Plan Overview

A Data Management Plan created using DMPonline

Title: REFLOW ESR13

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Template: Horizon 2020 DMP

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Project abstract:

REFLOW is an interdisciplinary cross-sectoral European Training Network combining world-leading scientists and key stakeholders in dairy processing, fertilizer production and phosphorus recycling with early-stage researchers to address important technical and socio-economic challenges associated with the recovery of phosphorus from dairy processing wastewater and its recycling into fertilizer products enabling sustainable expansion of the dairy industry in Europe.

This particular research and Data Management Plan (DMP) is performent by the European Landowners Organization (ELO) in collaboration with Ghent University. The aim is to develop business models for Nutrient Recovery Techniques (NRT's). These strategies are looking for the financial viability of recovered fertilizers, but in other hand control over physical, legislative and value chain constraints.

ID: 69083

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Copyright information:

imply that the creator(s) endorse, or have any relationship to, your project or proposal

REFLOW ESR13 - Initial DMP

1. Data summary

Provide a summary of the data addressing the following issues:

- **State the purpose of the data collection/generation**
- **Explain the relation to the objectives of the project**
- **Specify the types and formats of data generated/collected**
- **Specify if existing data is being re-used (if any)**
- **Specify the origin of the data**
- **State the expected size of the data (if known)**
- **Outline the data utility: to whom will it be useful**

REFLOW aims to achieve significant social impact through closing the phosphorous loop for the dairy industry by delivering cost-effective phosphorus (P) recycling processes that minimize leakage, producing safe, effective high-value fertilizer products. The work carried out thus far has targeted the following objectives:

1. To develop and demonstrate processes for the recovery and reuse of P products from Dairy Processing Waste (DPW);
2. To establish their fertilizer value and optimum application rates through laboratory protocols and field trials.
3. To address the environmental, social, food safety, and economical challenges, ultimately finding market-driven solutions for the new processes and fertilizer products.

The purpose of the data for this specific research (ESR13) is working to develop models for nutrient management strategies. These strategies are looking for the financial viability of recovered fertilizers but on the other hand control over physical, legislative, and value chain constraints. Via a Doctoral dissertation, the output from this research will serve as a base for decisions towards market accessibility, potential business cases, and the distribution of social benefits of REFLOW products. As well, recommendations over financial configurations that will give certainty to potential investors and interested sectors.

The data described in this DMP relies on general objective number 3.

Types of data collected:

For the stage of the research panel data (multi-dimensional data that generally involves measurements over some period of time) on an excel spreadsheet is gathered.

Data format: **CSV, tabular data, survey data, models.**

At this stage of the project, panel data will feed a set of indexes for GAMS modeling software. The data includes information regarding farm characteristics, animal inventories, agricultural outputs (grains and milk fresh products), and socioeconomic variables.

Data relation to project objectives:

Nutrient concentrations and the use of fertilizers in Europe differ heavily among regions. Differences are can be expressed as nutrient status and are driven by GDP, population density, agricultural outputs, among others.

Based on this statement, REFLOW could offer improved nutrient management efficiency for a new set of P fertilizers. The idea of new P-fertilizers from DPW offers the opportunity to think into nutrient surpluses distribution.

It is constructed based on data downloads from the EUROSTAT website and advanced search.

https://ec.europa.eu/eurostat/data/database

Data volume:

275KB (January 2021)

Data utility:

Exclusive for personal use and modeling.

Once new data is generated, will be useful for users that are interested in modeling environmental resources and acceptance of fertilizer products.

2. FAIR data

2.1 Making data findable, including provisions for metadata:

- **Outline the discoverability of data (metadata provision)**
- **Outline the identifiability of data and refer to standard identification mechanism. Do you make use of persistent and unique identifiers such as Digital Object Identifiers?**
- **Outline naming conventions used**

- **Outline the approach towards search keyword**
- **Outline the approach for clear versioning**
- **Specify standards for metadata creation (if any). If there are no standards in your discipline describe what metadata will be created and how**

