short Title]	Short descriptor for easy identification, maximum 40 characters



[Type]	Describes the type of data (e.g. publication, inventory, etc.)
[Date]	Date in format YYMMDD
[Status]	Draft, Final, Public, Restricted, Confidential
[Free]	Free text field for internal communication purposes (e.g. initials of reviewer). This field should not be included in the name of published files.
.[extension]	File extension

For the completed individual datasets generated by the project, a specific file naming convention is used:

STAR-ProBio_[Short Title]_v[Version] _[Type]

It consists of:

STAR-ProBio	Project name, fixed
[Short Title]	Short descriptor for easy identification, maximum 40 characters
V[Version]	Version number in x.y format, should match a version number with a short description inside the document, such as the Document History table in this document
[Type]	Describes the type of data (e.g. publication, inventory, etc.)
.[extension]	File extension

2.1.4 Approach towards keywords

For each dataset, the responsible beneficiary has to indicate a set of selected keywords aiming to maximise findability. The default STAR-ProBio repository is [Zenodo](#), which follows the [DataCite Metadata Schema](#). The keywords are also included in the key characteristics tables per dataset, in the Annex.

2.2 Making data openly accessible

2.2.1 Data to be made publicly available and rationale for keeping some data closed

As set out in the STAR-ProBio Consortium Agreement, each beneficiary has the right to publish the outputs it generates. This also means that partners have to explicitly agree to the publication of datasets to which they have contributed. STAR-ProBio will comply with the open access clause in the Grant Agreement and uses the H2020 principle of “as open as possible, as closed as needed”. In practise, this means that the default approach is to make datasets public.



Not publishing, or under embargo or other restrictions is allowed, but only if there are sufficient grounds to do so. An example of such a case may be confidential data received for case studies or data gathered through interviews. Via the STAR-ProBio letter of consent, the project guarantees anonymity to respondent and if anonymised data from interview is made public via open access each respondent needs to sign a second informed consent regarding this step. A clear justification needs to be provided for any deviations from the default approach. This justification is recorded in the dataset characteristics log in the annex; see Table 2 for the template of the key information per dataset.

Rather than being a pre-defined deliverable, the underlying research needed for the STAR-ProBio deliverables and goals will organically create dataset in which research outputs are organised. The exact scope of individual datasets will only become known once the research gets underway, but based on the work programme a provisional list of STAR-ProBio dataset was created, see Table 1. Some of these dataset may be split or merged and other datasets may be added later in the project. It should be noted that the aim of Table 1 is to provide an up-to-date list of supporting data that STAR-ProBio has generated and is expected to generate. It does not mean that all data sets will be made public. For instance various STAR-ProBio tasks include interviews, questionnaires or Delphi exercises. The respondents are asked to sign an informed consent form in which is stated that their data will not be made public, therefore the resulting datasets will not be published at the level of individual responses. A specific justification for each dataset will be included in the Annex.

Table 1 List of 26 STAR-ProBio datasets

Dataset	Reference ¹	Lead beneficiary
Inventory of relevant existing bio-based economy related policies, strategies and regulations	T1.1	5 - DBFZ
Existing schemes and standards gap analysis: expert interviews	WP1	3 - TUB
Inventory of existing sustainability standards	T1.2	3 - TUB
Inventory of the sustainability methodologies, indicators and criteria of research projects funded by the European Union	T1.2	3 - TUB
Bio-based product value chain and stakeholder map Matrix for the analysis and identification of the most promising bio-based value chains via two-tier multi-criteria decision analysis	T1.3	2 - UoY
Literature review on environmental sustainability indicators related to bio-based products	WP2	10 - QUANTIS SARL
Selection of environmental indicators and impact categories for the life cycle assessment of bio-based products	WP2	10 - QUANTIS SARL
Life cycle inventory for production and upstream processing of selected feedstocks	T2.4, D2.3	13 - USC
Literature review and life cycle inventory for LCA of case studies	WP3	2 - UoY
End-of-life (EoL) life cycle inventory for the case studies	WP3	2 - UoY
Description of full chain Techno-Economic Sustainability Assessment (TESA) methodology	MS2	4 - AUA

¹ WP: Work Package, T: Task, D: Deliverable, MS: Milestone



Inventory of alternative feedstocks, production routes, EoL options	WP4	8 -UWM, 4 - AUA
Delphi results of stakeholder sustainability preferences and expectations	WP5	3 - TUB
Field experiment on consumer preferences for bio-based products	T5.3	1 - UNITELMA
Literature review of social sustainability assessment indicators and criteria related to bio-based products	D6.1	1 - UNITELMA
Social Value items validation through stakeholder consultation	T6.2	1 - UNITELMA
Comprehensive review of existing key drivers, parameters and standards related to ILUC risk.	WP7	7 - UNIBO
SydILUC model semantics parameters for the calibrated model with "realistic" future projection of the data (for the validation part)	WP7	7 - UNIBO
FAOSTAT data used for the SydILUC model	WP7	7 - UNIBO
FAOSTAT data used for the SydILUC model, tier 2	WP7	7 - UNIBO
Bioplastic production pathways with yields, for the SydILUC model	WP7	7 - UNIBO
Results of SWOT/PESTEL analyses for selected bio-products	T8.1	8 - UWM
Inventory of principles and criteria in relation to SAT-ProBio blueprint	T8.2, T8.3	8 - UWM
Inventory of relevant bio-based economy related policies, strategies and regulations	T9.1	5 - DBFZ
Overview of criteria and indicators for environmental, social and economic product characteristics in 42 eco-labels	T9.2	3 - TUB
Inventory of existing monitoring options of the socio-economic and environmental consequences of developing a bio-based economy	T9.4	5 - DBFZ

Key information was collected for each dataset, by the lead beneficiary responsible for the dataset. This key information is recorded for each of the 26 datasets in Annex I of this DMP. Table 2 provides the template of the key information per dataset.

Table 2 Template for the key information log for each dataset

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	
Dataset description	
Dataset DOI	
Dataset version history	
Key contact [Beneficiary]	
Dataset file format and size	
Associated WPs/Tasks/Deliverables/Milestones	
Other contributing beneficiaries	
Dataset (to be made) public?	[Yes/No]
If No, justification:	
Published version(s)	
Repository(-ies)	
Keywords	
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	
Key data sources	



The default STAR-ProBio approach is to make datasets publicly available; however making datasets public is not an aim in itself. Some datasets generated in the project may be so specifically geared toward a project task or deliverable that there is no apparent use outside the project. In that case, this should be clearly explained, and the dataset should not be published. For several project activities, such as expert consultations, questionnaires for professionals and individuals, field experiments with members of the public and requests for sensitive production process data from companies, agreements are made with the outside parties that their data will not be made public, or only in aggregated and anonymized form. For datasets that will be published, the intended audience is described in Annex I.

