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# SYNERGIES

Shaping consumer-inclusive data pathwaYs towards the eNERGY transltion, through a reference Energy data Space implementation

## WP1: Project Management

# D1.2: Data Management Plan

**Deliverable Leader:** TXT

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## Document Log

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## Executive Summary

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The Data Management Plan (DMP) describes the management policies for the data that will be collected, processed and/or generated by the SYNERGIES project. It is a critical document, especially given the data-driven nature of the project, and has been announced to all consortium partners in order to follow its guidelines.

The present DMP takes into account the existing European Commission's guidelines on Open Science, in particular Open Access to Research Data<sup>1</sup> by adopting the FAIR principles methodology<sup>2</sup>. Therefore, as part of making the research data Findable, Accessible, Interoperable and Re-Usable (FAIR), the DMP will include information on:

- (i) handling of research data during & after the project (use and re-use of data);
- (ii) what data will be collected, processed and/or generated;
- (iii) which methodology & standards will be applied;
- (iv) whether data will be shared/made open access;
- (v) and how data will be curated & preserved, including ethical aspects.

Moreover, the methodology and guidelines provided in the DMP complements the communication and dissemination strategies described in deliverable D6.1 (Communication, Dissemination and Engagement Plan), in order to ensure an efficient communication and dissemination of the project results with specific attention to the sharing of data.

The DMP includes information on the roles and responsibilities for data management within the SYNERGIES consortium. Moreover, the economic aspects such as the resources allocation (the costs and how they will be covered) to ensure to make data FAIR will be addressed by the present DMP.

The current document represents the first version of the DMP. It will be regularly updated, whenever required, in the periodic management reports so as to maintain the DMP up to date with any significant change in the SYNERGIES project or the EC's policies on Open Access and Data Management.

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<sup>1</sup> European Commission, Open Access and Data Management. Available at [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm)

<sup>2</sup> European Commission, Data Management. Available at [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm)



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## List of Acronyms/Abbreviations

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<b>Acronym/ Abbreviation</b>	<b>Description</b>
<b>CKAN</b>	<b>Comprehensive Knowledge Archive Network</b>
<b>DCAT</b>	<b>Data Catalog Vocabulary</b>
<b>DER</b>	<b>Distributed Energy Resources</b>
<b>DMP</b>	<b>Data Management Plan</b>
<b>DPO</b>	<b>Data Protection Officer</b>
<b>DSO</b>	<b>Distribution System Operator</b>
<b>EC</b>	<b>European Commission</b>
<b>EV</b>	<b>Electric Vehicle</b>
<b>FAIR</b>	<b>Findable, Accessible, Interoperable and Reusable</b>
<b>GDPR</b>	<b>General Data Protection Regulation</b>
<b>IoT</b>	<b>Internet of Things</b>
<b>IP</b>	<b>Intellectual Property</b>
<b>TOC</b>	<b>Table of Contents</b>
<b>TSO</b>	<b>Transmission System Operator</b>



## Introduction

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The main aim of Section 1 is to provide a brief overview of the content structure and the deliverable scope in order to present comprehensive background information regarding the SYNERGIES Data Management Plan.

### 1.1 SYNERGIES Project Overview

The growing number of distributed energy resources (DERs) connected to the network continuously expands the energy system “edge”, in terms of controllability and operational complexity. The progressive decentralization, which is also accompanied by the introduction of new digitalized assets (EVs, IoT, batteries), poses significant challenges for the resilience of the system, while introducing increased uncertainty in traditional control routines, given the stochastic and intermittent character of renewable generation and the new control variables (not currently addressed in existing tools for the system management) introduced by new assets.

SYNERGIES introduces a reference Energy Data Space Implementation that will attempt to unleash the data-driven innovation and sharing potential across the energy data value chain by leveraging on data and intelligence coming from diverse energy actors (prioritizing on consumers and introducing them as data owners/ providers) and coupled sectors (buildings, mobility) and effectively making them reachable and widely accessible. In turn, it will facilitate the transition from siloed data management approaches to collaborative ones which promote the creation of a data and intelligence ecosystem around energy (and other types of) data and enable the realization of data (intelligence)-driven innovative energy services. SYNERGIES solution will:

- value the flexibility capacity of consumers in optimizing energy networks’ operation, maximizing RES integration and self-consumption at different levels of the system (community, building)
- evidently support network operators in optimally monitoring, operating, maintaining and planning their assets and coordinating between each other (TSO-DSO collaboration) for enhancing system resilience
- create an inclusive pathway towards the energy transition, through consumer empowerment, awareness and informed involvement in flexibility market transactions
- step on real data streams and intelligence to deliver personalized and automated features to increase prosumer acceptance and remove intrusiveness
- facilitate the establishment of sustainable LECs by enhancing their role with Aggregator and BSP functions
- establish solid grounds for the creation of a new economy around energy data produced and shared across a complex value chain, in a secure, trustful, fair and acceptable manner

In this context, SYNERGIES aims at re-conceiving data sharing against traditionally bilateral contracting applied in the energy sector and acting as multiplier of the collective data value that can be accrued, shared and traded towards achieving the resilient operation of energy systems through the coordinated optimization of their constituent components (generation, demand, storage) and the orchestrated integration with relevant sectors that can inject significant amounts of flexibility (mobility and EV charging, buildings and heating/cooling systems’ control).