This includes repositories to describe and catalog data. (ZENODO)
Metadata is generated for this research, will follow international standards, such as DublinCore and the DataCite Metadata Schema. As well, guidelines provided by the University of Ghent will be followed.
More information can be found below:
https://ec.europa.eu/eurostat/data/database
https://www.ugent.be/en/research/datamanagement/during-research/documentation.htm#Metadata
Existent project data:
Constructed based on data downloads from the EUROSTAT website and advanced search.
*Data volume: 275KB
Data utility:
Exclusive for personal use and modeling
Standards for metadata creation: DIF (Directory Interchange Format) (Upon approval with supervisor)
Identification mechanism:
Digital Object Identifiers (DOIs) is considered for the project. DOI generated by open access repository (ZENODO)
Naming conventions:
Deliverable number+Project+WP number+ Title + Version + doc ID
Example:

- D3 10 REFLOW WP3 Report on consumer and retailer behavior - food purchasing v0.5.docx

Files and folder organization
Folder: Project name>Deliverable name
Files> Deliverable number+Project+WP number+ Title
Internal version history table
Example:

Version	What was changed?	By whom	When?
1	Initial draft	Sergio Garmendia	12/05/2019
2	Revised Intro	Jeroen Buysse	14/05/2019
3	Added Methodology	Sergio Garmendia	18/05/2019

Search keywords:
No keywords are provided for re-use purposes
Approach for clear versioning:
Clear versioning of deliverables and documents is provided:
1) within the file name
2) within a versioning table inside the document
UGent guidance on file naming, organizing files and folders, and version control will be followed.
More information can be found below:

https://www.ugent.be/en/research/datamanagement/during-research/collection.htm#Filenaming
Metadata to be created: (if applicable)
At the research project/study level: e.g. research design, the context of data collection, data collection methods, quality control procedures, processing, and analysis procedures.
Capture methods considered:
Research paper, project report, lab notebook, codebook, or database.

2.2 Making data openly accessible:

- **Specify which data will be made openly available? If some data is kept closed provide rationale for doing so**
- **Specify how the data will be made available**
- **Specify what methods or software tools are needed to access the data? Is documentation about the software needed to access the data included? Is it possible to include the relevant software (e.g. in open source code)?**
- **Specify where the data and associated metadata, documentation and code are deposited**
- **Specify how access will be provided in case there are any restrictions**

Researchers have to comply with ethical standards governing (confidentiality in) research, as well as legal requirements regarding personal data (i.e. information relating to (in)directly identified or identifiable living individuals and therefore requiring special protection to avoid disclosure).

Processing personal data:

This research is intended to follow the institutional Code of Conduct for the processing of personal data and confidential information, which is based on Belgian and European privacy and data protection legislation, especially the General Data Protection Regulation (GDPR).

For this stage of the project, all data produced can be openly available for internal use. External use of data and confidential aspects of REFLOW ITN must be consulted with the general coordination and must follow the guidelines from the EC.

The code of conduct is publicly available at: https://www.ugent.be/en/ghentuniv/privacy/generic_code_of_conduct **Data accessibility:**

The IT facilities of the University of Ghent. In particular, the institutional repository will be used for the preservation of data. Any data to be stored in the institutional repository is aimed to follow the description below as stated by the guidelines from the university. (If an additional IT facility is provided by REFLOW ITN, will be considered as well)

Appraisal and selection of research data is still an evolving field, but some generic, high-level criteria are emerging to guide decisions on what to keep. Common criteria for keeping data include:

- Legal or ethical requirements to keep (certain) data for a specified retention period (e.g. for clinical trials data)
- Funder, institutional, or publisher policies.
- High potential reuse value of the data
- Great scientific, the historical, or cultural significance of the data
- The data are unique and/or cannot easily be re-created.
- The benefits outweigh the costs of data preservation.

Storing and backing up are considered differently for data preservation. As well, all data from this research is aimed to belong to the general coordination of REFLOW ITN. More information is available to the public at: https://www.ugent.be/en/research/datamanagement/after-research/preservation.htm#Wheretokeepdata? **Methods or software to access data:** Documentation will be captured in various ways, if applicable: in a research paper, project report, lab notebook, codebook, separate ‘readme’ file, database, annotated computer script and/or the data files themselves, etc. **Access restrictions:**

No restrictions on use are considered at this stage of the project. This will be discussed with the coordination of REFLOW ITN.