Publications of project outputs other than the Deliverables set as public in the grant agreement have to comply with the Consortium Agreement. The most relevant sections are included below:

8.4.2.1 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 29.1 of the Grant Agreement 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 publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement in writing 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.

8.4.2.2 An objection is justified if: (a) the protection of the objecting Party's Results or Background would be adversely affected; (b) the objecting Party's legitimate interests in relation to the Results or Background would be significantly harmed. The objection has to include a precise request for necessary modifications.

8.5.1 Dissemination of another Party's unpublished Results or Background A Party shall not include in any dissemination activity another Party's Results or Background without obtaining the owning Party's prior written approval, unless they are already published.

10.1 All information in whatever form or mode of communication, 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, is "Confidential Information".

10.2 The Recipients hereby undertake in addition and without prejudice to any commitment on non-disclosure under the Grand Agreement, for a period of 4 years after the end of the Project:

- not to use Confidential Information otherwise than for the purpose for which it was disclosed;*
- not to disclose Confidential Information without the prior written consent by the Disclosing Party; - to ensure that internal distribution of Confidential Information by a Recipient shall take place on a strict need-to-know basis; and*



- *to return to the Disclosing Party, or destroy, on request all Confidential Information that has been disclosed to the Recipients including all copies thereof and to delete all information stored in a machine readable form to the extent practically possible. The Recipients may keep a copy to the extent it is required to keep, archive or store such Confidential Information because of compliance with applicable laws and regulations or for the proof of on-going obligations provided that the Recipient comply with the confidentiality obligations herein contained with respect to such copy for as long as the copy is retained.*

2.2.2 Approach to providing public access to datasets

Until a dataset is fully finalised and ready for publication, the private area of the STAR-ProBio website is the default platform for data exchange. As long as there is consensus among all contributors to a dataset and any restrictions on sensitive data are respected, other forms of data exchange are also allowed, such as email or cloud services.

The default approach is to make fully finalized datasets publicly available, unless there is a clear reason not to. STAR-ProBio has created a [community on Zenodo](https://zenodo.org/communities/star-probio/) (<https://zenodo.org/communities/star-probio/>) which is used as the main repository for making datasets publicly available. Always use this link to upload to Zenodo: <https://zenodo.org/deposit/new?c=star-probio>. Deviation from this approach is only allowed if sufficiently justified in line with the provisions in the relevant sections of this document, and recorded in the dataset characteristics log in the annex. Datasets should always include an explanation (either in the main file or in a separate readme.txt file) and relevant references to sources, methods used, metadata and other pertinent documentation.

Partners are encouraged to add the datasets that they (co)-author to their institutional repositories, and/or the STAR-ProBio website, as appropriate.

Zenodo is a repository created by CERN and the EU OpenAire project. Data in this repository can be searched and downloaded with any modern internet browser. Its key benefits to the STAR-ProBio project include:

- All research fields, all types of data;
- Open access;
- Free of charge;
- Publications and supporting data can be linked;
- A DOI is provided for effective and persistent citation;
- Offers various licencing options;
- If relevant an embargo date can be set, for instance to give the consortium time to publish or seek IPR protection. This way it will be accessible through Zenodo.org to consortium members only until the embargo expires.

In case of restricted data, the default access option is through uploading the data to the private area of the STAR-ProBio: <http://www.star-probio.eu/wp-login.php>

In case a restricted dataset can be shared outside the consortium under specific conditions, [Zenodo](#) is used. This platform provides a way for interested parties to request data access.



2.3 Making data interoperable

2.3.1 Data interoperability and used vocabulary

It is essential that published datasets are unequivocally interpretable by third persons without any link to the project. Therefore, each dataset needs to be accompanied with a description of the methodology, sources, definitions and scope of the data contained in it.

As discussed in section 2.1.1, whenever possible, datasets should be structured in such a way that it can, in full or in part, be combined with another dataset, from the project or any other data source. For some fields of research specific definitions, metadata and/or vocabulary exists to enable this (see [RDA's Metadata Standards](#)). For each dataset, the responsible beneficiary needs to determine if this exists for the relevant field(s) of research and comply with the relevant standards. At the time of writing (M18) no such dedicated metadata standard was found for any of the project's datasets, therefore likely all published datasets will follow [DataCite Metadata Schema](#).

In order to ensure good interoperability of datasets, it is imperative that standards and methods commonly used in the same field are used. [Fairsharing.org](#) is a valuable resource where researches can identify relevant standards, as well as databases and repositories. For example, all STAR-ProBio work on LCA methodology is ILCD/PEF-compliant.

2.4 Increase data re-use (through clarifying licences)

2.4.1 Data licensing

STAR-ProBio has chosen the Zenodo repository (<https://zenodo.org/communities/star-probio/>) for making datasets publicly and permanently available. Zenodo has a built-in mechanism to select the appropriate licence.

[Creative Commons licences](#) are used for every published dataset. The default licence is Attribution-ShareAlike (CC BY-SA), however the level of restriction will need to be determined on a case-by-case basis. The chosen licence needs to be recorded in the dataset characteristics log in the annex.

Possible [Creative Commons licences](#):

- **Attribution (CC BY)**

This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials.

- **Attribution-ShareAlike (CC BY-SA) [STAR-ProBio default option]**



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2.4.2 Reusability during and at the end of the project

Datasets are made available through the [STAR-ProBio website](#), which will remain online for at least three years after the end of the project.

Before the end of the project, the final datasets will be uploaded to the Zenodo repository (<https://zenodo.org/communities/star-probio/>), which ensures long-term archiving of the final research data. Dataset published on Zenodo will be retained for the lifetime of the repository, which is currently indicated as indefinitely. Uploaded data files and metadata are backed up on a 12-hourly basis, as well as replicated in multiple copies in the online system.

The lead beneficiary in charge of a dataset should strive to make the dataset public as early as possible, while adhering to the restrictions of consent of all contributing beneficiaries and sufficient time for pre-publication quality control. When publishing to Zenodo a DOI will be obtained, to be used in the scientific publications and project deliverables, hence if possible datasets are published ahead of the documents for which the dataset provide the supporting data.

Beneficiaries should also make sure to provide repository address and basic access instructions as part of any dissemination related to the datasets.