SYNERGIES will be extensively validated in 3 large-scale demonstration sites in Greece, Spain and Denmark involving complete value chains, diverse data sources, heterogeneous energy systems/assets and spanning different socio-economic characteristics.



## 1.2 Deliverable Purpose and Structure

The main aim of the present Data Management Plan (DMP) is to provide detailed information concerning the type of data that will be collected, processed and/or generated by the SYNERGIES project and their management lifecycle. Given the strong data-relevant nature of the project, the DMP is a critical result to be delivered, as it guarantees an appropriate and compliant management of all data collected and generated by the project. The delivery of a well described DMP has a twofold objective: on one hand, detailed information on how data will be stored and used guarantees protection of the user in terms of security of data, ethical management and IPR issues; on the other hand, it provides useful and precise information on the data management lifecycle and the relevant responsibilities within the consortium: this allows for a smoother resolution should any conflict arise on alleged data breach or any other data related-issue, with the support of the processes established for conflict resolution in deliverable D1.1 and in the Consortium Agreement.

More specifically, the DMP will include information on:

- (i) handling of research data during & after the project (use and re-use of data);
- (ii) what data will be collected, processed and/or generated;
- (iii) which methodology & standards will be applied;
- (iv) whether data will be shared/made open access;
- (v) and how data will be curated & preserved, including ethical aspects.

The present document represents the first version of the SYNERGIES DMP. It will be regularly updated to remain up to date with the project advancements and any significant change of the EC's policies on Open Access and Data Management<sup>3</sup>. Moreover, the involvement of entities with strong expertise in legal matters will serve as a further guarantee that the procedures hereby described are up to date and compliant with the existing policies and that they will be applied accordingly.

The DMP was structured following the European Commission suggested model<sup>4</sup>. Therefore, the document's contents are structured as follows:

- Section 2 is the core of the DMP, providing critical information about the data that will be generated/collected by SYNERGIES, such as the type, format and size of the data, why such data is collected in relation to the project objectives and to whom such data will be useful;
- Section 3 focuses on the FAIR data principles: it describes the SYNERGIES consortium's approach to comply with these principles in order to make the generated/collected datasets *findable, accessible, interoperable* and *re-usable*; moreover, it provides information on the roles and responsibilities within the SYNERGIES Consortium for data management, the relevant costs produced by such activities and how they will be covered;
- Section 4 describes the provisions that are put in place by SYNERGIES to guarantee data security;
- Section 5 covers any ethical or legal issue related to the data generated/collected by SYNERGIES;
- Section 6 includes the conclusions and provides an overview of the next steps for the DMP.

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<sup>3</sup> European Commission, Open Access and Data Management. Available at [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-dissemination_en.htm)

<sup>4</sup> European Commission, Data Management. Available at [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm)





The present deliverable is meant to be a public document that informs the users on how their data will be stored and re-used, on IPR and ethical aspects, for a better understanding, on their side, of their rights. Moreover, given the data-driven nature of SYNERGIES, it serves as a guarantee to the EC that the project will comply with the existing rules and policies on data management.

### 1.3 Positioning in SYNERGIES

The present Data Management Plan is linked to any project activity that is meant to generate, collect or re-use data (both technical and organisational). More specifically:

- WP2 “Project Foundations, Requirements and Technical Design”, with a focus on task 2.2, which is meant to draft business and user requirements based on implicit requirements expressed through the demo data profiling and the DMP policies.
- WP3 “SYNERGIES Reference Energy Data Space Implementation” since the techniques and solutions delivered for data management must be compliant with the DMP.
- WP4 “SYNERGIES data sharing-driven digital solutions and innovative energy services marketplace”, where the data will be leveraged and re-used taking into consideration the provisions of the DMP.
- WP5 “Demonstration and Impact Assessment”, that is responsible for the data asset landscaping activities providing input to this DMP, but also for the actual data collection and management from the demo site partners and external stakeholders during the preparation, demonstration, evaluation and impact assessment activities of each demo case.
- WP6 “Dissemination, Stakeholder Engagement and Business Innovation” since the methodology and guidelines provided in the DMP will complement the communication and dissemination strategies described in deliverable D6.1 (Communication, Dissemination and Engagement Plan), in order to ensure an efficient communication and dissemination of the project results with specific attention to the sharing of data. Moreover, the DMP will apply to the results of task 6.3 *Exploitation and Business Innovation Planning* and task 6.4 *New data sharing-driven business models for prosumers and local energy communities*.



