



**HarvREST**  
Greener Farming with RES

D1.2

# Data Management Plan (first draft)

21 / 06 / 2024



Funded by  
the European Union

## PROJECT INFORMATION

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This project has used a standard methodology already developed in the NENUPHAR project (Grant Agreement number: 101082169). *Ad hoc* modifications were added to comply with the conditions of the Grant Agreement for HarvRESt project (Grant Agreement number: 101136904).

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## ABBREVIATIONS

|      |                                                   |
|------|---------------------------------------------------|
| AVPP | Agricultural Virtual Power Plant                  |
| C&D  | Communication and Dissemination                   |
| CA   | Consortium Agreement                              |
| CATI | Computer Assisted Telephone Interviewing          |
| DLV  | Deliverable                                       |
| DMP  | Data Management Plan                              |
| DOI  | Digital Object Identifier                         |
| DSS  | Decision Support System                           |
| EC   | European Commission                               |
| EOSC | European Open Science Cloud                       |
| EU   | European Union                                    |
| FAIR | Findable, Accessible, Interoperable, and Reusable |
| GA   | General Assembly                                  |
| GDPR | General Data Protection Regulation                |
| ID   | Identification                                    |
| IPR  | Intellectual Property Rights                      |
| ISO  | International Organization for Standardization    |
| JEL  | Journal of Economic Literature                    |
| KER  | Key Exploitable Result                            |
| KPI  | Key Project Indicator                             |
| MCDA | Multi Criteria Decision Analysis                  |
| ML   | Machine Learning                                  |
| PC   | Project Coordinator                               |
| RES  | Renewable Energy System                           |
| RWG  | Regional Working Group                            |
| WP   | Work Package                                      |
| WPL  | Work Package Leader                               |

## 1. EXECUTIVE SUMMARY

As part of the European Commission's commitment to advancing Open Science policies and practices, data management is a critical component of Horizon Europe projects. It ensures long-term accessibility and preservation of data both during and after the project's duration.

This deliverable, the "Data Management Plan (first draft) (D1.2)," developed under WP1 Management & Coordination of the HarvRESt project, is based on the Horizon Europe Data Management Plan template [1] and aligns with the Consortium Agreement clauses signed by the partners. It establishes the framework for managing data creation, use, and handling throughout the project.

The Data Management Plan (DMP) outlines the types of data that HarvRESt will generate, details their exploitation or accessibility for verification and reuse, and describes their treatment and preservation. The DMP aims to improve research efficiency, save time and resources, enhance data security, and minimize the risk of data loss. It emphasizes making data findable, accessible, interoperable, and reusable according to the FAIR principles.

Additionally, the document includes guidelines, recommendations, and useful information on repositories, strategies, and data management practices following the FAIR principles. It also provides a specific explanation of GDPR compliance, detailing how data will be handled in accordance with these regulations.

## 2. INTRODUCTION

Competitive conflicts for land use between the energy and food sectors have appeared, which could be mitigated by the vertical integration of Renewable Energy Sources (RES) in farms through new circular business models. By this approach, farms will become climate neutral, optimising their production and reducing their impact on natural resources and biodiversity, on top of providing energy services to communities and diversifying their economic income.

HarvRESt will try to solve this problem improving the existing knowledge of the use of RES in the agro food sector. For that an Agricultural Virtual Power Plant will be developed able to run different scenarios and farm configurations to determine the best operation procedures for a given RES solution. This data will be then provided to a decision support system able to weight trade-offs and key indicators to provide ad-hoc recommendations to farmers and policy makers, thus enabling the consecution of improved production rates on renewable energy, food & feed within agro communities.

To achieve these ambitious objectives, data collection, creation, and management is needed during and after the project execution. The aim of this DMP is to present information regarding what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved. It is expected that the DMP increases research efficiency, saves time and resources in the long run, enhances data security and minimizes the risk of data loss.

Important definitions followed in this document are:

- **Input Data** under the frame of the HarvRESt project should be understood as the needed inputs to carry out the mapping and linking with best practices and existing initiatives on farms decarbonisation, interviews with key stakeholders, surveys, characterisation of demos, demo tests, AVPP, DSS, models, methodologies, technologies (research outputs), warm-up events, workshops, C&D and capacity building activities, among others.
- **Derived Data** under the frame of the HarvRESt project should be understood as workflows, policy recommendations, business models, equipment, tools and any other tentative result created by project partners.

HarvRESt coordinator, CIRCE, has prepared this document at the beginning of the project (M6). Since this stage is relatively short to have all the data related issues defined and solved, the aim of this deliverable is to show how different data will be treated during the project. Then, during the project lifespan, the Data Management Plan will be updated at least twice: in M18 (D1.5) and M36 (D1.8), in order to update the type of data resulting from HarvRESt, and how they are being/ must be managed by the Consortium.

### 3. DATA SUMMARY

Following the EU's guidelines regarding the DMP, this section aims to address:

- The purpose of the data collection/generation and its relation to the objectives of the project
- Types and formats of data generated/collected by the project
- Sharing/access policies applied to each dataset
- Expected size of the data
- Origin of the data
- Re-use of any existing data
- Data utility

This section shall provide a description of those elements in order to ensure their understanding by the partners of the consortium. At this early stage of the project, it is not yet possible to provide an estimation of the data size.

#### 3.1 Purpose of data collection

As stated in the introductory section, HarvRESt is a project that relies on data collection and use/re-use during the project's implementation. In order to fulfil the objectives of HarvRESt, the project team expects to be collecting data of various kinds, sizes and qualities.

Among the activities related to the project, the most relevant datasets identified so far to be examined/considered are shown in Table 1.