The same quality assurance performed on the STAR-ProBio Deliverables specified in the grant agreement should be performed on its datasets, including extensive review by contributing partners. In order to ensure that the individual datasets contain clear instructions (either directly in relevant dataset files or in a readme.txt file) at least one senior reviewer who was not involved in the preparation of the dataset will review the dataset. The Data Manager (see section 3 can take this role.



2.4.3 Re-usability duration

Given the fast-changing nature of both bio-based product development and sustainability certification, the useful lifetime of the majority of STAR-ProBio datasets is likely to be limited. This is especially true if the data sources used are subject to change, such as the rules guiding existing sustainability schemes. Inventories using scientific publications are more stable over time; future research can use published STAR-ProBio data and build on it by updating and completing such data.

The default STAR-ProBio approach is for its datasets to, once published, remain on Zenodo indefinitely. No exceptions to this have been identified so far or are expected for the remainder of the project.



3 Allocation of resources

Work Package 10 leader SQ Consult's Sjors van Iersel will act as Data Manager for the STAR-ProBio project. In cooperation with the project's CoDNOC Louise Summerton (University of York), he will oversee data management under STAR-ProBio. Sjors van Iersel is the primary contact point regarding data management and can help in case of questions regarding implementation of the Data Management Plan.

The leaders of the task(s) generating each dataset have the ultimate responsibility of the correct implementation of the provisions in the DMP.

Public project deliverables and datasets are published on the STAR-ProBio website and the Zenodo repository. There is no additional cost for publication on the website because this is included in the cost of operating the website as a whole, included the public and private parts. In addition, Zenodo is free of charge for H2020 projects. No financial resources for storage, cloud, hosting, IT infrastructures etc. are required.

All partner institutions have budgeted dissemination costs supporting publication of scientific articles to Open Access Journals. The CoDNOC maintains an overview (https://docs.google.com/spreadsheets/d/1wWa4no3M3n7B0k0KUhKSO3_vlw-p6hZcUyB03A426Ec) of all Green and Gold publications from the project, including any embargo period and when it ends. The project coordinator and the CoDNOC coordinate the strategy on which publications should be published in a Green access journal.

Open access publications in peer-reviewed journals will be a vital part of STAR-ProBio dissemination activities. In line with the STAR-ProBio Communication and Dissemination Strategy, part of the project funding will be made available for gold access – particularly for any major results or breakthroughs –, which is preferable as they avoid embargo periods, enabling faster dissemination and subsequently increased visibility of the research. Along with gold access, green access will be utilised for disseminating projects' outcomes, which, though relevant, are not considered major results or breakthroughs



4 Data security

4.1 Prevention of data loss and data recovery

Significant human resources are allocated to building the various STAR-ProBio datasets. Once published, datasets are protected from data loss. For each file of each dataset the MD5 checksum of the file content is generated. This allows checking if all files remain fully intact.

Once datasets are finalised, they will be stored safely in the same cloud infrastructure as research data from CERN's Large Hadron Collider. All files uploaded to Zenodo are stored in CERN's EOS service in an 18 petabytes disk cluster. Each file copy has two replicas located on different disk servers with 12-hourly backup cycle with one backup sent to tape storage once a week.

While work is still in progress, measures are needed to prevent data loss due to equipment failure, digital or physical theft, ransomware etc. Each person working on the STAR-ProBio project must have a backup system in place. The maximum time that only one copy of any research data exists is 48 hours. Within that period, the data must be backed up somewhere, even while working outside office or while traveling. STAR-ProBio does not impose any specific backup or cloud solution to its partners, but an automated backup system with maximum 48 hour intervals is mandatory.

4.2 Secure storage and transfer of sensitive data

For storage and transfer of sensitive data, the [private area](#) of the STAR-ProBio website is used.

The majority of STAR-ProBio's research is based on public information, is meant to be made public and IPR will not be sought. In such cases, no specific security measures other than the backup requirement described in section 4.1 are needed.

For any data listed in the annex as not made public or under embargo, as well as any sensitive information received via interviews or case studies, the following restrictions apply:

For information in digital format:

- Must be stored only on hard drives with encryption, such as [BitLocker](#);
- Transfer of sensitive data will occur uniquely via the private area of the STAR-ProBio website or by encrypted email.

For information in paper format:

- Needs to be stored in a locked cabinet or office, where only a restricted, known number of people have access to it;
- Once the information has been processed and the raw data is no longer needed, appropriate long-term storage or destruction measures need to be taken.



5 Ethical aspects to data management

STAR-ProBio will collect expert knowledge and opinions by means of interviews, questionnaires and Delphi exercises. The focus is on the participants' views related to standards, labels, policy, and bio-based product issues, collecting non-personal information. Sensitive issues will be carefully avoided and, if any personal information is given, researchers will ensure that the opinions cannot be directly associated to individuals. In general, individual names and organisations will not be identified in the research. In the specific case of interviews, the minutes of each of them will not mention names but will be labelled with an identifying code to allow easier consultation of documents. If individuals agree to be quoted, researchers will first verify the accuracy of quotes that will be used with the respondent.

Respondents are asked to sign an informed consent form, see Annex II. The template for this form, as well as other STAR-ProBio's ethical considerations of personal data can be found in STAR-ProBio's POPD (Protection of Personal Data, Deliverable 12.1, Version 1.0, 28 July 2017) and is included as Annex II to this document.



Annex I: Key information per STAR-ProBio dataset

This annex lists all 26 datasets identified in the project, providing an overview of their key characteristics, including whether or not they will be made public and tracking if and where each dataset is published.

See Table 1 for a summarised list of all datasets

For the completed individual datasets generated by the project, a specific file naming convention is used:

STAR-ProBio_[Short Title]_v[Version] _[Type]

It consists of:

- STAR-ProBio Project name, fixed
- [Short Title] Short descriptor for easy identification, maximum 40 characters
- V[Version] Version number in x.y format, should match a version number with a short description inside the document, such as the Document History table in this document
- [Type] Describes the type of data (e.g. publication, inventory, etc.)
- .[extension] File extension

Topic	Description
Dataset identifier	STAR-ProBio_CertificationCriteria_v1.0_Spreadsheet
Dataset name	Inventory of relevant existing bio-based economy related policies, strategies and regulations
Dataset description	Inventory of ~50 BIO-BASED ECONOMY policy documents including a brief characterisation and analysis regarding their potential impact on sustainability assessment activities
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Stefan Majer [DBFZ]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP9 T9.1
Other contributing beneficiaries	TU Berlin, UNITELMA, SQ Consult, ECOS, UWM, Unibo
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	bio-based economy; sustainability; policy framework; standardisation; sustainability criteria; gaps; sustainability assessment; indicator; criteria; SDGs
Metadata standard	DataCite Metadata Schema
Useful for whom?	Stakeholders from industry and science who are interested in the current EU BIO-BASED ECONOMY policy framework
Key data sources	The analysed documents are the main source



Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Existing schemes and standards gap analysis: expert interviews
Dataset description	Protocols of 20 expert interviews based on a detailed interview guide
Not applicable	Not applicable
Dataset version history	V1.0 22/12/2017
Key contact [Beneficiary]	Simone Wurster [TU Berlin]
Dataset file format and size	Part of a 3 MB .pdf text file
Associated WPs/Tasks/Deliverables/Milestones	WP1 Tasks 1.1 and 1.2 D1.1
Other contributing beneficiaries	DBFZ, Unitelma, UoY
Dataset (to be made) public?	No
If No, justification:	Part of confidential deliverable
Published version(s)	V1.0 (submission to the EU: 22/12/2017)
Repository(-ies)	STAR-ProBio non-public area
Keywords	sustainability assessment, sustainability criteria, standards, certification schemes, legislation
Metadata standard	
Useful for whom?	STAR-ProBio project: specification of the SAT-ProBio blueprint and development of a CWA, foundation for recommendations in Deliverable 9.2 addressing target groups of all life cycle stages of bio-based products (e.g. industry, procurement, standardisation, certification, policy and science)
Key data sources	interviews

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Inventory of existing sustainability standards
Dataset description	European, national and international standards in the bio-based economy
Dataset DOI	
Dataset version history	22/12/2017
Key contact [Beneficiary]	Simone Wurster [TU Berlin]
Dataset file format and size	xlsx spreadsheet, 2 MB
Associated WPs/Tasks/Deliverables/Milestones	WP1 Task 1.2 D1.1
Other contributing beneficiaries	-
Dataset (to be made) public?	No
If No, justification:	Work in database with restricted publication rights, results used for confidential deliverable
Published version(s)	(submission of D1.1 to the EU: 22/12/2017)
Repository(-ies)	TU Berlin
Keywords	Standards, bio-based, sustainable, life cycle assessment, recyclability
Metadata standard	
Useful for whom?	STAR-ProBio project: specification of the SAT-ProBio blueprint and the development of a CWA
Key data sources	Perinorm database

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Inventory of the sustainability methodologies, indicators



	and criteria of research projects funded by the European Union
Dataset description	Detailed overviews for the results of 16 projects and summary
Dataset DOI	Not applicable
Dataset version history	22/12/2017
Key contact [Beneficiary]	Simone Wurster [TU Berlin]
Dataset file format and size	Part of a 3 MB .pdf text file
Associated WPs/Tasks/Deliverables/Milestones	WP1 Task 1.2 D1.1
Other contributing beneficiaries	DBFZ, Unitelma, UoY, Novamont
Dataset (to be made) public?	No
If No, justification:	Part of confidential deliverable
Published version(s)	(submission of D1.1 to the EU: 22/12/2017)
Repository(-ies)	STAR-ProBio non-public area
Keywords	sustainability assessment, sustainability criteria, standards, certification schemes, legislation
Metadata standard	
Useful for whom?	STAR-ProBio project – various WPs involved in the development of sustainability methodologies, indicators and criteria
Key data sources	CORDIS database, deliverables of the relevant projects

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Bio-based product value chain and stakeholder map Matrix for the analysis and identification of the most promising bio-based value chains via two-tier multi-criteria decision analysis
Dataset description	A preliminary list of bio-based value chains was drawn partially from literature review and from the initial review of the value chain coverage by the sustainability and certification schemes, drawn from the analysis in T1.1 and T1.2. This preliminary list, drafted for analysis and knowledgeable contributions from consortium experts, on a secured Google spreadsheet, had been considered for selection and analysis towards T1.4: Identification of case studies and stakeholders. STAR-ProBio consortium partners were allocated to specific selection criteria based on their expertise to provide their recommendation (<i>yes/maybe/no</i>) to adopt a specific value chain towards the selection of an appropriate case study and provide sufficient information to support their decision. A second round assessment initiated with the collation of information, analysis and identification of national policies, bio-economy initiatives and growth plans established by individual EU member states. Owing to the direct contributions and viewpoints of consortium members in the selection of value-chains within this task, the appropriate documents with raw data were not published, respecting the affiliated confidentiality protocols.
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Kadambari Lokesh [UoY]
Dataset file format and size	. Google drive .xlsx spreadsheet



Associated WPs/Tasks/Deliverables/Milestones	WP1 T1.3
Other contributing beneficiaries	UNITELMA, TUB, SQ Consult, DBFZ, Unibo, UWM and Novamont
Dataset (to be made) public?	No
If No, justification:	The dataset contains raw data entailing the expert comments, recommendations and suggestions from consortium members
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Value chains, Weighting, Multi-criteria decision analysis
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	Researchers, Bioeconomy experts
Key data sources	Scientific peer reviewed literature, EC publications

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Literature review on environmental sustainability indicators related to bio-based products
Dataset description	This report reviews 83 scientific articles assessing bio-based products, selected for their relevance to the framework of the STAR-ProBio project. The review presents in quantitative terms the environmental indicators used by this sample of literature, grouped by "clusters", which are groups of similar indicators.
Dataset DOI	(tbd)
Dataset version history	(work in progress) FINAL VERSION
Key contact [Beneficiary]	Xavier Bengoa [Quantis]
Dataset file format and size	http://www.star-probio.eu/wp-content/uploads/2017/04/D2-1.pdf
Associated WPs/Tasks/Deliverables/Milestones	WP2 D2.1
Other contributing beneficiaries	Leader: Quantis, Partners: USC, AUA, Unibo, UWM, ChemProf
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	0.1 First draft 0.2 Second draft 0.3 – 0.6 Draft content inclusion 0.7 Final draft 1.0 Submitted document 1.1 Submitted document with 2 additional annexes 1.2 Submitted document in pdf version 1.3 Change in title formulation
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Bio-based products, environmental indicators, LCA
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	For all the Work packages, specially WP2, 3 and 4
Key data sources	Scientific peer-reviewed literature

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Selection of environmental indicators and impact categories for the life cycle assessment of bio-based products
Dataset description	This report describes the outcome from STAR-ProBio