## 2 Data Summary

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Section 2 provides the most important information and specifics about the data that will be generated, collected and used by the SYNERGIES project during the implementation of its activities.

On the one hand, indeed, it is of foremost importance to clarify the purpose of the data collection and management activities within SYNERGIES, with specific attention to how such a purpose is related to the project objectives. Moreover, a clear overview of the roles concerning data management within the consortium is provided. On the other hand, this section will focus on more technical insights in relation with the types and formats of the data that will be collected, as well as its expected size and origin. This includes information on potential re-use of existing data. Data utility will also be addressed: this will clarify to whom the data generated/collected might be useful.

As previously stated, SYNERGIES will collect existing data from the three demo sites as well as generate new data within the execution of the project activities.

The data collected and generated by SYNERGIES will be critical to deliver the envisioned project results linked to the creation of a reference implementation for an Energy Data Space increasingly involving all the energy data value chain stakeholders, especially prosumers and to the foreseen bundle of data-driven and intelligence-enabled digital solutions and energy services. Moreover, the results will be disseminated (according to the FAIR data principles, further discussed in section 3) to ensure a wide knowledge transfer and the official recognition of the project's outcomes.

### 2.1 SYNERGIES Data Management Roles and Responsibilities

As per the individual responsibilities on data management within the SYNERGIES project consortium, the roles are assigned as follows:

- the Project Coordinator (TXT) is identified as the **Data Protection Officer** (DPO) of the project, ensuring the overall proper data management and monitoring within the project in compliance with the existing data protection rules, as per with article 39 of the General Data Protection Regulation (GDPR)<sup>5 6</sup>. In addition, the DPO will provide advice where requested as regards the data protection impact assessment and monitor its performance, as well as act as the contact point for the supervisory authority on issues relating to processing and to consult it, where appropriate, with regard to any other matter<sup>7</sup>. Moreover, the DPO is the owner of the project shared repository folder, managing the access rights and permissions;
- the Technical Coordinator (Suite5) supports the Project Coordinator in the monitoring of the compliance with the data protection rules. They also identify project data and technical results that may be appropriate for publication, and monitor the dataset availability, integrity and compatibility for use by different partners throughout the project's duration;
- partners with strong expertise in legal matters (Arthur's Legal) will be involved as a further guarantee that the procedures described are up to date and compliant with the existing policies and that they are applied accordingly;
- the Communication and Dissemination Manager (TXT) identifies publications suitable for publication in the considered repositories and manages the publication on the Open Access platforms;

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<sup>5</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.

<sup>6</sup> Art. 39 of the General Data Protection Regulation, Tasks of the data protection officer. Available online at <https://gdpr.eu/article-39-tasks-of-the-data-protection-officer/>

<sup>7</sup> ibidem

- Each individual partner identifies their own project results suitable for publication and shares the published scientific articles with the Project Coordinator and the Dissemination and Communication Manager.

## 2.2 SYNERGIES Data Asset Landscaping Process

The data asset landscaping process is built on the use of a spreadsheet, which will act as a living document to record the data assets, that:

- (a) are already available by the demo partners,
- (b) will be made available by the demo partners in the course of the project,
- (c) are expected to be needed by the demo partners to run their demo cases or
- (d) are available by relevant open source repositories.

The template is distributed to the demo partners and is used to gather information about the data assets, spanning a variety of factors, in accordance with the guidelines and with the assistance of provided examples.

In particular, four categories of data assets will be taken into account for the requirements of the data management plan:

- Data assets that are currently accessible and will be used for the purposes of the SYNERGIES project;
- Data assets that will be made accessible as a result of actions carried out to fulfil the requirements of the SYNERGIES project;
- Data assets collected for SYNERGIES's purposes through public sources, such as weather information or local-specific information, to supplement the information already accessible and advance the planned objectives;
- Data assets that will be produced as a result of the analysis of the data already in existence, such as analytics results.

Datasets can be categorized as Public, Proprietary, and Confidential (i.e., data that should not be shared outside the consortium) in the context of SYNERGIES.

The detailed definition of the different types, formats and standards of the data to be collected, processed and/or generated during the project is taking place in the framework of WP5, where the data assets available from the SYNERGIES demo partners are identified in T5.1 "Ex-ante demo sites auditing and data landscaping". Such an activity will create thorough knowledge around the data sources that will be handled and managed during the project.

The preliminary documentation and information from the project's demo partners has already been collected and registered in a dedicated spreadsheet, which is stored in the project shared repository (described in detail in D1.1). The metadata requested in the spreadsheet are structured in different categories as follows: general info, data asset features, data asset availability, data asset rights, data analysis, data asset assessment.

The tables below provide an overview of the info provided for the data assets in each of the above-mentioned sections of the spreadsheet.