**Table 1. List of datasets foreseen in HarvRESt**

| WP  | WP title                                                           | Datasets identified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WP1 | Management and Coordination                                        | <ul style="list-style-type: none"> <li>• Agreements &amp; Legal documentation (Grant Agreement, Consortium Agreement, etc.) for T1.1 "Overall Project Management"</li> <li>• Contact list for T1.1 "Overall Project Management"</li> <li>• Internal management documentation for T1.1 "Overall Project Management"</li> <li>• Meetings documentation (agendas, minutes, assistant lists, etc.) for T1.2 "Progress monitoring and reporting"</li> <li>• Interim &amp; Periodic Reports for T1.2 "Progress monitoring and reporting"</li> </ul> |
| WP2 | Knowledge and perceptions gathering through a multi-actor approach | <ul style="list-style-type: none"> <li>• List of relevant projects and initiatives showcasing best practices on RES integration and farm decarbonisation (project title, acronym, link to project website, RES type covered, countries covered, agricultural production type covered) for T2.1 "Mapping and linking with best"</li> </ul>                                                                                                                                                                                                     |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <p>practices and existing initiatives on farms decarbonisation”</p> <ul style="list-style-type: none"> <li>• Collection of scientific and grey literature references relevant to the topics covered by T2.1 “Mapping and linking with best practices and existing initiatives on farms decarbonisation”</li> <li>• Data collected through desk research for T2.2 “Analysis of socio-economic context needs and framework conditions in target rural areas” including research papers, pictures, graphs, and figures.</li> <li>• Data collected through stakeholder interviews for T2.2 “Analysis of socio-economic context needs and framework conditions in target rural areas”.</li> <li>• Data collected through a CATI survey or T2.2 “Analysis of socio-economic context needs and framework conditions in target rural areas” to reveal the project’s stakeholders’ level of understanding, perceptions, preferences, intentions, and behavioural aspects around to identify the knowledge gaps, as well as the perceived needs and challenges towards RES uptake by farmers and rural actors.</li> <li>• Data collected during online surveys or T2.2 “Analysis of socio-economic context needs and framework conditions in target rural areas”.</li> <li>• Data collection about the characterisation de each use case including a desk research for T2.3 “Characterisation of HarvRESt use cases through a multi-actor approach”.</li> <li>• KPIs devised, based on the characterisation of the Use Cases (energy production, food production, environmental aspects, economic aspects and social aspects) for T2.4 “Definition of KPIs and analysis of their interaction”.</li> <li>• Creation and monitoring of the database where the actors involved in the Regional Working Groups (RWG) are indicated, including the feedback received in each organized event for T2.5 “Establishment of the use cases working groups, arrangement of HarvRESt laboratory set-ups and initial trials”.</li> <li>• Data collection during RWG activities T2.5 “Establishment of the use cases working groups, arrangement of HarvRESt laboratory set-ups and initial trials”.</li> </ul> |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WP3 | Stakeholder engagement strategies for the generation of cooperative business models | <ul style="list-style-type: none"> <li>• Data collected during warm-up activities (agenda, minutes, photos, attendees, etc. ) for T3.1 “HarvRESt strategy for multi-actor engagement in agro communities”. Participants will sign consent forms to potentially distribute images/video taken during the activity for promotional purposes).</li> <li>• Data collected during awareness-raising campaigns, and info days (ns, videos, images) for T3.2 “Increase of regional awareness and social acceptance on renewable energy projects”. All participants sign consent forms for the potential distribution of the images/video taken during the activity for promotional purposes.</li> <li>• List of financial mechanisms in the agro sector for T3.3 “Definition of financial schemes and risks and identification of incentives”</li> <li>• Database of start-ups (NetZero Insights, Climate Ecosystem Databases) for T3.3 “Definition of financial schemes and risks and identification of incentives”</li> <li>• Data collected during training workshops and webinars (notes, videos, images) for T3.4 “Capacity building towards the uptake of HarvRESt outcomes for RES integration at farm level”. Personal information data to be aggregated/anonymised before being made openly available. All participants sign consent forms to potentially distribute the images/video taken during the activity for promotional purposes.</li> <li>• Business models catalogue for T3.5 “Development of HarvRESt business models catalogue”</li> </ul> |
| WP4 | Sustainable practices on agricultural communities                                   | <ul style="list-style-type: none"> <li>• Database on the existing state-of-the art related to the impact of using RES technologies in agricultural production for T4.1 “Compilation and analysis of measures related to the use of RES technologies in agricultural production”</li> <li>• Database on the KPIs for T4.2 “Developing KPIs to monitor the RES system”</li> <li>• Data collection in experimental campaigns on nutrients recovery and improvement of the agricultural crop footprint methodology for T4.3 “Experimental campaigns on nutrients recovery and improvement of the agricultural crop footprint methodology”.</li> <li>• Data collection across Denmark-registers on agricultural activity data such as land management, livestock,</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|     |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                   | fertilizer/manure handling, stable technology, etc. for T4.4 “Digital services for agro communities”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| WP5 | Modelling and optimization of renewable alternatives for agricultural communities | <ul style="list-style-type: none"> <li>• Spreadsheets with datasets: granularity, temporal coverage, veracity, velocity, language, volume, format, availability, historical availability for T5.1 “Forecasting of RES production at farm level”</li> <li>• Datasets collected from the Use Cases (text, image, video) for T5.1 “Forecasting of RES production at farm level”</li> <li>• Public/ experimental datasets (text, image, video) for T5.2 “Library of renewable alternatives for agro-communities”</li> <li>• Analytics results from the application of ML algorithms on the collected datasets (text, image) for T5.3 “Development of HarvRESt hybrid models for the definition of optimal operation modes”</li> <li>• Forecasts of RES production per Use Case for T5.4 “Development of smart energy systems and algorithms for maximizing energy performance”</li> </ul> |
| WP6 | Development of HarvRESt AVPP and DSS based on a MCDA approach                     | <ul style="list-style-type: none"> <li>• Static data from use cases: i.e.: coordinates, PV configuration (tilt, azimuth, fixed axis, installed power), batteries specifications, etc. for T6.1 “Development of the Agricultural Virtual Power Plant”</li> <li>• Historical data from meteorological web services and market prices for T6.1 “Development of the Agricultural Virtual Power Plant” and for T6.3 “Programming of HarvRESt DSS”</li> <li>• Monitored data from use cases: operational and meteorological data for T6.1 “Development of the Agricultural Virtual Power Plant” and T6.4 “Co-creation sessions, experimental trials and final validation of HarvRESt use cases”</li> </ul>                                                                                                                                                                                  |
| WP7 | Integrated assessment, knowledge transfer and development of recommendations      | <ul style="list-style-type: none"> <li>• HarvRESt set of recommendations for T7.1 “Assessing the overall impact of HarvRESt recommendations at farm level”</li> <li>• Feedback from farmers on the recommendations for T7.1 “Assessing the overall impact of HarvRESt recommendations at farm level”</li> <li>• Guidelines for agro-communities business models for T7.2 “Development of guidelines for agro-communities business models”</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|     |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                           | <ul style="list-style-type: none"> <li>List of communities for future deployment for T7.4 "Identification of future communities for deployment - Replication Handbook"</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| WP8 | Dissemination, Communication and Exploitation of HarvRESt | <ul style="list-style-type: none"> <li>Communication material (videos, presentations, press releases, infographics) for T8.2 "Dissemination and communication actions"</li> <li>Documentation/data resulting from events participation and organization (pictures, agendas, contacts, ppts....) for T8.2 "Dissemination and communication actions"</li> <li>Project website for T8.2 "Dissemination and communication actions"</li> <li>Dissemination contacts lists for T8.2 "Dissemination and communication actions"</li> <li>Documentation resulting from exploitation workshops for T8.3 "IPR review and exploitation strategy"</li> <li>Dataset of KERs resulting from the project for T8.3 "IPR review and exploitation strategy"</li> <li>IPR Analysis for T8.3 "IPR review and exploitation strategy"</li> <li>C&amp;D Stakeholders database for T8.4 "Networking and exploitation of synergies at EU level"</li> <li>Dataset of sister projects &amp; contacts for T8.4 "Networking and exploitation of synergies at EU level"</li> </ul> |

As illustrated in the table above, various data types (questionnaires, surveys, etc.) will be accessible across multiple work packages (WPs) within the project for demonstration activities. This list is not exhaustive and is expected to increase throughout the project's duration. Additionally, during dissemination and communication efforts, the project will generate further datasets, including public deliverables, scientific reports, articles, and other publicly accessible communications. Within the consortium, a broad array of data is exchanged for management purposes, such as emails and financial reports. Many of these management-related activities involve sensitive and confidential information, which is restricted to the relevant parties. All sensitive and confidential data concerning individuals and companies collected during HarvRESt activities will be handled in accordance with data privacy laws and the terms of the HarvRESt Grant Agreement and Consortium Agreement.

In summary, it is clear from this brief overview that a variety of data will be made available throughout the project. The subsequent sections will detail how HarvRESt partners plan to manage these different datasets, following the template provided by the European Commission (EC).

### 3.2 Types and formats of data

HarvRESt project covers many activities with varied data needs across the different tasks and demo sites, such as relevant parameters monitored, tests results, measurements, observations resulting from fieldwork,

surveys results, interviews recordings with key stakeholders and images, deliverables, publications, etc. In addition, data will be reused if derived from other sources (old projects, public sources, etc.) or generated by the project partners (by means of measurement campaigns). While the details of the data to be gathered are not clear yet, some of the types and/or formats of data to be used and/or collected in the project are identified below.

### Types of data

- Numerical, quantitative, data defining specific characteristics or values for variables. Either existing or generated (physical and chemical characteristics, technology, sizing, other market data, data to define existing regulatory conditions, etc.).
- Derived data, that arises from data analytics or further processing of raw data, such as that might be generated by the models developed in the project, or any data processing in research.
- Qualitative data relating to results of and project activities, like research data, surveys, questionnaires, etc.
- Project Management data, such as meeting attendance lists, contact lists, financial information, and other data on the project activities.

### Formats

To ensure that it can be easily shared and worked with by all partners involved, mainly widespread usage data types are used (for the data types as presented above). For the management activities of the project:

- Microsoft Office formats readable in Excel, Word, PowerPoint (.doc, .docx, .xls, .xlsx, .ppt, .pptx, etc)
- General file types readable by a range of software (.csv, .xml, .json and .txt)
- Illustrations and graphic designs: Microsoft Visio (.vsd), Adobe Photoshop, Canva, Illustrator and InDesign (.jpg, .png, .tiff and .ai files)
- PDF: Variety of documents such as reports, roll-ups and leaflets
- Audio/Video files: .mp3, .wav, .avi, Windows Media Video or QuickTime Movie

Formats that are proprietary, not widely used or not supported by commonly available software should be avoided. Where unavoidable an attempt should be made (by the responsible partner- data subject) to facilitate the reuse within the project.

## 3.3 Sharing/access policies applied to each dataset

Based on access policies, the data types identified in section 1.2 can be categorized as follows:

- **General Data Protection Regulation (GDPR) Covered Data:** This includes all personal data collected for the project. Such data must be collected and handled in compliance with the GDPR and relevant national regulations. The data collector is responsible for its proper handling. Personal data cannot be shared outside the partnership without prior notification and agreement from the involved parties. Consequently, this data cannot be included in any public repository and can only be shared in specific situations in accordance with the regulations.
- **Restricted Scope:** This category includes data, metadata, restricted documents, and other information that are reused and generated for various tasks but require limited access. These materials should be

stored in different repositories with specific rules applicable to each situation. This allows partners to have restricted access to certain data and metadata as needed.

- **General Scope Inside the Consortium:** This encompasses data, metadata, deliverables, working documents, bibliographic research lists, and common information necessary for the collaborative tasks and overall project development. All partners have access to this data and the relevant repositories where it is stored.
- **General Scope Outside the Consortium:** This includes public deliverables, conference presentations, press releases, dissemination materials, newsletters, and other information that can be made available to the general public through HarvRESt's webpage, CORDIS, or other public repositories.

According to the open data principles, data should be "as open as possible, as closed as necessary". Thus, the project partners must aim to use and generate General Scope, although different categories exist for the cases that are needed.

### 3.4 Expected size of data

Data generated from project activities (such as deliverables, communication materials, and reports) will be stored in Microsoft SharePoint, which serves as the project's internal repository. Additional repositories will be used based on access rights, such as a website for public deliverables. To avoid issues with email recipients, a maximum file size of 15 MB will be enforced. However, SharePoint will be available to accommodate larger files when necessary.

In any case, some dataset, models, etc. may have a big size (e.g., 40 GB) although the number of the data assets to be considered is limited. In any case, the Consortium (and more specifically the partners who are responsible to store the data generated from the technical activities performed in the project and to create the AVPP and DSS) will take all measurements to ensure the prompt storage of the HarvRESt datasets.

### 3.5 Origin of the data collection & re-use of existing data

During the project, HarvRESt partners will generate their own data from measurements and analyses of variables and models. Additionally, existing data will be reused alongside the new data generated within the project. In addition to the expertise and own knowledge of the project partners, HarvRESt aims to utilize previous research efforts, existing literature, and experiences from other projects and sector-specific studies. Data will be collected from ongoing or completed projects, bibliographic data from scientific papers, and other well-known public sources. As the project progresses, more detailed information on the datasets to be reused will be provided. All gathered data will be properly cited, referenced, and stored.