	Task 2.3 which objective is to select the life cycle impact assessment (LCIA), standardised environmental indicators and impact categories that are relevant for the environmental life cycle assessment (E-LCA) of bio-based products. Indicators are made of impact categories (e.g.: eutrophication) coupled with impact assessment methodologies, or models (e.g.: how to quantify eutrophication on an impact scale)
Dataset DOI	(tbd)
Dataset version history	(work in progress) Final version
Key contact [Beneficiary]	Xavier Bengoa [Quantis]
Dataset file format and size	http://www.star-probio.eu/wp-content/uploads/2017/04/STAR-ProBio_D2.2_v1.0-1.pdf
Associated WPs/Tasks/Deliverables/Milestones	WP2 D2.2
Other contributing beneficiaries	Leader: Quantis; Partners: USC, AUA, UWM, UoY, Unibo, ChemProf)
Dataset (to be made) public? If No, justification:	Yes
Published version(s)	0.1 First draft, 0.2 – 0.5 Intermediate drafts, 0.6 Final draft for internal review, 0.7 Final draft with additional inputs for RUSLE equation, 1.0 Final version
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	For all the Work packages, specially WP2, 3 and 4
Key data sources	European Commission's ILCD and PEF frameworks

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Life cycle inventory for production and upstream processing of selected feedstocks
Dataset description	This report will evaluate the environmental impacts of maize, maize stover and sugar beet pulp production using life cycle assessment methodology. These products are the reference flows for the downstream environmental assessment (the final product).
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	[USC]
Dataset file format and size	To be defined
Associated WPs/Tasks/Deliverables/Milestones	WP2 D2.3
Other contributing beneficiaries	Leader: USC Partners: AUA, UWM, Unibo, ChemProf, Quantis
Dataset (to be made) public? If No, justification:	Yes
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Life cycle inventory assessment (LCIA), upstream assessment, feedstock selection
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	To all work package and stakeholders
Key data sources	Scientific peer-reviewed literature, SIMAPRO database,



	Field data.
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Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Literature review and life cycle inventory for LCA of case studies
Dataset description	A life cycle inventory was developed, on a locked and protected spreadsheet for a single user, for the candidate case studies considered as a part of the life cycle assessment undertaken within this WP. The data for the candidate case studies were drawn from WP4, which is responsible for processing raw industrial data into processable clean data for life cycle impact analysis and interpretation. The dataset contains information about the material, energy consumption and other process specifications accounting the productivity of the technology considered from “manufacturing to formulation” phase. This dataset has not been published owing to the confidential nature of the industrial data shared with us.
Dataset DOI	Not applicable
Dataset version history	(work in progress)
Key contact [Beneficiary]	Kadambari Lokesh [UoY]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP3
Other contributing beneficiaries	Quantis, AUA, UWM, USC
Dataset (to be made) public?	No
If No, justification:	The dataset contains raw industrial data which is covered by the project’s confidentiality procedures
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Life cycle inventory, case studies, Material use, energy consumption
Metadata standard	Not applicable
Useful for whom?	Researchers
Key data sources	Scientific peer-reviewed literature, Industrial project partners, SimaPro databases

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	End-of-life (EoL) life cycle inventory for the case studies
Dataset description	WP3 is currently at preliminary stages of literature review and method development with respect to the T3.3. We do not currently have the data/ datasets to populate the life cycle inventory for the managed end-of-life options for the bio-based case studies and it is a work in progress. However, similar to T3.2, the raw data received from literature review or the industry will be processed by WP4 members and transformed into useable technical information for use within WP3. Any updates on the dataset we receive will be provided in the upcoming reporting period.
Dataset DOI	Not applicable
Dataset version history	



Key contact [Beneficiary]	Kadambari Lokesh (UoY)
Dataset file format and size	In progress
Associated WPs/Tasks/Deliverables/Milestones	WP3
Other contributing beneficiaries	Quantis, AUA, UWM, USC
Dataset (to be made) public?	No
If No, justification:	The dataset will likely contains raw industrial data which is covered by the project's confidentiality procedures
Published version(s)	
Repository(-ies)	
Keywords	Life Cycle inventory, Datasets, product transformation, EoL
Not applicable	Not applicable
Useful for whom?	Researchers
Key data sources	Scientific peer-reviewed literature, Industrial project partners, SimaPro databases

Topic	Description
Dataset identifier	STAR-ProBio_Techno-economic Principles-Criteria-Indicators_v1_Spreadsheet
Dataset name	Description of full chain Techno-Economic Sustainability Assessment (TESA) methodology
Dataset description	The dataset provide preliminary description for techno-economic sustainability principles and criteria in relation to SAT-ProBio blueprint. The dataset will also include a compilation of relevant references provided by STAR-ProBio project partners AUA and UWM on techno-economic indicators and by AUA, UWM and UoY on common techno-economic and environmental indicators.
Dataset DOI	Not applicable
Dataset version history	(work in progress)
Key contact [Beneficiary]	Demetres Briassoulis (AUA)
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP4 T4.1 to 4.4 D4.1
Other contributing beneficiaries	AUA, UWM, UoY project partners
Dataset (to be made) public?	No
If No, justification:	there are preliminary set of principles, criteria and indicators for internal discussion (contribution to D4.1 and D4.2)
Published version(s)	(work in progress)
Repository(-ies)	Not applicable
Keywords	Bio-based products, sustainability, principles, techno-economic criteria, indicators
Metadata standard	Not applicable
Useful for whom?	To all partners
Key data sources	Scientific peer-reviewed literature, standards, regulations, data-bases, certification schemes related to bio-based products, STAR-ProBio partners and EAB contributions

Topic	Description
Dataset identifier	STAR-ProBio_Feedstock-Routes-EoL_v1.0_pdf
Dataset name	Inventory of alternative feedstocks, production routes,



	EoL options
Dataset description	The dataset provides case-study related data on alternative feedstocks, bio-based products production routes, and EoL options.
Dataset DOI	Not applicable
Dataset version history	(work in progress)
Key contact [Beneficiary]	Demetres Briassoulis (AUA)
Dataset file format and size	.pdf
Associated WPs/Tasks/Deliverables/Milestones	WP4
Other contributing beneficiaries	AUA, UWM, ChemProf, NOVAMONT
Dataset (to be made) public?	No
If No, justification:	Those partial data will support WP4 reports.
Published version(s)	(work in progress)
Repository(-ies)	Not applicable
Keywords	Alternative feedstocks, bio-based production routes, End-of-Life
Metadata standard	Not applicable
Useful for whom?	To WP4 partners and others WPs to utilize the data in reports.
Key data sources	Scientific peer-reviewed literature, industry-based partners contribution