### General Info

<b>Demo Country</b>	[The name of the demo site country, i.e., Greece, Spain, Denmark]
<b>Dataset ID</b>	[Unique identifier following the convention "Country_Partner#no"]
<b>Data Asset Title</b>	The title of the data asset
<b>Description</b>	A brief description of the data asset - At least 2-3 lines to give an overview of the data



<b>Date of Last Update</b>	The date of the last update of the specific spreadsheet
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Table 1: "General Info" section of the data landscaping spreadsheet

Data Asset Features

<b>Volume</b>	[X GBs / records / transactions per hour / day / month / in total]
<b>Type</b>	[Text / Image / Video / Audio / Other]
<b>Format</b>	[csv, xml, json, other]
<b>Veracity</b>	[Raw, Pre-processed, Processed Data asset]
<b>Velocity</b>	[Real-time, Near Real-time, Batch]
<b>Historical Data Availability</b>	Details about the historical data availability
<b>Temporal Coverage</b>	[From ... To...]
<b>Temporal Resolution</b>	[The temporal "granularity" of the data, e.g., per minute / hour / day / month]
<b>Spatial Coverage</b>	[Locations]
<b>Spatial resolution</b>	[The spatial "granularity" of the data, e.g., at district / zone / building / area level or number of prosumers]
<b>Language</b>	[e.g., English, Italian, German, Greek, ...]
<b>Relevant Standards</b>	[List the international standards to which a data asset complies]
<b>Dependency / Linking to Other Sources</b>	[Y/N, If Y, list the other sources or codelists]

Table 2: "Data Asset Features" section of the data landscaping spreadsheet

Data Asset Availability

<b>Data Asset Owner</b>	The name of the data asset owner
<b>Data Asset Available from 3rd Party</b>	[Y/N]
<b>Data Asset Provider</b>	The name of the data asset provider in SYNERGIES
<b>Accessibility Method for Historical Data</b>	[Through API, As downloadable file, As database extract, Other]
<b>Accessibility Method for New Data</b>	[Through API, As downloadable file, As database extract, Other]
<b>Frequency of Updates for New Data</b>	[Real-time, Every X minutes / hours, Daily, Weekly, Monthly, Yearly, other]
<b>Update Strategy</b>	[Append new data / Replace existing data / other]
<b>Documentation</b>	The documentation of the API or data sample (incl. the location and the name of the file in the SYNERGIES repository). The documentation should include a sample of 30 rows of the data (e.g., for a csv, the 1st row must have the columns of the dataset), and the columns that appear need to be explained (definition, measurement unit if any)

Table 3: "Data Asset Availability" section of the data landscaping spreadsheet

Data Asset Rights

<b>Privacy</b>	[Confidential (not to be shared at all) / Proprietary (to be stored locally and shared with appropriate licensing with the demonstrator partners) / Private (to
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	be shared in the cloud with appropriate licensing within the demonstrator & potentially to be traded with other stakeholders in SYNERGIES) / Public (available to all)]
<b>License</b>	[Exact Licence that is currently applied, e.g., CC Attribution-NonCommercial-ShareAlike (CC BY-NC-SA), or Case-by-Case Bilateral Agreement]
<b>Sharing Mode</b>	[Exact Licence that is currently applied, e.g., CC Attribution-NonCommercial-ShareAlike (CC BY-NC-SA), or Case-by-Case Bilateral Agreement]
<b>Data Asset Consumer(s)</b>	The list of consumers (in the demonstrator) that are interested in the specific data asset
<b>Pricing</b>	[Per Transaction / To be "exchanged" with other dataset-bartering / Subscription / PAYG / N.A.]
<b>Need for Anonymization</b>	[Y/N depending on whether the data asset contains sensitive or personal data]

Table 4: "Data Asset Rights" section of the data landscaping spreadsheet

Data Analysis

<b>Types of analysis currently conducted on data</b>	[e.g., Correlation analysis for..., Predictive analytics for...]
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Table 5: "Data Analysis" section of the data landscaping spreadsheet

Data Asset Assessment

<b>Accuracy</b>	[Measure of correctness and precision, e.g., whether the dataset is error-free, Ranked 1 (Low) - 5 (High)]
<b>Completeness</b>	[Degree to which a data asset is sufficient in scope, depth, Ranked 1 (Low) - 5 (High)]
<b>Timeliness</b>	[How long a data asset remains up-to-date]
<b>Relevance to specific demonstrator</b>	[The list of related demo cases where the data asset will be used]
<b>Importance</b>	[How critical a data asset is for the demonstrator, Ranked 1 (Low) - 5 (High)]
<b>Rationale</b>	[Explain the reasons for importance ranking]

Table 6: "Data Asset Assessment" section of the data landscaping spreadsheet

As already mentioned, the project demonstrators have already started providing the requested information, yet it is not to be considered exhaustive: the file will be considered as "live" and updated throughout the project, should any new asset or data asset be available.

The following table includes a simplified overview of the data asset landscaping information provided so far by the SYNERGIES demo partners. The detailed profile of each data asset will be made available in D5.1 and in the SYNERGIES platform.