### 3.6 Data utility

During and after the project, the data outputs of HarvRESt may be utilized to disseminate the results to many different stakeholders. As target groups for the different innovations of the HarvRESt project, the following list of stakeholders may be interested in the data generated during the project (a detailed stakeholder mapping will be carried out in Task 3.1.):

- Farmers
- Agricultural associations
- Energy cooperatives

- Medium and large sized energy industries
- Energy consultants and service providers
- Fertiliser producers
- Policy makers and public bodies
- Technical experts and scientific community
- Society as a whole

It is clear that there is significant interest in the results generated by the project. Therefore, whenever possible and practical, project partners should adopt the FAIR principles (Findable, Accessible, Interoperable, and Reusable) to open and make available data and results that could benefit professionals in research, investigation, planning, and other fields. As the project progresses and the focus on exploitation becomes clearer, the data and findings will be updated to further the exploitation goals of the partners.

## 4. FAIR DATA

This DMP is based on the concept of FAIR data, that stands for data that is Findable, Accessible, Interoperable and Reusable, even if the access will not be always open (Figure 1). Following FAIR principles aids in data use/reuse within the consortium to complete the actions required under the Grant Agreement and facilitates reuse beyond the HarvRESt project.

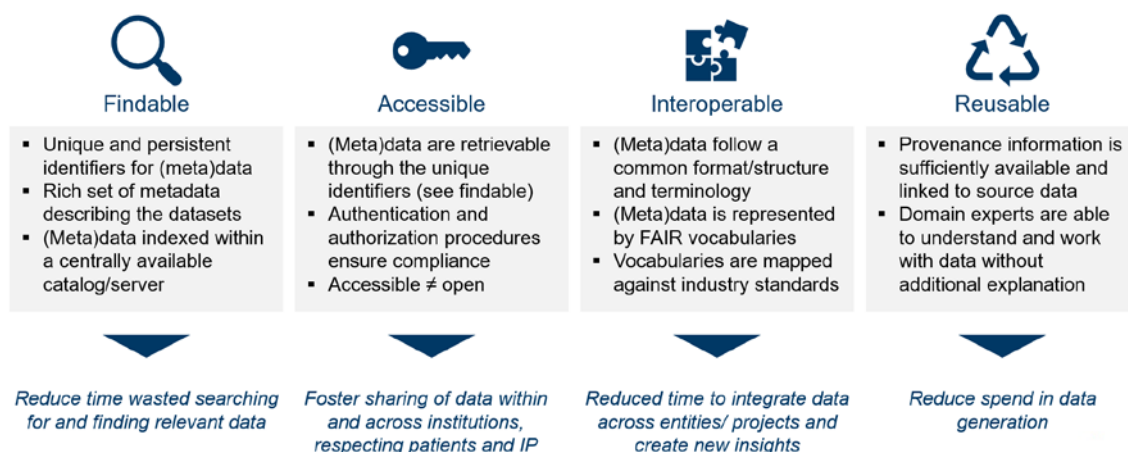


Figure 1. Criteria for and direct value generated by FAIR data [2]

Within this subsection general information and recommendations for partners are provided to make project data FAIR.

### 4.1 Making data findable

In creating FAIR digital resources, consistent data, that is persistent and with unique identifiers is needed. Towards this direction, a series of actions should be considered for creating data that are findable:

- Define the way the data can be discovered (including metadata provisions)
- Define the way the data can be identified referring to a standard identification mechanism.
- Define the way naming conventions to be used.
- Define the way method towards search keywords.
- Define the way for versioning control.
- Define the way the standards for metadata generation (if any).

The details of the different steps are presented below.

#### 4.1.1 Data identification and naming

Data findability can be greatly enhanced following a consistent set of naming conventions. Because of this, HarvRESt will promote the creation of consistent data file names that provide clues to their content, status and versioning, while also increasing their discoverability. In doing so, project partners as well as interested stakeholders will easily identify a file as well as classify and sort them.

A key principle in establishing naming conventions is to craft concise, yet informative, names for data files, that facilitate classification. It is advisable to avoid the utilisation of spaces, dots, or special characters (such as

& or !) in the naming convention, while underscores (\_) are recommended for delineating elements within the file name and enhancing readability. Additionally, integrating versioning into the naming convention is essential for transparently delineating modifications and updates to a file.

For instance, a suggested naming convention for datasets within the project could be structured as follows:

- WP number associated with the dataset
- Acronym of the partner responsible for creating/collecting and managing the dataset, specifically the short name as presented in Grant Agreement
- Descriptive data set name;
- Numerical data set sub index (starting from 1) so as to identify data sets created/collected at different times with individual metadata.

The proposed format to be followed for naming the data sets (enabling that way the identification of the data sets internally and when published as open dataset) and a naming example is shown below:

**HarvRESt\_[Wpnumber]\_[Description]\_[Responsible\_Partner]\_[Data\_set\_Sub\_Index]**

**Example: HarvRESt\_WP2\_bestpractices\_CKIC\_1**

Similar process will be followed for deliverables. These files should have an alphanumeric code included in the name which identifies the version number and date of creation of the version.

**HarvRESt\_DX.X [Name of the deliverable]\_[Responsible Partner]**

**Example: HarvRESt\_D1.2 Data Management Plan (first draft)\_CIRCE**

To avoid potential localization and informatic issues when using SharePoint, the naming of datasets should be limited to approximately 50 characters.

When possible, Digital Object Identifier (DOI) will be used to identify content and provide a persistent link to its location on the Internet. DOI is a unique alphanumeric string assigned by a registration agency (the International DOI Foundation). The publisher assigns a DOI when an article is published and made available electronically.

The DOI is typically located on the first page of the electronic journal article, near the copyright notice. The DOI can also be found on the database landing page for the article. The DOI system has been standardised through the International Standards Organisation, ISO (within the responsibility of committee ISO TC46/SC9, Identification and documentation) as ISO 26324, Digital Object Identifier System.

All DOI numbers begin with a 10 and contain a prefix and a suffix separated by a slash. The prefix is a unique number of four or more digits assigned to organizations; the suffix is assigned by the publisher and was designed to be flexible with publisher identification standards.

### 4.1.2 *Keywords*

In general, keywords are a subset of metadata and include words and phrases used to name data. In the context of HarvRESt, keywords should be used to add valuable information to the data collected/generated as well as to facilitate the description and interpretation of its content and value. Along these lines, the project's strategy on keywords is underpinned by the following principles:

- The who, the what, the when, the where, and the why should be covered.

- Consistency among the different keyword tags needs to be ensured.
- Relevant, understandable, and clear keywording ought to be sought.

The keywords must accurately reflect the content of the datasets and avoid words used only once or twice within them.

When possible, deliverables that produce core output will be tagged with keywords following the [JEL Classification System](#). Moreover, all the scientific papers that will be produced during the execution of the project will include a list of keywords that will make their search easier.

### 4.1.3 *Metadata generation*

In creating FAIR digital resources, metadata can (and should) be generous and extensive, including descriptive information about the context, quality and condition, or characteristics of the data. The definition of metadata should obviously be relevant to the specific data sets used/generated by consortium members for their different project tasks.

For this reason, the creation of metadata is considered as a good practice within the HarvRESt project. Metadata should include the following information:

- Datasets (description, date of deposit, author(s), venue and embargo)
- Horizon Europe
- Potential of RES for sustainable farming
- HarvRESt (101136904);
- Licensing terms of the data
- Persistent identifiers for the dataset
- Authors involved in the action, and, if possible, their organisations

Examples of metadata standards can be found in the reference [3]. Metadata is usually presented in two formats – contextual information about the data in a text-based document and ISO 19115 standard metadata in an xml file. These two formats for metadata provide a full explanation of the data (text format) and ensure compatibility with international standards (.xml format).

## 4.2 Making data accessible

In line with the accessibility principles of the HarvRESt project, it is crucial to specify which data will be openly available and to justify why certain datasets remain closed. This involves detailing where the data, along with associated metadata, documentation, and code, will be deposited and how it can be accessed. The project follows the principle of "making data as open as possible and as closed as necessary." This approach encourages project partners to disseminate data that offers long-term value to external stakeholders without compromising the confidentiality and privacy of those who contributed to the data collection or generation. The goal is to maximize the beneficial impact of HarvRESt.