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Delphi results of stakeholder sustainability preferences and expectations
Dataset description	Views of different stakeholder groups regarding the acceptance of bio-based products, certification schemes and assessment criteria
Dataset DOI	Not applicable
Dataset version history	work in progress
Key contact [Beneficiary]	Luana Ladu and Simone Wurster [TU Berlin]
Dataset file format and size	xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP5
Other contributing beneficiaries	SQ Consult, Unitelma, ECOS
Dataset (to be made) public?	No
If No, justification:	GDPR-based requirement, participants know that the data is not passed on to third parties
Published version(s)	-
Repository(-ies)	TU Berlin
Keywords	Sustainable bio-based products, assessment criteria, procurement, environment, social assessment
Metadata standard	Not applicable
Useful for whom?	STAR-ProBio WPs involved in the development of the SAT-ProBio blueprint
Key data sources	Web-based survey, 1000+ participants

Topic	Description
Dataset identifier	STAR-ProBio_Field experiment on consumers' willingness to pay (WTP)_v[Version]_[Type]
Dataset name	Field experiment on consumer preferences for bio-based products
Dataset description	Field experiment comparing consumer choices on bio-



	based products vs. conventional products
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Pierguiseppe Morone [Unitelma]
Dataset file format and size	xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP5 T5.3; D5.2
Other contributing beneficiaries	TUB
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Consumer preferences; willingness to pay; certifications
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	Scholars and practitioners interested in consumers' willingness to pay for bio-based products
Key data sources	Field experiment involving consumers and interviews

Topic	Description
Dataset identifier	STAR-ProBio_Social criteria_v[Version] _[Type]
Dataset name	Literature review of social sustainability assessment criteria and indicators related to bio-based products
Dataset description	List of value items and related indicators retrieved from the main frameworks employed in SLCA within the bio-based economy
Dataset DOI	(tbd)
Dataset version history	Final (month 1-5)
Key contact [Beneficiary]	Pasquale Falcone, Enrica Imbert [Unitelma]
Dataset file format and size	.pdf
Associated WPs/Tasks/Deliverables/Milestones	WP6 D6.1
Other contributing beneficiaries	
Dataset (to be made) public?	Yes]
If No, justification:	
Published version(s)	Falcone, P.M., Imbert, E., 2018. Social Life Cycle Approach as a Tool for Promoting the Market Uptake of Bio-Based Products from a Consumer Perspective. Sustainability 10, 1031.
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Bio-based products; value items, social impact categories; social indicators
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	Scholars and practitioners interested in most important social topics related to bio-based products
Key data sources	Peer reviewed papers, grey literature including EU reports and documentation of standards

Topic	Description
Dataset identifier	STAR-ProBio_Social criteria and indicators validation_v[Version] _[Type]
Dataset name	Social Value items validation through stakeholder consultation



Dataset description	Stakeholder validation and integration of the list of social impact categories, subcategories and indicators identified in the D6.1
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Pasquale Falcone, Enrica Imbert [Unitelma]
Dataset file format and size	xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	D6.2
Other contributing beneficiaries	USC, TUB
Dataset (to be made) public?	[Yes/No]
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Stakeholder analysis, validation, social impact categories, social indicators
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	Scholars and practitioners interested in bio-based products' most relevant social indicators according to stakeholders
Key data sources	Interviews from four workshops conducted with a selected group of stakeholders covering all categories, i.e. workers, consumers, local community, value chain actors and the general society, with the specific aim of validating the value items' list.

Topic	Description
Dataset identifier	STAR-ProBio_ILUCLiteratureReview_v1.0 _Spreadsheet
Dataset name	Comprehensive review of existing key drivers, parameters and standards related to ILUC risk.
Dataset description	Inventory of existing key drivers and parameters for ILUC quantification and future strategies to reduce ILUC risks, and collection of standardisation work related to the sustainability of biofuels and biomaterials.
Dataset DOI	(tbd)
Dataset version history	V1.0 Published version
Key contact [Beneficiary]	Eva Merloni
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP7 Deliverable 7.1
Other contributing beneficiaries	TUB, DBFZ, UWM, QUANTIS SARL, USC and ECOS
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Indirect Land Use Change (ILUC); bio-based economy; Key drivers; parameters; indicators; standards.
Metadata standard	DataCite Metadata Schema
Useful for whom?	Other work package partners, researchers, experts in ILUC, stakeholders from industry, standardisation and science interested in the status quo of LUC approaches
Key data sources	Scientific peer-reviewed literature

Topic	Description
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Dataset identifier	STAR-ProBio_ModelParameters_v11.0 _Spreadsheet
Dataset name	SydILUC model semantics parameters for the calibrated model with “realistic” future projection of the data (for the validation part)
Dataset description	Inventory of parameters and relationships used in the SydILUC model, with related metadata, i.e. source (literature), units, etc...
Dataset DOI	(tbd)
Dataset version history	V 11.0 (all other versions shared with WP7 partners)
Key contact [Beneficiary]	Enrico Balugani [UNIBO]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP7
Other contributing beneficiaries	UniBO
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	bio-based economy; feedstock market data; elasticity functions; sustainability assessment; indicator
Metadata standard	DataCite Metadata Schema
Useful for whom?	Other work package partners, researchers, experts in ILUC
Key data sources	Various (indicated in the document)

Topic	Description
Dataset identifier	STAR-ProBio_MaizeGlobalFAOSTAT_v1.0 _Spreadsheet
Dataset name	FAOSTAT data used for the SydILUC model
Dataset description	SydILUC model historical dataset of Maize market and production data to feed, calibrate, validate and run the model
Dataset DOI	(tbd)
Dataset version history	V 1.0 (all other versions shared with WP7 partners)
Key contact [Beneficiary]	Enrico Balugani [UNIBO]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP7
Other contributing beneficiaries	UniBO
Dataset (to be made) public?	Yes (but data is actually from FAOSTAT)
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Global Maize production, price, use, yields.
Metadata standard	DataCite Metadata Schema
Useful for whom?	Other work package partners, researchers, experts in ILUC
Key data sources	Various (indicated in the document)

Topic	Description
Dataset identifier	STAR-ProBio_MaizeNationalFAOSTAT_v1.0 _Spreadsheet
Dataset name	FAOSTAT data used for the SydILUC model, tier 2
Dataset description	SydILUC model historical dataset of Maize market and production data to feed, calibrate, validate and run the model – for the regional version of the model
Dataset DOI	(tbd)



Dataset version history	V 1.0 (all other versions shared with WP7 partners)
Key contact [Beneficiary]	Enrico Balugani [UNIBO]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP7
Other contributing beneficiaries	UniBO
Dataset (to be made) public?	Yes (but data is actually from FAOSTAT)
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Global Maize production, price, use, yields.
Metadata standard	DataCite Metadata Schema
Useful for whom?	Other work package partners, researchers, experts in ILUC
Key data sources	Various (indicated in the document)