Demo Country	Data Asset Title	Volume	Type	Format	Language
Greece	<ul style="list-style-type: none"> <li>• AMI Data - Consumers</li> <li>• AMI Data - Producers</li> <li>• Metering data for non-telemetered</li> <li>• SCADA data</li> <li>• GIS data</li> <li>• Single-line diagrams of MV lines</li> <li>• Outage data</li> <li>• Flexibility data</li> <li>• Asset Inspection &amp; repair</li> <li>• Transformer data</li> <li>• Smart Metering Data</li> <li>• TS Topology</li> <li>• SCADA</li> <li>• GIS data</li> <li>• Measurements of P, Q, V, I per substation</li> <li>• Visual &amp; IR imagery</li> <li>• Smart Metering Data</li> <li>• Storage Device</li> </ul>	Varying	<ul style="list-style-type: none"> <li>• Text</li> <li>• Image</li> <li>• Other</li> </ul>	<ul style="list-style-type: none"> <li>• .csv</li> <li>• .json</li> <li>• .png</li> <li>• .kmz</li> <li>• Sav</li> <li>• Pdf</li> <li>• jpeg</li> </ul>	<ul style="list-style-type: none"> <li>• English</li> <li>• Greek</li> </ul>
Spain	<ul style="list-style-type: none"> <li>• Grid topology</li> <li>• Real time data per secondary substation (P, Q, V, I)</li> <li>• Active and reactive power consumption and generation</li> <li>• DERs location</li> <li>• DERs real time data</li> </ul>	Varying	<ul style="list-style-type: none"> <li>• Text</li> </ul>	<ul style="list-style-type: none"> <li>• .csv</li> </ul>	<ul style="list-style-type: none"> <li>• English</li> </ul>
Denmark	<ul style="list-style-type: none"> <li>• AMI Data - Consumers/producers</li> <li>• Customer metadata</li> <li>• Real time Smart Metering Data</li> <li>• Indoor temperature, humidity etc</li> <li>• Heat pump data</li> <li>• Inverter data</li> <li>• Wind turbine data</li> <li>• EV-charger data</li> <li>• data for power grid</li> </ul>	Varying	<ul style="list-style-type: none"> <li>• Text</li> </ul>	<ul style="list-style-type: none"> <li>• .csv</li> </ul>	<ul style="list-style-type: none"> <li>• Danish</li> <li>• English</li> </ul>

Table 7: Overview of the data asset information provided so far by the SYNERGIES demo site partners



## 2.3 SYNERGIES Results

Data will be generated by SYNERGIES through its results, namely its deliverables and technology solutions. Such results will be widely disseminated towards both the general and a more targeted (scientific/sector specific) public.

The project results will be shared with the public through standard dissemination materials (presentations, flyers, newsletters, video, pictures...) as well as through scientific publications and articles. This will mainly be the responsibility of the Communication and Dissemination Manager, with the support of all the partners.

Responsible partner	Data type	Format	Utility
Communication and Dissemination manager + support from all partners	Dissemination materials: presentations, flyers, newsletters, video, scientific publications, articles	.pdf, .jpg/png, .mov	The general public will be introduced to the project results to spark interest in the solution and reach an increasingly wider audience. The scientific public will be able to know the more technical aspects of the SYNERGIES results; this is aimed at increasing their interest and trust in the solution for future scale-up.

Concerning scientific publications and articles, such data will be disseminated and stored, in an anonymized way where requested, on Open Access and Open Science platforms, such as Zenodo, as described in detail in D6.1 Dissemination, Communication and Engagement Plan.

A precise template has been provided to the project partners to report on such data that are published, specifying the main information about contents and selected platform for dissemination.

Scientific Publication/Article	
<b>Title</b>	< Include the title of the publication >
<b>Author(s)</b> SYNERGIES participants on bold	< Author1, N.; <b>Author 2</b> , N., ... >
<b>Place of Publication</b>	< Include Title of the Journal / Proceedings / Books series / Magazine /etc. >
<b>Type of Publication</b>	< Article in Journal / Publication in Conference / Workshop proceedings / Book / Chapter in a Book / Thesis / Press /etc. >
<b>Number, date or frequency of the Journal / Proceedings / Book</b>	<fill in if applicable>
<b>Relevant Pages</b>	<fill in if applicable>
<b>DOI</b>	<mandatory for scientific publications>
<b>ISBN</b>	<fill in if applicable>
<b>Repository Link</b>	< please share the public link to the publication (official or self-archived)>
<b>Publisher</b>	



<b>Location</b>	< physical location in case of a conference >
<b>Year of Publication</b>	
<b>Is this publication available in Open-Access, or will it be made available?</b>	Available in Green Open Access Yes <input type="checkbox"/> No <input type="checkbox"/> Available in Gold Open Access Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>Is this a peer-reviewed publication?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>Is this a joint public/private publication?</b>	Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>SYNERGIES keywords</b>	#hashtag1 #hashtag2 #hashtag3

*Table 8: template to report on SYNERGIES scientific publications contents and details on archive of choice*



## 3 FAIR Data Policies

Section 3 provides information concerning the approach adopted within SYNERGIES to comply with the existing European Commission’s guidelines on Open Science, in particular Open Access to Research Data. According to said guidelines, it is strongly endorsed that data and results of publicly funded research are made available openly in order to enhance the efficiency in research collaboration and speed up innovation, according to the widely recognised FAIR principles.