HarvRESt partners are dedicated to promoting collaborative work and the systematic sharing of knowledge and tools throughout the research process. This commitment will be addressed through the application of open science practices:

- **Early and open sharing of research:** In the first stage of WP where technologies will be developed (WP3-WP6) and validated (WP6), HarvRESt partners will preregister the methodology to increase transparency about the purposes and methods of the study. This preregistration document will be posted on a public website and, once the preregistered study has been conducted, a report of the study and its results will be submitted for publication together with access to the preregistration document.
- **Involvement of relevant knowledge actors, including citizens:** HarvRESt will engage the citizens and key local stakeholders through the information sessions, workshops, awareness raising campaigns, events to foster participation on the project topics and gather their main concerns in the area, providing insights for the development of HarvRESt overall solutions. Engagement and awareness creation through knowledge sharing will be key to support farmers, agricultural stakeholders, agro-food industry and citizens in a transition to a more decarbonized food production value chain.
- **Research output management and measures to ensure reproducibility of research outputs:** HarvRESt will ensure the reproducibility of the outputs by covering the three main research processes that reproducibility is based on: reproduction, replication, and re-use. All these processes rest on the availability of data and methods from the original study. All the outputs of the project (data, reports, publications, etc.) will be available in Open Access repositories either through preregistrations or through publications in open repositories or journals.
- **Open access to research outputs and participation in open peer-review:** A dedicated budget for open access scientific publications is reserved. Open access clauses will appear in the Consortium Agreement (CA) and the Grant Agreement (GA). For every publication, no later than 6 months after the publication is released, a machine readable electronic copy of the published manuscript will be available on the website. Research data and bibliographic metadata needed to validate published results will be stored in the repository respective area. Finally, to make project knowledge publicly available, the dissemination leader will exploit EC open access portals and tools (e.g., OpenAIRE, Horizon the EU Research and Innovation Magazine, Research\*EU Results Magazine, etc.).

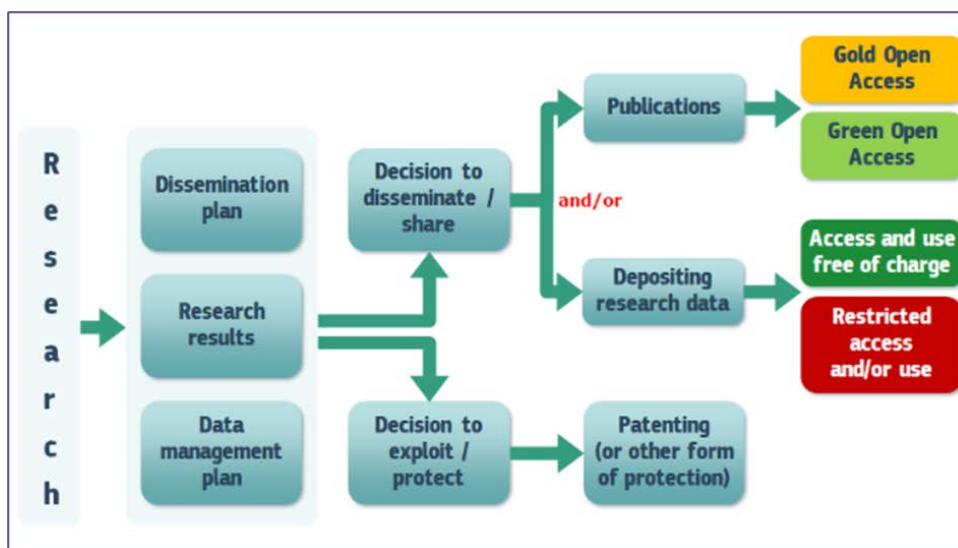


Figure 2. Open Access strategy for publications and scientific data [4]

Open Access to scientific publications may be achieved in two ways as presented above in Figure 2 figure:

- **Self-archiving / “Green” open access:** these are the publications that can be made available in an online repository before, at the same time as, or after publication (with no extra costs to be required). Green open access implies no publishing costs for the project, but the final version of the article will only be available to journal subscribers. With green access, the author's version of the article (not the journal version) can be published elsewhere, in HarvREST’s case on the project website and ZENODO. Many of the major journals in the field require a 24-month embargo with green access schemes.
- **Open access publishing / “Gold” open access:** the article is immediately published in open access mode but require a fee to be paid. In that case the publication costs are usually covered by the entity (university, institute, etc.) funding the research. In other cases, the costs of open access publishing are covered by subsidies or other funding models. Publishing under the gold access scheme typically costs between 2 000€ and 3 000€ per article. However, it is important to remark that this cost is only accepted within Horizon Europe rules in “full open access publishing venues”. Gold access will be preferred within the limits of the project budget.

To comply with the open access principles, HarvREST will apply a hybrid of gold and green access schemes. Choosing the scheme will be determined by the project coordinator, the dissemination lead, and the partners concerned on a case-by-case basis.

The project target is to publish **at least 8 scientific and technical publications**, and a dedicated budget for open access scientific publications is reserved in the project. However, in cases where the budget falls short, and in order to allocate dissemination resources effectively, the utilization of gold access should be applied selectively for each case.

According to the Consortium Agreement signed by the partners article 8.4.2:

*“8.4.2 Dissemination of own (including jointly owned) Results.*

*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 17.4 of the Grant Agreement and its Annex 5, Section Dissemination, subject to the following provisions.*

*Prior notice of any planned publication shall be given to the other Parties at least 30 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the Coordinator and to the Party or Parties proposing the dissemination within 15 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted."*

Thus, **prior to any publication all the involved parties must notify CIRCE as coordinator and FBCD as C&D Leader**, to ensure that the process is followed accordingly.

#### 4.2.1 *Repository*

The general repository for the project outcomes and work is Microsoft SharePoint and CIRCE has provided access to all partners. This repository must store information from the partners-related tasks such as: drafts versions of reports, data for the work, bibliographic information, etc. The information available in this SharePoint will be accessible by all partners. In addition to the project internal repository, additional repositories are considered under the FAIR principles.

The publicly available reports and other documents related to the project will be accessible from the HarvRESt project website, as well as the CORDIS results webpage (<https://cordis.europa.eu/project/id/101136904>). Moreover, for making its research data FAIR, HarvRESt partners are encouraged to use the free ZENODO repository (more information regarding ZENODO at Annex 2 ZENODO). A HarvRESt community has been established on the ZENODO website (<https://zenodo.org/communities/harvrest>), where all public datasets and deliverables, as well as possible scientific publications with green open access, will be uploaded. It is also possible to allow open access through organisations own solutions, such as via direct links to papers.

#### 4.2.2 *Results "As open as possible, as closed as necessary"*

The Consortium will do the best to make data open and accessible. As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data, if the achievement of the action's main objective (as described in Annex 1 of the Grant Agreement) would be jeopardised by making those specific parts of the research data openly accessible. In this case, the Data Management Plan must contain the reasons for not giving access.

Following the methodology of the Open Access strategy towards defining which data are to be made openly accessible, here it is presented a simple structural approach formed by a list of simple (but important) questions that must be answered to classify the different datasets or information as part of the DMP:

- Q1: Does a result provide significant value to others or is it necessary to understand a scientific conclusion?  
  
If Yes, then the result is classified as public (i.e., granted for open access). If the answer to Q1 is No, the result is classified as non-public. (e.g., code that is very specific to a platform (e.g., a database initialization) is usually of no scientific interest to anyone, nor does it add any significant contribution.
- Q2: Does a result include personal information that is not the author's name?

If Q2 is answered with Yes, the result is classified as non-public. Any personal information further than the name must be removed if it should be published according to the ethics management plan of the project.

- Q3: Does a result allow the identification of individuals even without the name?

If Q3 is answered with Yes, the result is classified as non-public.

- Q4: Can a result be abused for a purpose that is undesired by society in general or contradict with societal norms and the project's ethics?

If Q4 is answered with Yes, the result should be classified as non-public. This is also managed by the ethics management plan of the project.

- Q5: Does a result include business or trade secrets of one or more partners of the project?

If Q5 is answered with Yes, the result should be classified as non-public. Any business or trade secrets need to be deleted in accordance with all partners' requirements prior to being published.

- Q6: Does a result name technology that consist of an ongoing, project-related patent application?

If Q6 is answered with Yes, the result should be classified as non-public. The result can be published once a patent has been filed.

- Q7: Does a result break security interests for any project partner?

If Q7 is answered with Yes, the result should be classified as non-public.

In any case, it is important to point out that HarvRESt partners are obliged to comply with the Annex V of the Grant Agreement, when referring to Open Science:

*"Open science: research data management*

*The beneficiaries must manage the digital research data generated in the action ('data') responsibly, in line with the FAIR principles and by taking all of the following actions:*

- *establish a data management plan ('DMP') (and regularly update it)*
- *as soon as possible and within the deadlines set out in the DMP, deposit the data in a trusted repository; if required in the call conditions, this repository must be federated in the EOSC in compliance with EOSC requirements*
- *as soon as possible and within the deadlines set out in the DMP, ensure open access — via the repository — to the deposited data, under the latest available version of the Creative Commons Attribution International Public License (CC BY) or Creative Commons Public Domain Dedication (CC 0) or a licence with equivalent rights, **following the principle 'as open as possible as closed as necessary'**, unless providing open access would in particular:*
  - *be against the beneficiary's legitimate interests, including regarding commercial exploitation, or*
  - *be contrary to any other constraints, in particular the EU competitive interests or the beneficiary's obligations under this Agreement; if open access is not provided (to some or all data), this must be justified in the DMP*

- *provide information via the repository about any research output or any other tools and instruments needed to re-use or validate the data.*

*Metadata of deposited data must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) and provide information at least about the following: datasets (description, date of deposit, author(s), venue and embargo); Horizon Europe or Euratom funding; grant project name, acronym and number; licensing terms; persistent identifiers for the dataset, the authors involved in the action, and, if possible, for their organisations and the grant. Where applicable, the metadata must include persistent identifiers for related publications and other research outputs.”*

### 4.2.3 **Metadata**

From the Annex V of the Grant Agreement, when referring to Open Science:

*“Metadata of deposited data must be open under a Creative Common Public Domain Dedication (CC 0) or equivalent (to the extent legitimate interests or constraints are safeguarded), in line with the FAIR principles (in particular machine-actionable) [...]”*

Even if the original data is missing, tracking down people, institutions or publications associated with the original research can be extremely useful. For this reason, as a good practice, the partners should prepare the metadata when needed, and are encouraged to make it publicly available. Metadata should be stored in the general repository or even if considered as a good practice, make publicly available by means of the project webpage, or open access repositories as ZENODO.