2.3 Making data interoperable:

- **Assess the interoperability of your data. Specify what data and metadata vocabularies, standards or methodologies you will follow to facilitate interoperability.**
- **Specify whether you will be using standard vocabulary for all data types present in your data set, to allow inter-disciplinary interoperability? If not, will you provide mapping to more commonly used ontologies?**

Project data is interoperable within the consortium. Meaning data exchange is available between researchers, institutions that belong to REFLOW.

Dissemination of information is defined by the project under the following nomenclature and codes.

PU Public
CO Confidential, only for members of the consortium (including the Commission Services)
EU-RES Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)
EU-CON Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)
EU-SEC Classified Information: SECRET UE (Commission Decision 2005/444/EC)

Each deliverable and document containing data is subtle to one of the above dissemination and data exchange codes.

Standard vocabularies:

No standard vocabularies for data types have been defined.

Ontologies or vocabularies (mainly abbreviations) will be defied in each document (deliverable) as "nomenclature or definitions lists"

2.4 Increase data re-use (through clarifying licenses):

- **Specify how the data will be licenced to permit the widest reuse possible**
- **Specify when the data will be made available for re-use. If applicable, specify why and for what period a data embargo is needed**
- **Specify whether the data produced and/or used in the project is useable by third parties, in particular after the end of the project? If the re-use of some data is restricted, explain why**
- **Describe data quality assurance processes**
- **Specify the length of time for which the data will remain re-usable**

For the widest re-use of data, rights will apply (both generated by this particular research and any third-party data). The rights do belong to the consortium of REFLOW ITN and associated partners. The joint intellectual property rights and the ownership of that rights are subject to an agreement (e.g. with Ghent University and REFLOW ITN coordination, with a funder or a research partner…).

If confidential data is generated, will not be available for re-use. In another case, where there is work taken with a commercial organization, a disclosure document for sharing information will be enclosed for a period of time. (ex 5-10 years)

Depending on the nature of the data if it is restricted. (ex. Surveys are restricted to the anonymity of respondents).

Reusability of data is considered until the expiration of data or update of source data.

Licensed data will remain available according to the provider conditions

Data quality assurance processes:

The supervisor team will revise the assurance process on gathering data and quality of results. Good practices of academic standards will be followed.

3. Allocation of resources

Explain the allocation of resources, addressing the following issues:

- **Estimate the costs for making your data FAIR. Describe how you intend to cover these costs**
- **Clearly identify responsibilities for data management in your project**
- **Describe costs and potential value of long term preservation**

No cost associated with data. Free download for panel data creation. Additional costs related to open access to research data are eligible as part of the Horizon 2020 grant.

Costs and potential value for preservation:

Costs related to the long-term preservation of research data are eligible as part of the Horizon 2020 grant and the responsible entity from the consortium is the University of Limerick, specifically REFLOW coordination.

4. Data security

Address data recovery as well as secure storage and transfer of sensitive data

Storing and backup data:

Storage on local devices: Personal computer and hard disk

Network storage: Mails containing deliverables

Cloud storage: Dropbox and google drive personal account

The above follows the recommendations for safely working with IT provided by the host institution of this research (Ghent University). The guidelines provide information about:

1) Trustworthiness of devices

2) University account protection

3)Common risks and hazards

4) Central disk storage information

5) Use of internal applications provided by the university (ex. Citrix)

6) The use of external cloud services for confidential data

7) Data leak and IT devices lost

The researcher is responsible for backing up data regularly during the course of research activities.

Data does not contain any sensitive information or trade secrets.

5. Ethical aspects

To be covered in the context of the ethics review, ethics section of DoA and ethics deliverables. Include references and related technical aspects if not covered by the former

As stated in the grant agreement, REFLOW will respect fundamental ethical principles, including
those reflected in the Charter of Fundamental Rights of the European Union, the European Convention on Human Rights and its Supplementary Protocols, and the relevant ethics rules of H2020.

Identity protection, data security, data retention, and data sharing will be informed consent forms. In the case of the processing of personal data for this research, ethical standards will be followed such as the Code of conduct for the processing of personal data. This is a document based on Belgian and European privacy and data protection legislation on which Ghent University is governed. These guidelines include as well basic principles such as confidentiality and integrity.

For more information:

https://www.ugent.be/en/ghentuniv/privacy/code-of-conduct-personal-data.htm

6. Other

Refer to other national/funder/sectorial/departmental procedures for data management that you are using (if any)

No other national/funder/sectorial/departmental procedures are considered for this stage of the project.