The FAIR data principles are guiding principles to promote the use and reuse of analytical data sets to improve systems and processes, fuel research and generate knowledge.

FAIR data sets are findable, accessible, interoperable and reusable<sup>8</sup>.

- *Findable* – Data sets should be easy to find for both humans and computers. Each asset is assigned a persistent identifier and metadata to make it easily located.
- *Accessible* - Once the data are found, it should be easy to access them, and any authorisation processes should be clear. Common protocols, platforms and access methods should make the data readily available to the intended audience.
- *Interoperable* – Data should be easily combined with other data and work within standard applications. Standard terminologies, code sets and exchange formats ensure that data can be shared and used in this way.
- *Reusable* – Data sets should be well-described so that they can be used for multiple purposes. Being clear about the provenance of the data set and any licensing requirements makes this possible.

The following paragraphs will describe the SYNERGIES strategy to comply with the European guidelines on FAIR principles.

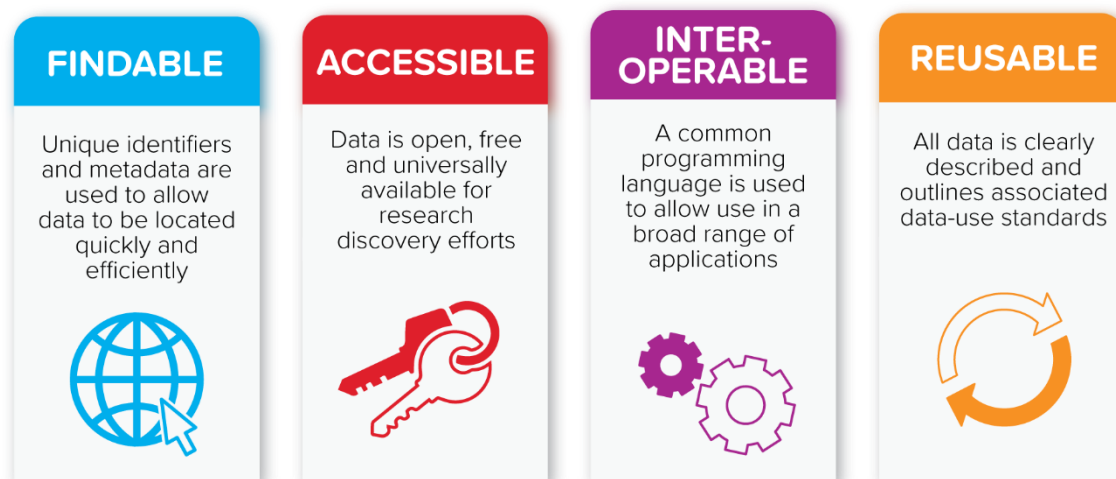


Figure 1: FAIR data principles

<sup>8</sup> European Commission, Data Management. Available at [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm)



## 3.1 Making data findable

Identification and localisation means will be used for the data to be available and processed during the SYNERGIES project. The data to be generated in SYNERGIES project will be identifiable through unique identification mechanisms and appropriate metadata. Files will be uniquely identifiable by using standardised name conventions and clear versioning. These conventions for the documents and data sets - are already provided in D1.1 Project Management Plan.

To enable efficient distinction of the generated data assets, SYNERGIES uses standardized names and identifiers. As a general guideline, each data asset's title should include information about the following: the project name, the data asset title, the data asset kind (e.g., data, deliverable, scientific paper), and a version number that will be updated in response to new data asset versions or modifications (starting from v0.1).

As per Open Access platforms (i.e., Zenodo), each publication will be identified through the following metadata (as described in section 2.3):

- Title
- Author(s)
- SYNERGIES keywords
- SYNERGIES Grant details
- Place of Publication
- Type of Publication
- Number, date or frequency of the Journal / Proceedings / Book
- Relevant Pages
- Digital Object Identifiers - DOI
- ISBN
- Repository Link
- Publisher
- Location
- Year of Publication

Some specific keywords have been created to tag the SYNERGIES related content (as described in D6.1), such as: synergiesproject, energydataspace, horizeurope. This will optimize the findability and the possibilities for re-use of data results and enhance the outreach of the project.

### 3.1.1 Data Assets Identification Mechanisms

As stated above, SYNERGIES proposes to use the project website as the primary instrument for publishing the public deliverables while using the Zenodo repository as the main tool for making research result data findable in compliance with the HE Open Access Mandate. Upon uploading a data asset to an online data repository, a Digital Object Identifier (DOI) will be issued for the purpose of efficient and long-lasting citation. A Digital Object Identifier (DOI) is a special alphanumeric string that is provided by a registration agency (in this example, the International DOI foundation) to identify content and provide a persistent link to where it is located on the internet. To make it easier for end users to find and connect to project-related publications, each one of them will be marked with a special DOI.