Topic	Description
Dataset identifier	STAR-ProBio_BioplasticProductionSydILUC_v1.0_Spreadsheet
Dataset name	Bioplastic production pathways with yields, for the SydILUC model
Dataset description	Collection of all the yields for different bioplastics from different sources (sugar, starch, oil) – from the document “Biopolymers facts and statistics”, 2017 by IfBB
Dataset DOI	(tbd)
Dataset version history	V 1.0 (all other versions shared with WP7 partners)
Key contact [Beneficiary]	Enrico Balugani [UNIBO]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP7
Other contributing beneficiaries	UniBO
Dataset (to be made) public?	Yes (but data is actually from IfBB)
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	Bioplastic production, yields, processing routes, feedstock, land use.
Metadata standard	DataCite Metadata Schema
Useful for whom?	Other work package partners, researchers, experts in ILUC
Key data sources	Various (indicated in the document)

Topic	Description
Dataset identifier	STAR-ProBio_[SWOT/PEST_factors]_v[1.0]_[Spreadsheet]
Dataset name	Results of SWOT/PESTEL analyses for selected bio-products
Dataset description	The dataset provide SWOT/PESTEL analysis, including identification of SWOT/PESTEL factors in the aspect of improvements of the current sustainability schemes and exemplary approach to weighing indicators attributed to the factors.
Dataset DOI	(tbd)
Dataset version history	(work in progress)



Key contact [Beneficiary]	Janusz Gołaszewski [UWM]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP8/T8.1-3/D8.1
Other contributing beneficiaries	All partners
Dataset (to be made) public?	No
If No, justification:	there are preliminary data that will contribute to D8.1
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	SWOT, PESTEL, sustainability schemes, indicators, weighing
Metadata standard	[Default: DataCite Metadata Schema , to be replaced with topic-specific standards, if exists]
Useful for whom?	To all WP8 partners, especially dealing with improvements of the current sustainability schemes and potential policies.
Key data sources	Scientific peer-reviewed literature, standards, certification schemes related to bio-based products, partners contribution

Topic	Description
Dataset identifier	STAR-ProBio_[Principles-Criteria-Indicators]_v1_Spreadsheet
Dataset name	Inventory of principles and criteria in relation to SAT-ProBio blueprint
Dataset description	The dataset provide preliminary indication for principles and criteria in relation to SAT-ProBio blueprint as well as a compilation of available data related to sustainability principles, criteria and indicators provided by EN 16751 and STAR-ProBio project partners USC-UNITELMA et al. on social indicators and Quantis et al. on selected environmental indicators.
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Janusz Gołaszewski [UWM]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP8/T8.1-3, T8.5/D8.1-2
Other contributing beneficiaries	All project partners
Dataset (to be made) public?	No
If No, justification:	there are preliminary set of principles, criteria and indicators for internal discussion (contribution do D8.1 and D8.5)
Published version(s)	(work in progress)
Repository(-ies)	Not applicable
Keywords	Bio-based products, sustainability, principles, criteria, indicators
Metadata standard	Not applicable
Useful for whom?	To all WP8 partners
Key data sources	Scientific peer-reviewed literature, standards, certification schemes related to bio-based products, STAR-ProBio partners contribution

Topic	Description
Dataset identifier	(tbd)



Dataset name	Inventory of relevant existing bio-based economy related policies, strategies and regulations
Dataset description	Inventory of ~50 BIO-BASED ECONOMY policy documents including a brief characterisation and analysis regarding their potential impact on sustainability assessment activities
Dataset DOI	(tdb)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Stefan Majer [DBFZ]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP9 T9.1
Other contributing beneficiaries	TU Berlin, UNITELMA, SQ Consult, ECOS, UWM, Unibo
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	bio-based economy; sustainability; policy framework; standardisation; sustainability criteria; gaps; sustainability assessment; indicator; criteria; SDGs
Metadata standard	DataCite Metadata Schema
Useful for whom?	Stakeholders from industry and science who are interested in the current EU BIO-BASED ECONOMY policy framework
Key data sources	The analysed documents are the main source

Topic	Description
Dataset identifier	STAR-ProBio_[Short Title]_v[Version]_[Type]
Dataset name	Analysis of EU (eco-) labels
Dataset description	Overview of criteria and indicators for environmental, social and economic product characteristics in 42 eco-labels
Dataset DOI	Not applicable
Dataset version history	work in progress
Key contact [Beneficiary]	Luana Ladu and Simone Wurster [TU Berlin]
Dataset file format and size	xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	T9.2
Other contributing beneficiaries	AUA, ECOS
Dataset (to be made) public?	No
If No, justification:	Used for internal analyses to create D9.2 D9.2 presents aggregated results reader-friendly
Published version(s)	(work in progress)
Repository(-ies)	TU Berlin
Keywords	eco-labels, EU Ecolabel, Blauer Engel, Nordic Swan, bio-based content, biodegradability, recyclability, toxicity, CO ₂ emissions
Metadata standard	Not applicable
Useful for whom?	The aggregated results are useful for STAR-ProBio (development of the SAT-ProBio blueprint) as well as for stakeholders from industry, standardisation, certification and science
Key data sources	Ecolabel index, assessment and certification guidelines as well as related documents of the various schemes



Topic	Description
Dataset identifier	(tbd)
Dataset name	Inventory of existing monitoring options of the socio-economic and environmental consequences of developing a bio-based economy
Dataset description	Matrix with a description of BIO-BASED ECONOMY monitoring activities (with both, public and private activities) from EU and EU member states. The overview includes a brief characterisation of the activities, describing the type of data reported, reporting formats and periods, etc.
Dataset DOI	(tbd)
Dataset version history	(work in progress)
Key contact [Beneficiary]	Stefan Majer [DBFZ]
Dataset file format and size	.xlsx spreadsheet
Associated WPs/Tasks/Deliverables/Milestones	WP9 T9.4
Other contributing beneficiaries	TU Berlin, UNITELMA, SQ Consult, ECOS
Dataset (to be made) public?	Yes
If No, justification:	
Published version(s)	(work in progress)
Repository(-ies)	Once completed: STAR-ProBio website , Zenodo
Keywords	bio-based economy; sustainability; policy framework; monitoring; material flow; biomass trade; sustainability criteria; sustainability assessment; indicator;
Metadata standard	DataCite Metadata Schema
Useful for whom?	Stakeholders from industry and science who are interested in an overview on BIO-BASED ECONOMY monitoring and BIO-BASED ECONOMY impact assessment activities
Key data sources	The analysed documents are the main source



Annex II: STAR-ProBio Informed consent template

Informed consent form

Project STAR-ProBio

Sustainability Transition Assessment and Research of Bio-based Products

I consent to participate in the European Union-funded² STAR-ProBio research project³ conducted by **NAME** of the **INSTITUTION**. I am aware that the purpose of this research is to support the European Commission in the full implementation of European policy initiatives, including the Lead Market Initiative in bio-based products, the industrial policy and the European Bio-economy Strategy. The research will furthermore be disseminated more widely, e.g. in academic papers, briefing papers, media etc.