For the general purposes, data and the metadata stored in the SharePoint of the project will remain available for one (1) extra year and for four (4) additional ones CIRCE will store them and provided it to partners under request.

Project website and the materials stored on them will be available and active two (2) years after the end of the project.

Considering the utilization of external repositories (CORDIS, ZENODO, etc.) the data/metadata that could be open at that stage will be made available after the end of the project for further use. There are no specific limitations about the period data will be made available and findable.

Other specific situations need to be studied in detail. Nevertheless, according to the Grant Agreement two (2) years are expected according to the record keeping obligation.

## 4.3 **Making data interoperable**

The data produced and generated in HarvRESt must facilitate data exchange and reuse among researchers, institutions, organizations, and countries. To ensure interoperability, (meta)data must utilize a formal, accessible, shared, and broadly applicable language for knowledge representation, adhere to vocabularies that follow FAIR principles, and include qualified references to other (meta)data.

Therefore, in line with the interoperability principles of the HarvRESt project, it is essential to predefine the standard or field-specific data and metadata vocabularies and methods to be used to enable data exchange, reuse, and interoperability. While the project does not intend to use uncommon data models or create project-

specific ontologies or vocabularies, the consortium is committed to making project-specific information as publicly available as possible for further reuse.

To support this effort, standard vocabularies will be applied to all data types within the dataset, promoting interdisciplinary interoperability. For example, acronyms will be explained in brackets upon their first use. Additionally, each deliverable will include a comprehensive list of acronyms and abbreviations, along with the necessary definitions, to ensure proper interoperability among users and consumers.

The following typographic conventions are used in this specification:

- 1) A variable in pseudo-code or in an algorithm description is in italics (*variable*).
- 2) A definition of a term, to be used elsewhere in this or other specifications, is in bold and italics (***definition***)
- 3) A reference to a definition in this document is underlined and is also an active link to the definition itself (definition reference)
- 4) A reference to a definition in this document, when the reference itself is also a markup, is underlined, red-orange monospace font, and is also an active link to the definition itself (markup definition reference)
- 5) A hyperlink is underlined and in green (hyperlink).
- 6) A document reference (normative or informative) is numbered in order of appearance, enclosed in square brackets and linked to the references section [reference].

Furthermore, the consortium is committed to explicitly stating references to other project data or datasets from previous research, if available, to maintain transparency and traceability.

## 4.4 Making data reusable

To ensure reusability, (meta)data must possess a range of accurate and relevant attributes, be released with a clear and accessible data usage license, include information about their provenance, and adhere to domain-relevant community standards.

Given the significance of the HarvRESt project, it is essential that all generated information and data can potentially be reused in future projects and experiments, contingent upon the consortium's agreement. The consortium should strive to make a broad array of curated data available for further reuse. For instance, partners who generate or reuse data are encouraged to use readme files or other documentation, which can be stored in the general SharePoint.

While the Consortium is not obligated to make all data available, it will review the data for potential availability to ensure the widest possible reuse. In such cases, data will be licensed using standard reuse licenses, in accordance with the Grant Agreement obligations. Research publications and their underlying data will be subject to a Creative Commons (CC) license, typically CC BY, unless there are compelling reasons, such as intellectual property rights (IPR), to choose a different license [5]. The CC BY license allows for distribution, remixing, adaptation, and building upon the material in any medium or format, provided the author is credited, and also permits commercial use. For monographs and other long-text formats, licenses excluding commercial

use, such as CC BY-NC and CC BY-ND, may be used. Additionally, the metadata of deposited publications must be open under CC0.

Although reuse is not the primary focus at this stage of the project, it is crucial that all partners aim for data reuse. This practice is encouraged by CIRCE as a standard to follow.

Finally, it is important to note that data reuse is facilitated when datasets are consistent: they should be of the same type, organized in a standardized manner, use well-established and sustainable file formats, and have documentation (metadata) that follows a common template and uses common vocabulary. Community standards or best practices for data archiving and sharing should be adhered to whenever they exist.

## 5. ALLOCATION OF RESOURCES

As the Coordinator of the HarvRESt Project, CIRCE is ultimately responsible for data management. However, to ensure the proper, effective, and secure handling of data collected and/or generated across different Work Packages, specific data management roles need to be established.

To this end, the following responsibilities have been assigned:

- **Project Coordinator (PC):** CIRCE, as the PC, oversees overall data management within the HarvRESt framework. This includes developing the DMP and updating it as needed with support from all partners. The PC also creates appropriate templates for informed consent forms and information sheets for use by project partners during relevant activities. Additionally, the PC collaborates closely with Work Package and Task Leaders to decide how collected and/or generated data during the project's lifespan is shared and made available for reuse.
- **Work Package Leaders (WPL):** WPLs coordinate the implementation of data processing activities within their respective Work Packages. They work with the PC and Task Leaders to determine whether and how the data gathered or produced under their WPs will be shared or reused. WPLs are also primarily responsible for ensuring the quality of data from their WP activities, assessing data quality, and indicating any needed improvements to Task Leaders.

In the HarvRESt project, costs related to making data FAIR (Findable, Accessible, Interoperable, and Reusable) and ensuring open access to research data include:

Efforts of the project partners:

1. Preparation and supervision of the DMP's applicability (CIRCE).
2. Compiling, handling, and adapting data to adhere to FAIR principles.
3. Preparing project reports and scientific publications.
4. Reviewing reports developed by other project partners.

Other direct costs:

1. Disseminating project results at relevant congresses/scientific events.
2. Translation services related to project data/publications.
3. Costs associated with making project results available in Open Access.
4. Indirect costs associated with the above efforts.

These costs are eligible under the Horizon Europe Grant, provided they comply with the Grant Agreement conditions. Initially, an estimated 50,000€ of the total project budget (1%) will be allocated to making data FAIR and ensuring open access to project results. This estimate does not include the cost of the Microsoft SharePoint license.

All partners are expected to use their own repositories to store copies of the data after the project's completion, maintaining confidentiality and not disclosing any information. Specific discussions about data value and reuse potential will take place during General Assembly meetings as needed.

The Microsoft SharePoint will be accessible to all partners for one year after the project's end. After this period, CIRCE will store the data included in SharePoint for an additional four years and provide access upon request.

## 6. DATA SECURITY

As mentioned earlier, the HarvRESt project aims to ensure the findability, accessibility, interoperability, and reusability (FAIR) of the data produced during and beyond the project's duration.

Throughout the project's lifespan, all documents will be stored on the project's intranet (Microsoft SharePoint), ensuring access for all consortium members and providing a backup in case of technical issues with the public repository (website). Microsoft SharePoint's access control features will restrict data visibility to HarvRESt project partners only. Partners must also apply user access control within their own organizations to safeguard HarvRESt project data from unauthorized access. Regular backups across these platforms and infrastructures will ensure data retrieval in case of loss. When using data destruction techniques, methods must be permanent and irreversible, depending on the medium used. Additionally, CIRCE, the coordinator, will retain a copy of all documentation whenever possible, both during and after the project's lifetime.

All project partners are responsible for protecting data processed on their private servers, ensuring necessary security controls are implemented to minimize the risk of information leaks and data destruction.

Confidential data refers to information that will remain closed and not be shared, as stipulated in Article 10: Non-disclosure of Information, signed by the HarvRESt partners in the Consortium Agreement. When gathering data, especially private data under GDPR or other confidential data, only the minimum amount necessary to perform the required activities should be collected. This approach enhances data security by limiting the storage of sensitive and commercial data. If sharing confidential data is necessary, only the minimum required for the activity should be shared. At the end of the project, the consortium will decide if long-term preservation of the data is necessary.

Additionally, non-disclosure agreements (NDAs) may be signed between industrial and technological partners to protect any confidential information that partners wish to safeguard.

Finally, public results will be stored in a public repository (e.g., ZENODO) and properly standardized following the FAIR principles.

## 7. ETHICS

Ethical aspects are also a key point of the DMP, specially related with personal data. The collection and/or generation of data from individuals participating in the project's activities is based upon a process of informed consent. Any personal data collected and/or generated in the framework of HarvREST is processed according to the principles laid out by the **Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016** as stated on the article 15 of the Grant Agreement on GDPR:

### *"ARTICLE 15 — DATA PROTECTION*

#### *15.1 Data processing by the granting authority*

*Any personal data under the Agreement will be processed under the responsibility of the data controller of the granting authority in accordance with and for the purposes set out in the Portal Privacy Statement.*

*For grants where the granting authority is the European Commission, an EU regulatory or executive agency, joint undertaking or other EU body, the processing will be subject to Regulation 2018/1725<sup>1</sup>*

#### *15.2 Data processing by the beneficiaries*

*The beneficiaries must process personal data under the Agreement in compliance with the applicable EU, international and national law on data protection (in particular, Regulation 2016/679<sup>2</sup>).*

*They must ensure that personal data is:*

- *processed lawfully, fairly and in a transparent manner in relation to the data subjects*
- *collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes*
- *adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed accurate and, where necessary, kept up to date*
- *kept in a form which permits identification of data subjects for no longer than is necessary for the purposes for which the data is processed and*
- *processed in a manner that ensures appropriate security of the data.*

*The beneficiaries may grant their personnel access to personal data only if it is strictly necessary for implementing, managing and monitoring the Agreement. The beneficiaries must ensure that the personnel is under a confidentiality obligation.*

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<sup>1</sup> Regulation (EU) 2018/1725 of the European Parliament and of the Council of 23 October 2018 on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data, and repealing Regulation (EC) No 45/2001 and Decision No 1247/2002/EC (OJ L 295, 21.11.2018, p. 39).