Additionally, metadata descriptions for all project data assets are anticipated as described in Section 2.2. Data that give context or extra information about other data are referred to as metadata. Researchers can discover data in an online repository thanks to metadata, which enhances the likelihood that a data asset will be reused. The grant agreement number and the project acronym will be added to every upload as typical Zenodo Metadata. Version control is another feature offered by Zenodo, while all submitted items are given relevant DOIs.



Researchers can quickly decide if a data asset is relevant to their research thanks to the availability of extensive and precise metadata. The appropriate metadata also offer a tangible perspective of the data being utilized in the project, irrespectively of accessibility constraints, in addition to data ingestion and reusability requirements.

For open access to scientific articles, the bibliographic metadata have to follow a standard format and contain the following information:

- the "European Union (EU)" and "Horizon Europe" terms;
- the name of the action, the grant number, the acronym;
- the publication date and the length of the embargo period (if any);
- persistent identification.

The partner that owns the data has the responsibility of versioning control when data assets need to be updated. The partner must make sure that only the most recent version of any publicly available data is released. It is important to provide more details on the data acquisition and storing procedure. The description and location of data assets kept in a database may be found using metadata information, which can then be linked to each individual data item. Recommendations and best practices for dealing with Open Data, such as the Dublin Core Metadata Initiative, DCAT and CKAN, are taken into consideration.

### *3.2 Making data openly accessible*

As previously mentioned, the majority of the data assets provided by the demo site partners are confidential (proprietary or private), therefore none of it can be shared openly as primary data. Similar conditions apply to the data that will be fed into the SYNERGIES solutions and that will be generated by and for the users, as well as to the general data of the project and of the consortium partners (such as the contractual documents, mailing lists including names, emails and telephone numbers, organisation logos, meeting minutes and interim working material for the project activities) which is stored on the SYNERGIES shared repository (further described in section 4).

However, data gathered, processed and collected by SYNERGIES, namely the project results, will be made openly accessible for dissemination purposes, in compliance with the Open Access and Open Science principles endorsed by the European Commission. The disseminated data will be anonymised before being shared openly, observant of the GDPR issues.

Anonymised data and results will be made openly accessible and disseminated through various channels:

- Thematic events and workshops: project partners will attend the most relevant thematic events, workshops and fairs it is functional to all phases of SYNERGIES. It will contribute to raise project awareness, to liaise with potential stakeholders, to present the project results and prepare the ground for their exploitation.
- Open Access platforms: scientific publication and articles will be made openly accessible on Open Access and Open Science repositories, such as Zenodo.
- Website: the SYNERGIES webpage<sup>9</sup> will be used as Open Access repository where (anonymised) non-confidential interim results and published project deliverables as well as are more general articles and publications. Moreover, a link to the Zenodo page will be added.

The SYNERGIES Open Data will be made accessible through a variety of relevant channels depending on the data kinds that are available for release. Table 9 lists the potential methods for publishing the various data kinds. Only the project website and its social media accounts (LinkedIn) have been used

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<sup>9</sup> Available at <https://energydataspaces.eu/>

so far, among all publication channels. When appropriate content is available for publication through them, all additional channels will be activated.

Data type	Publication Channels
<b>Datasets</b>	Project Website, Zenodo, OpenAIRE
<b>Deliverables</b>	Project Website, Zenodo, OpenAIRE
<b>Dissemination material</b>	Project Website, Social Media, OpenAIRE, Zenodo
<b>Software</b>	Github
<b>Scientific publications</b>	Project Website, ResearchGate, Zenodo, open access journals, research oriented social media

*Table 9: Lists of potential methods for publishing the different data kinds*

All open and fully accessible public datasets, scientific papers, and deliverables will be uploaded to Zenodo. At the time of publication, research data needed to verify the results of the scientific paper will be stored in a data repository and made available to interested parties. Publications and data assets will be connected through the usage of unique identifiers (DOI versioning). However, due to privacy concerns, non-anonymous or commercially-sensitive datasets with the dissemination level tag "confidential" will not be disseminated. Instead, they will be preserved in a secure repository to which only approved consortium members have regulated access.

### 3.2.1 Open Access Mechanisms

The term "open access" refers to the practice of offering online access to scientific information that is free to the end-user and re-usable, such as peer-reviewed research articles published in academic journals or research data underlying publications (e.g., statistics, experimental results, measurements, raw or curated data). When discussing the dissemination of open access information, two open issues must be addressed:

- Define the open access (OA) type of data and, if the data are to be kept secret or of limited access, explain the reasons for it.
- Decide on the type of open access to be allowed to a publication.