This research will involve an interview lasting up to **1 hour** where I will be invited to discuss my knowledge about this area with particular reference to the experience of my organisation.

I understand that I am participating in this research voluntarily and that I am free to terminate the interview at any time. I am also aware that I am free to refuse to answer any questions that I feel are commercially or institutionally sensitive or relate to topics that I do not wish to discuss. I understand that I have the right to ask questions and receive understandable answers before making any decision.

I understand that I will only be asked to provide professional, not personal, information and that if I wish, the record of my involvement in the research will be kept confidential. I have been informed that everything I say will be anonymous and if I wish, I can remain anonymous in future published material. The interview data will be recorded via **paper notes/tape recorder** and I understand that I can request a copy of the **notes/transcript** to review if I wish. I understand that I am also allowed to delete or make any changes to the **notes/transcript** if I feel my answers could be improved or clarified. I understand that this research will be used to develop sustainability assessment tools for bio-based products, and by developing credible cases for bio-based products with the highest actual market penetration and highest potential for the future markets.

I understand that should the research team consider making the anonymised data from this interview available by open access I will be contacted for a second informed consent regarding this step.

I understand that this research conforms to European Commission guidelines and that it has been approved by the Ethics Committee in the Cooperation theme of the Horizon 2020 Research and Innovation Programme. Finally, I have been given the contact details of the research team and I have been informed that I am free to contact Professor Piergiuseppe Morone (Project Coordinator) about any queries relating to my data or the project itself.

² Grant agreement no. 727740 of the Horizon 2020 research and innovation programme. Work Programme BB-01-2016: Sustainability schemes for the bio-based economy.

³ Website: <http://www.star-probio.eu/>



STAR-ProBio project Interview Participant Consent Form

Lead researchers: **Insert name of person conducting the research activity**

Participant Identification Number for this project:

Please initial box

- 1. I confirm that I have read and understand the information sheet/letter (delete as applicable) dated **[insert date]** explaining the above research project and I have had the opportunity to ask questions about the project.
- 2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline and can contact *Project Coordinator Professor Piergiuseppe Morone on piergiuseppe.morone@unitelma.it*
- 3. I understand that my responses will be kept strictly confidential
- 4. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.
- 5. I agree for the data collected from me to be used in future research
- 6. I agree to take part in the above research project.

Name of Participant
(or legal representative)

Date

Signature

Name of person taking consent
(if different from lead researcher)

Date

Signature

Lead Researcher

Date

Signature

Copies:

Once this has been signed by all parties the participant should receive a copy of the signed and dated participant consent form, the letter/pre-written script/information sheet and any other written information provided to the participants. A copy of the signed and dated consent form should be placed in the project's main record (e.g. a site file), which must be kept in a secure location.



Information Sheet form - Project STAR-ProBio - Grant Agreement Number 727740

Sustainability Transition Assessment and Research of Bio-based Products

STAR-ProBio supports the European Commission in the full implementation of European policy initiatives, including the Lead Market Initiative in bio-based products, the industrial policy and the European Bio-economy Strategy.

STAR-ProBio does so by developing sustainability assessment tools for bio-based products, and by developing credible cases for bio-based products with the highest actual market penetration and highest potential for the future markets.

STAR-ProBio integrates scientific and engineering approaches with social sciences and humanities-based approaches to formulate guidelines for a common framework promoting the development of regulations and standards supporting the adoption of business innovation models in the bio-based products sector.

The aim of STAR-ProBio is to cover gaps in the existing framework for sustainability assessment of bio-based products, and improve consumer acceptance for bio-based products by identifying the critical sustainability issues in their value chains.

STAR-ProBio constitutes a multidisciplinary project that will:

- meet environmental, social and economic challenges, paving the way for a much-needed sustainability transition towards a bio-based economy;
- promote a more efficient and harmonized policy regulation framework;
- boost the market-pull of bio-based products within the context on a sustainable 21st Century.

The overall objective of the project is to promote a more efficient and harmonized policy regulation framework for the market-pull of bio-based products. This will be achieved by developing a fit-for-purpose sustainability scheme, including standards, labels and certifications.

An integral part of STAR-ProBio is the adoption of life-cycle methodologies to measure Environmental, techno-economic and social impacts, and comprehensively assess the roll-out of bio-based products. The analysis of selected case studies on construction materials, bio-based polymers, and fine chemicals, will ensure that the approach is not too broad and theoretic, allowing the benchmarking against non-bio-based products.

The specific objectives of STAR-ProBio are to:

- Develop a fit-for-purpose sustainability scheme;
- Identify gaps regarding sustainability indicators, requirements and criteria;
- Develop a sound and harmonised approach for environmental LCA, Social-LCA and techno-economic LCC assessment of bio-based products;
- Enhance the reliability of sustainability certifications and standards;
- Assess the effectiveness of the proposed sustainability scheme for selected case studies;
- Develop an approach to identify and mitigate the risk of negative ILUC effects;
- Encourage market pull for bio-based products through the assessment of consumers' preferences and acceptance;



- Spread awareness about sustainable production of bio-based products among farmers associations, industries, EU bodies, entrepreneurs and stakeholders from the civil society.

The STAR-ProBio consortium is integrated by:

- UNITELMA Sapienza University of Rome, Italy (Consortium leader)
- University of York, United Kingdom
- Technische Universität Berlin, Germany
- Agricultural University of Athens, Greece
- DBFZ, Germany
- SQ Consult B.V., The Netherlands
- University of Bologna, Italy
- Uniwersytet Warmiński Mazurski w Olsztynie, Poland
- ChemProf, Poland
- Quantis SARL, Switzerland
- Novamont SPA, Italy
- Naturvårdsverket, Sweden
- Universidad de Santiago de Compostela, Spain
- European Environmental Citizens Organisation for Standardisation, Belgium
- agroVet GmbH, Austria

STAR-ProBio receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 727740, Work Programme BB-01-2016: Sustainability schemes for the bio-based economy.

Additional information can be found here: www.star-probio.eu