<sup>2</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC ('GDPR') (OJ L 119, 4.5.2016, p. 1).

*The beneficiaries must inform the persons whose data are transferred to the granting authority and provide them with the Portal Privacy Statement.”*

Added to the previous points, the Consortium Agreement stated the following conditions regarding the data protection.

#### *“4.5 Specific responsibilities regarding data protection*

*Where necessary, the Parties shall cooperate in order to enable one another to fulfil legal obligations arising under applicable data protection laws (the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and relevant national data protection law applicable to said Party) within the scope of the performance and administration of the Project and of this Consortium Agreement.*

*In particular, the Parties shall, where necessary, conclude a separate data processing, data sharing and/or joint controller agreement before any data processing or data sharing takes place.*

The Consortium partners will ensure compliance with Regulation (EU) 2016/679 (GDPR) and its application at national and regional level in the member states involved in the HarvRESt project. Considering the personal data use within the project technical and demonstration activities (and in line with what has been defined in the Grant Agreement), a series of action points have been defined:

- All personal data will be collected, stored and destructed only with and accordingly to the explicit consent of the personal data holder.
- Personal data will be stored in secure server systems with protected user access control. Given that this data is usually held only by the original partner, the partner responsible should have its own secure storage. Data access will be restricted to only those directly using the data for project purposes, usually the partner with initial contact with the users. But in any case, a data controller/responsible must be assigned.
- No data will be transmitted to any person, company or organization not being involved on the HarvRESt project, and in any case the collected data will be used for commercial purposes.
- Where data sharing related to activities with specific users is required, data will be anonymised prior to sharing, with the user being represented only by an anonymised ID.
- Personal or confidential data will be kept for an absolute minimum of time and should be destroyed at the earliest opportunity (depending on use, or legitimate continued use for which permission has been granted by the subject).

As stated in the first point, prior to any data gathering process, **an informed consent required for the end users that will get voluntarily enrolled in project activities.** This is also specified in the relevant regulation: *“data cannot be collected without the explicit informed consent of people under observation; therefore no person unable to express a free and informed consent for age-related reasons, on-going medical and/or psychological conditions, mental incapacity, should be enrolled in any study/activity. Consent should be freely given, specific, informed and unambiguous by way of a request presented in clear and plain language. Consent should be given by an affirmative act, such as checking a box online or signing a form. When someone consents to the processing of their personal data, the processing of data must be strictly for the purposes for which consent was given.”*

For the collection of data (personal and technical data) related with technical activities of the project (technical developments, sectorial studies, stakeholders consultations...), as well as communication and dissemination tasks, in order to ensure the transparency of this process, an informed consent procedure will be performed following the next steps:

1. Initial communication from the partner to the external person to present the project and explain in detail the data collection purposes, the data that will be collected, the privacy risks and the outcome of the processing of collected data.
2. The external people that have explicitly mentioned that they do not wish to be informed or voluntarily participate in the technical activities will be excluded from any further activity (and the personal data already gathered will be deleted).
3. Collecting potential participants contact details on a list must be approved by them.
4. Provision of the consent form to the participants that have declared that they would consider their participation in the technical activities and data collection processes of the HarvRESt project, ensuring that they are given enough time to read and sign it.

Examples and models of the documentation to get used as the informed consent material for the users can be found in Annex 1.

## 8. OTHER ISSUES

At the current stage of the project, the usage of any other procedure for data management is not foreseen.

## 9. CONCLUSIONS

As mentioned, this document is the initial version of the Data Management Plan (DMP). The purpose of this report is to outline the methodologies and standards for data collection and handling, detail the procedures for information sharing and open access to HarvRESt data, and explain how the data will be curated and preserved.

This DMP establishes the procedures for data sharing within the project, adhering to the FAIR principles to ensure that research data is Findable, Accessible, Interoperable, and Reusable. Additionally, the plan addresses key considerations such as resource allocation, data security, and ethical aspects.

The plan serves as both a checklist for future reference and a guide for resource and budget allocations related to data management. It is important to note that the DMP is a living document, allowing for updates as the project progresses and significant changes occur. Therefore, at least two more versions of the DMP will be issued during the implementation of the HarvRESt project: by Month 18 (D1.5) and Month 36 (D1.8).

## 10. REFERENCES

- [1] European Commission. (October of 2023). Funding and Tender's portal. Horizon Europe Data Management Plan Template. [Link](#).
- [2] Enlightenbio. (2021). FAIR Data or the Journey Towards Data-Centricity – Pushing Towards Making Data Discoverable, Accessible, Interoperable, and Reusable. [Link](#).
- [3] University of Bath. (October of 2023). Metadata Standards Catalogue. [Link](#).
- [4] European Commission (May 2024). Funding and Tender's portal. Open access to research data. [Link](#).
- [5] Creative Commons. (May of 2023). Creative Commons. [Link](#).

## 11. ANNEXES

### 11.1 Annex 1 Models/ templates to the Informed Consent Forms of HarvRESt participant

Each beneficiary of HarvRESt project, as established in the Consortium Agreement, shall be responsible for the respectively collected and processed personal data. In order to meet the General Data Protection Regulation, this annex shows some models that HarvRESt partners can follow and adapt to their corresponding organization/countries requirements, to request authorization from for external to the personal data treatment in HarvRESt.

#### Clause to register in HarvRESt's events/ workshops

##### EVENT TITLE

##### Form for the registration

Full name:

Email:

Organisation:

Role:

Country:

**BASIC INFORMATION ON DATA PROTECTION.** According to the General Data Protection Regulation. (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016. **Responsible:** Consortium partners Project HarvRESt. **Purpose:** Your data may be used under your consent, with the aim of registration to the event **and receiving newsletters** in order to keep you informed about the dissemination activities of the project HarvRESt. **Exercise your rights:** You are entitled to exercise your rights of access, rectification, elimination, limitation, opposition, portability and to not be subject to a decision based solely on automated processing by contacting by **email protection data project (from partner organizing the event)** **More information:** **Check our Privacy Policy (link to the Privacy Policy of the partner organizing the event)**

- ☐ I have been informed about the treatment of my data **Compulsory check**
- ☐ I wish to receive newsletters about the dissemination activities of the project HarvRESt **Optional**

#### Clause to inform externals regarding the processing of their data and for collecting image use permission

According to the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, you are informed that due to the monitoring and control obligations to which [**Organizer/Responsible of data**] (hereinafter, "**short name**") is subject in the project HarvRESt "Harnessing the vast potential of RES for sustainable farming", hereinafter, the "**Project**", in their condition of collaborator of the mentioned Project together with the rest of consortium partners, are obliged to keep records of the activities carried out, including meetings, training and/or dissemination of Project activities, interviews, among others, in the frame

of the Project, aiming at performing the actions required by the control bodies and any other competent authorities of the Project.

With this consent, you are informed that your personal data can be sent to control bodies and any other competent authorities of the Project and to the rest of the consortium partners in order to comply with the control requirements under **[Name of the partner]** 's obligations in the frame of the Project, and will be kept until the end of the Project and for the limited periods of the responsibilities that may result enforceable.

- ☐ I have been informed about the treatment of my data by **[Name of the partner]** and I authorize their use.

As a collaborator of the Project, you are informed that all contributions added in the document **[name of deliverable/task/service]** of the Project will be able to be published in the appropriate wherewithal for the project.

- ☐ I confirm that I have received, reviewed the document before publishing it on the different public platforms and I agree with the publication of the data provided within it.

Likewise, we inform that the event which you have been summoned/invited/registered could be filmed and photographed, **[Name of the partner]** may be entitled to publish these videos and images in its Web Site and social networks, as well as, to send these videos and images to the Media in order to contribute to the dissemination of the Project, and also to the rest of the Partners of the Project to comply with their obligations and to be published in their corresponding web Sites and social networks.

We will only use your image if you authorized your consent by checking the following box.

- ☐ I hereby authorize the use of my personal image in order to contribute to the implementation of the Project activities.

Additionally, if you expressly authorize it, by checking the box below, your data may be used under your consent, with the aim of sending bulletins and informative news, and other commercial and promotional communications, in order to keep you informed about events, workshops, activities and services run by the Project.

- ☐ I wish to receive from **[Name of the partner]** commercial and promotional communications.

You are entitled to exercise your rights of access, rectification, elimination, limitation, opposition, portability and to not be subject to a decision based solely on automated processing by contacting **[HarvRESt email]**.

The data controller is **[Name of the partner, address, VAT ID, contact]**

**[City], [Date]**

**Signature**

\_\_\_\_\_  
**[Name and Surname]**

### Clause to consent image use

According to the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, you are informed that due to the monitoring and control obligations to which **[Organizer/Responsible of data]**

(hereinafter, “**short name**”) is subject in the project HarvRESt “Harnessing the vast potential of RES for sustainable farming”, hereinafter, the “Project”, in their condition of collaborator of the mentioned Project together with the rest of consortium partners, are obliged to keep records of the activities carried out, including meetings, training and/or dissemination of Project activities, interviews, among others, in the frame of the Project, aiming at performing the actions required by the control bodies and any other competent authorities of the Project.

With this consent, you are informed that the event **[write the description of the event]** which you have been invited could be filmed and photographed, **[Partner short name]** may be entitled to publish these videos and images in its Web Site and social networks, as well as, to send these videos and images to the Media in order to contribute to the dissemination of the Project, and also to the rest of the Partners of the Project to comply with their obligations and to be published in their corresponding web Sites and social networks.

Additionally, you are informed that you may only take photographs related to the project. Under no circumstances may you take pictures of other equipment and facilities located at **[Location]**.

You are entitled to exercise your rights of access, rectification, elimination, limitation, opposition, portability and to not be subject to a decision based solely on automated processing by contacting **[Partners email]**.

The data controller is **[Name of the partner, address, VAT ID, contact]**

**[City], [Date]**

**Signature**

---

*[Name and Surname]*

#### Clause to compile inputs/forms/questionnaires/interviews from externals

##### **“Form/Questionnaire/Interview title”**

**Organisation name:** **<Insert Partner Name>**

**Address:** **<Insert Partner Address>**

**Phone:** **<Insert Partner Phone>**

**Email:** **<Insert Partner Generic e-mail Address>**

#### Who we are?

HarvRESt is a European Project (GA 101136904) that aims to integrate Renewable Energy Systems (RES) in farms looking for synergies between the energy and food sectors. By this approach, farms will become climate neutral, optimising their production and reducing their impact on natural resources and biodiversity, on top of providing energy services to communities and diversifying their economic income. For that, HarvRESt will develop an Agricultural Virtual Power Plant able to run different scenarios and farm configurations to determine the best operation procedures for a given RES solution. The full approach of HarvRESt will be supported and executed at 4 use cases representing different topologies of farms, a diversity of stakeholders and organizational structures, distinct geographical conditions and a wide variety of RES technologies.

#### What do we need from you?

You have been invited to take part in this interview because you have been identified as a key stakeholder for HarvRESt. In this context, we would like to learn more about your views on RES integration at the farm level to understand what framework conditions might act as a barrier or an enabler for the up-taking of RES.

The interview is expected to last no more than 45 minutes and **your participation is entirely voluntary**. Partners will take written notes.

If you decide to participate in this HarvRESt activity, we will ask you to sign a HarvRESt Informed Consent Form (provided at the end of this document) to collect and process your data. The project will last 36 months but your involvement would only be for as long as you wish.

### What will we do with your data?

The information you will provide will be confidential and anonymous. HarvRESt project will handle your data according to the General Data Protection Regulation. (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016.

**Responsible:** HarvRESt Consortium

**Purpose:** Your data may be used under your consent, to participate in this interview. Once the data is analysed, a report of the findings may be submitted. The project's deliverables that may be derived from this **activity will not include your data** or any other information that could identify you. The results of this project activity may be also shared with European Union representatives (e.g., the Project Officer evaluating the project's progress, etc.) Only broad trends will be reported, and **it will not be possible to identify any individuals**. No risks are involved.

**Exercise your rights:** According to the General Data Protection Regulation (GDPR), you are entitled to exercise your rights of access, rectification, elimination, limitation, opposition, and portability and to not be subject to a decision based solely on automated processing by contacting by email to [info@foodbiocluster.dk](mailto:info@foodbiocluster.dk). If you wish to access detailed information on how the HarvRESt project handles data, you might check the HarvRESt Privacy Policy Project (<https://www.harvrest.eu/privacy-policy/>).

### I hereby give my consent to the processing of my data needed for:

*(Please, tick the boxes below to confirm that you give us your consent for the respective subject. Any boxes left unticked mean that **you do not consent** to that specific subject).*

| # | Consent Subject                                                                                                                                   | Tick box |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1 | I have been informed about the treatment of my data (mandatory)                                                                                   | x        |
| 2 | I consent to participate in the <b>form/questionnaire/interview</b> to learn more about my views on RES integration at the farm level (mandatory) | x        |
| 3 | I am interested in joining other HarvRESt activities (optional)                                                                                   |          |
| 4 | I wish to receive newsletters about the dissemination activities of HarvRESt (optional)                                                           | x        |

---

 Name of participant

---

 Date

---

 Signature

### Clause to include in bilateral agreements between partners & externals

Each Party of this [indicate the type of contractual document applicable: i.e., contract/letter of intent/shareholder's agreement] (hereinafter the "Agreement") shall be responsible for the personal data referred to their employees, collaborators, trainees, and/or other possible categories of data subjects, while the Consortium Agreement is in force.

In this sense, regarding the personal data made available to the rest of Partners on the occasion of the execution of the Project, the Partners shall reciprocally guarantee-in their condition of assignors -duly fulfil all the obligations under the General Data Protection Regulation, Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, to their processing and subsequent communication to the rest of Partners and to third parties, such as granting entities, control bodies and any other competent authorities, in relation to the granting and justification of the Project.

In view of the above, the Partners shall not be liable in any case for any possible breaches on Data Protection Regulation in which the rest of the Partners may have incurred regarding the personal data conveyed. Therefore, the Partners shall hold harmless themselves of any consequence which may arise from such breaches, including the possible sanctions imposed by the competent control authority.

Likewise, the Partners shall undertake to keep the strictest confidentiality of the personal data to which they have access with the occasion on the Project, and they shall maintain secrecy and shall not be entitled to communicate nor cease them to the rest of the Partners of the Project, unless necessary for Project implementation. Personal data shall not be disclosed in any case to any third party or published without the prior written consent by the person concerned.

Lastly, given the monitoring and control obligations to which [Short name of HarvRESt partner] and the rest of the Partners are subject to, in the frame of the project, [Short name of HarvRESt partner] will be obliged to graphically document the works carried out and the meetings held on the occasion of the project, with the aim to implement promotion and dissemination actions required by the entities and control bodies. To that effect, each Partner shall have to inform to their employees or collaborators who take part in the Project about the fact that the work meetings, formative and/or dissemination of Project activities in which they may participate, may be filmed and photographed. [Short name of HarvRESt partner] may be entitled to publish these videos and images in its Web Site and social networks, as well as to send them to the Media. Each Partner shall obtain the prior and express consent of their employees and collaborators in order to use their images to the aforementioned effects.

## 11.2 Annex 2 ZENODO

ZENODO is a multidisciplinary, open repository for educational material, research papers, data, and reports. Developed under the European OpenAIRE program, ZENODO is operated by CERN to support the principles of FAIR data. It allows the uploads to be citable and trackable through DOI, the uploading process is fast, the datasets can be updated with a versioning feature, the uploads provide usage statistics, and its GitHub integration allows for preserving GitHub repositories.

ZENODO generally accepts datasets up to 50 GB; however, larger datasets may be accepted under special circumstances. At present, there are no limits on the number of datasets per community, so there will not be any additional costs associated with making data FAIR through ZENODO.

Moreover, ZENODO will be used to store metadata of the publications and datasets. Metadata associated with each published dataset in ZENODO will include:

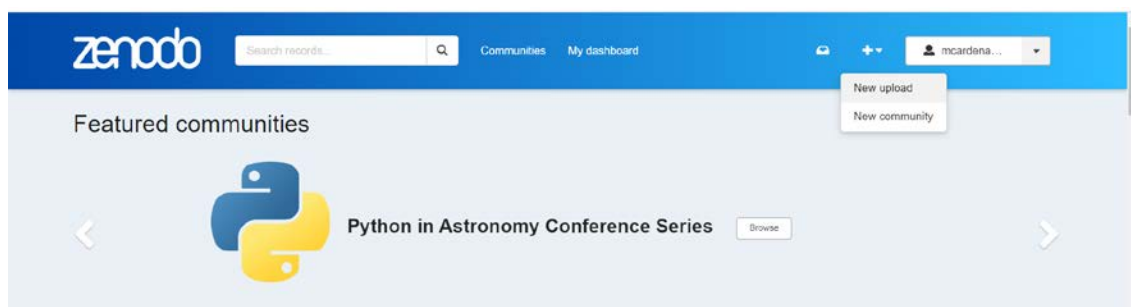
- Digital Object Identifiers (DOI)
- Abstract/description
- File sizes
- Keywords
- Related identifiers
- Version numbers
- Associated project and community
- Associated publications and reports
- Access and licensing info
- Language
- Grant agreement number
- Specific keywords

Rich metadata enhances the discoverability of data. Using JSON Schema as the internal representation of metadata, ZENODO offers export to other popular formats, such as Dublin Core and MARCXML. The metadata in ZENODO is openly available under the CC 0 license, which complies with the requirements of the European Commission.

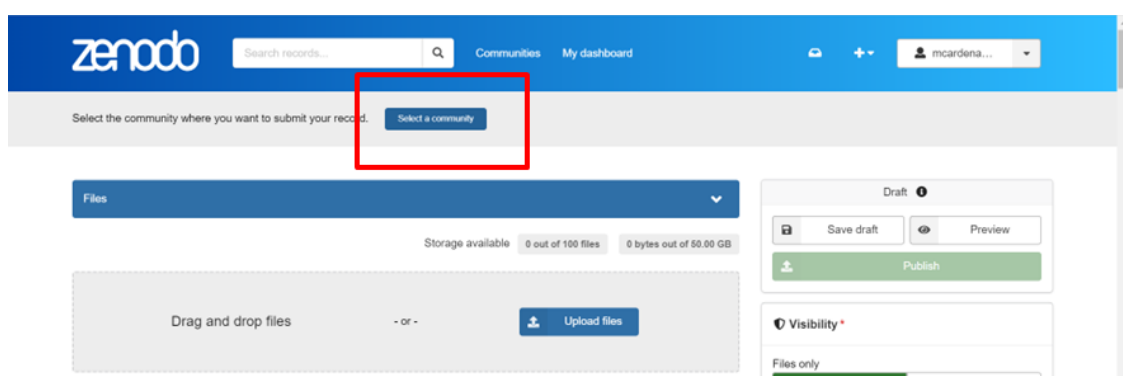
The portal enables researchers, scientists and institutions to share research data and results in a wide variety of formats including text, spreadsheets, audio, video. To each submitted data-set is attached a unique DOIs that enables referencing the data in research and institutional contexts. The OpenAIRE project, in the vanguard of the open access and open data movements in Europe was commissioned by the EC to support their nascent Open Data policy by providing a catch-all repository for EC funded research.

The submission of research data to ZENODO can be done through the following steps:

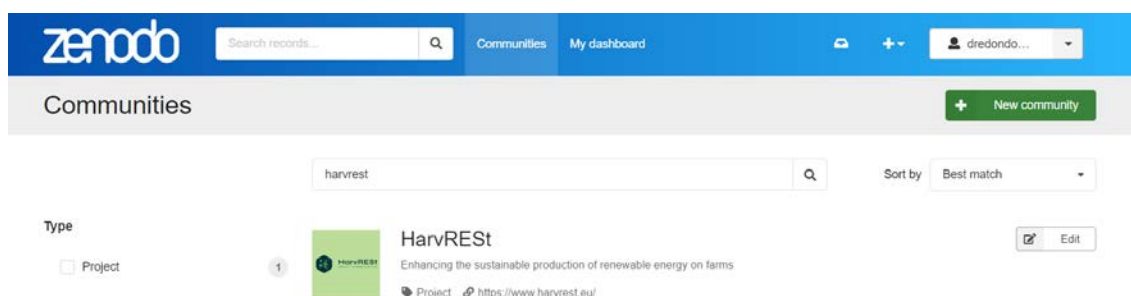
1. Enter the platform <https://zenodo.org/> . Sign in or register, if you do not have an account yet.
2. The upload procedure starts by clicking “new upload”:



- First, select the corresponding community, in this case “HarvREST”:



Select a community



- Upload the file, and add a DOI, in case it has been assigned already. If not, ZENODO will assign it automatically. Preferably, check public visibility. Apply an embargo period, if needed.

Files

Storage available 0 out of 100 files 0 bytes out of 50.00 GB

Drag and drop files

- or -

Upload files

Basic information

Digital Object Identifier\*

Do you already have a DOI for this upload? ☒ Yes ☐ No

Copy/paste your existing DOI here...

A DOI allows your upload to be easily and unambiguously cited. Example: 10.1234/foo.bar

Resource type\*

Draft

Save draft Preview

Publish

Visibility\*

Files only

Public Restricted

Public

The record and files are publicly accessible.

Options

Apply an embargo ⓘ

Record or files protection must be restricted to apply an embargo.

- Successively the data must be classified according to given categories such as: dataset (i.e., tables of numerical data), image and others:

Resource type\*

Dataset

\* Other

Physical object

Poster

Presentation

Publication

Publication / Annotation collection

Publication / Book

Publication / Book chapter

Publication / Conference paper

Publication / Conference proceeding

Publication / Data paper

Publication / Dissertation

Publication / Journal

Publication / Journal article

Publication / Other

- Finally, the portal prompts for additional metadata such as authorship of data and sharing policies. The structure of the dataset must be specified here as well. Make sure to add the information related to the external conference/ journal where the publication was originally reviewed/published, if applicable. All publications shared in ZENODO must meet the publications policies of such external sources.

**Title \***

+ Add titles

**Publication date \***

In case your upload was already published elsewhere, please use the date of the first publication. Format: YYYY-MM-DD, YYYY-MM, or YYYY. For intervals use DATE/DATE, e.g. 1939/1945.

**Creators \***

+ Add creator

**Description**

Paragraph ▾ **B** *I*        

+ Add description

**Licenses**

**Creative Commons Attribution 4.0 International**

The Creative Commons Attribution license allows re-distribution and re-use of a licensed work on the condition that the creator is appropriately credited. [Read more](#)

Edit Remove

+ Add standard

+ Add custom

**Recommended information**

**Contributors**

+ Add contributor

**Keywords and subjects**

Suggest from All ▾ Search for a subject by name ▾

**Languages**

Search for a language by name (e.g. "eng", "fr" or "Polish") ▾

**Dates**

| Date *                              | Type * | Description                                                                                                |
|-------------------------------------|--------|------------------------------------------------------------------------------------------------------------|
| YYYY-MM-DD or YYYY-MM-DD/YYYY-MM-DD | ▾      | <input type="text"/>  |

Format: DATE or DATE/DATE where DATE is YYYY or YYYY-MM or YYYY-MM-DD.

+ Add date

**Version**

Mostly relevant for software and dataset uploads. A semantic version string is preferred see [semver.org](https://semver.org), but any version string is accepted.

**Publisher**

The publisher is used to formulate the citation, so consider the prominence of the role.

## Funding ▼

### Awards



Add award



Add custom

## Alternate identifiers ▼

### Alternate identifiers

|                      |                      |                                  |
|----------------------|----------------------|----------------------------------|
| Identifier *         | Scheme *             |                                  |
| <input type="text"/> | <input type="text"/> | <input type="button" value="x"/> |



Add identifier

## Related works ▼

Specify identifiers of related works. Supported identifiers include DOI, Handle, ARK, PURL, ISSN, ISBN, PubMed ID, PubMed Central ID, ADS Bibliographic Code, arXiv, Life Science Identifiers (LSID), EAN-13, ISTD, URNs, and URLs.

### Related works

|                                                 |                      |                      |                      |                                  |
|-------------------------------------------------|----------------------|----------------------|----------------------|----------------------------------|
| Relation *                                      | Identifier *         | Scheme *             | Resource type        |                                  |
| <input type="text" value="Select relation..."/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="button" value="x"/> |



Add related work

## References ▼

### References

|                      |                                  |
|----------------------|----------------------------------|
| Reference string *   |                                  |
| <input type="text"/> | <input type="button" value="x"/> |



Add reference

## Publishing information

### Journal

**Title**

Title of the journal on which the article was published

**ISSN**

International Standard Serial Number

**Volume**

**Issue**

**Pages**

### Imprint

**Book title**

Title of the book or report which this upload is part of.

**ISBN**

International Standard Book Number

**Place**

Place where the imprint was published

**Pages**

### Thesis

**Awarding university**

## Conference

**Title**

**Acronym**

**Place**

Location where the conference took place.

**Dates**

**Website**

**Session**

Session within the conference.

**Part**

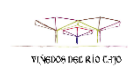
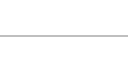
Part within the session.


**HarvREST**  
 Greener Farming with RES

## The project

The HarvREST project aims to enhance the sustainable production of renewable energy at farm-level. This approach not only makes farms climate-neutral but also optimizes production, reduces their impact on natural resources and biodiversity, and provides energy services to communities, thereby diversifying economic income. However, deciding how best to integrate renewable energy sources (RES) on a farm is not without its challenges. The decision is a complex one, with many factors to consider. Due to this, HarvREST seeks to identify, understand, and overcome the existing barriers hindering the widespread adoption of this innovative approach. Current initiatives often overlook the complex interactions and factors within the farming and RES context, resulting in ineffective support for decision-making based on accurate projections, estimations, and forecasts. HarvREST will therefore consolidate and enhance existing knowledge, creating an Agricultural Virtual Power Plant capable of running diverse scenarios and farm configurations. This tool will determine the best operational procedures for a given RES solution, providing valuable data to a decision support system. This system will weigh trade-offs and key indicators, offering tailor-made recommendations to farmers and policymakers.

| PARTNER                                                                             |                                         | SHORT NAME         |
|-------------------------------------------------------------------------------------|-----------------------------------------|--------------------|
|   | CIRCE Research Centre                   | CIRCE              |
|  | BETA Technological Centre               | UVic-UCC (BETA CT) |
|  | NORCE                                   | NORCE              |
|  | Tecnoalimenti                           | TCA                |
|  | WHITE                                   | WR                 |
|  | Suite5 Data Intelligence Solutions Ltd. | Suite5             |
|  | EnGreen                                 | EnG                |
|  | ConTerra                                | CT                 |
|  | Confagricoltura                         | CONFAGRI           |

|                                                                                   |                              |                |
|-----------------------------------------------------------------------------------|------------------------------|----------------|
|  | Fattoria Solidale del Circeo | FSDC           |
|  | Viñas del Vero               | VdV            |
|  | Viñedos del Rio Tajo         | VRT            |
|  | Sorigué                      | ACSA (SORIGUÉ) |
|  | Grønn Gårdsenergi AS         | GGE            |
|  | Food & Bio Cluster Denmark   | FBCD           |
|  | EIT Climate-KIC              | CKIC           |

## Contact us

[www.harvrest.eu](http://www.harvrest.eu)

 <https://linkedin.com/harvRESt>

 [https://twitter.com/HarvRESt\\_eu](https://twitter.com/HarvRESt_eu)