There are two methods for rendering scientific articles open access:

1. Self-archiving / "Green" open access: Up to a 12-month period prior to publication, during publication, or after publishing, the published article or the final peer-reviewed manuscript is preserved in an online, publicly available repository. Open access is often only given once an embargo period has passed (usually 6 months).
2. Instant access to the published paper in open access mode is known as "Gold" open access. In this instance, the funding body for the study (a university, institution, etc.) bears the publication expenses rather than subscribers. In other instances, subsidiaries or other funding sources are used to offset the expenses of open access publication.



Question	Answer
Is a result necessary to support a scientific conclusion or does it offer others anything of value?	If Yes, the result is classified as public (i.e., granted for open access).
	If No, the result is classified as non-public (e.g., a code part that is very specific to a platform), it is usually of no scientific interest to others, and it does not add any significant contribution.
Is there any further personal information in a result besides the author's name?	If Yes, the result is classified as non-public. Any personal information other than the name must be removed in order to be publishable, according to the ethics management plan of the project.
Does a result make it possible to identify people even without their names being mentioned?	If Yes, the result is classified as non-public. This case is also covered by the SYNERGIES ethics management plan towards anonymizing user identities (e.g., employing abstraction, dummy users, or non-intersecting features).
Can a result be utilized in a way that is against societal standards and project ethics, or for a purpose that is not wanted by society at large?	If Yes, the result is classified as non-public. This case is managed by the project ethics management plan.
Does a result contain the confidential information of one or more project partners?	If Yes, the result is classified as non-public. Any business or trade secrets need to be removed in accordance to partner requirements prior to being published.
Is a technology of an ongoing, project-related patent application named by a result?	If Yes, the result is classified as non-public. The result can be published once a patent has been filed.
Are security interests breached for any project partner, through a result?	If Yes, the result is classified as non-public.

*Table 10: Methodology to define whether, when and how the result should be made public*

The following actions should be taken in order to disseminate the project results after classifying the various data assets produced or gathered by each unique partner:

- Specify the way the data is distributed.
- Specify the procedures or software needed to access such data; decide if software documentation is required; and, if practical, include the pertinent open-source code.
- Specify the metadata, documentation, and code associated with the data repository.
- Provide the option to download deemed-useful and private data under the Open Data Commons Open Database License (ODbL).
- Specify which registry, if any, Open Data will be added to.
- Specify how access will be granted if there are limits on dissemination.

### 3.3 Making data interoperable

This DMP element focuses on evaluating data interoperability and outlines the standards, processes, and data and metadata vocabularies that must be adopted in order to achieve interoperability. Additionally, it specifies if a standard vocabulary will be used for each type of data to enable cross-disciplinary interoperability. To ensure interoperability within SYNERGIES, the following criteria must be fulfilled, when handling different types of data:

- If the data fall under a category having widely used, well-known open formats, those formats should be utilized.
- If the data do not fit into the preceding category, a format that is machine-readable should be utilized.

It needs to be noted that when it comes to the data assets sharing/exchange per se, the SYNERGIES solution will make them more interoperable through its novel mechanisms to map and transform the data according to the provisions of the SYNERGIES network of sectorial data models (created in the context of the T3.1 activities). Such a network is built based on existing standards/ontologies/data models that are maintained by international standardisation initiatives and have been embraced by stakeholders in each sector.

### 3.4 Increase data re-use

As previously mentioned, data about the project and its results will be made public solely in an anonymised form. However, the SYNERGIES consortium aspires to increase the potential outreach of all (public/private) data assets in the SYNERGIES Energy Data Spaces, making them accessible at metadata level to eligible third parties according to the applicable access policies, and at the actual data level to stakeholders with an active data contract. This procedure will be governed by the applicable access policies, and the appropriate licenses and contract terms agreed between the involved stakeholders. The terms of the contract dictate how the data will be reused, shall include any necessary declaration of confidentiality and shall be signed online in the SYNERGIES platform by the authorised representatives of each organization.

With regard to the SYNERGIES public data, according to the Zenodo platform's policies, data published and stored may be deposited under closed, open, or embargoed access. Data deposited under closed access are protected against unauthorized access at all levels. Access to metadata and data files is provided over standard protocols such as HTTP and OAI-PMH. Therefore, data re-use is subject to the license under which the data objects were deposited. The license to be used will be assessed on case-by-case basis. However, SYNERGIES aims to have its overall results as visible as possible to both the general and the scientific/sector specific audience in view of the future scale-up of the SYNERGIES solution and the general acknowledgement and acceptance of the project's reference framework for Energy Data Spaces; therefore, where possible data will be made open and reusable.

The Zenodo platform guarantees that the data will be retained and made re-usable (when applicable based on the selected license) for the lifetime of the repository. This is currently the lifetime of the host laboratory CERN, which currently has an experimental programme defined for the next 20 years at least<sup>10</sup>.

Finally, data published on the project website are open and re-usable. They will be available to the public and re-usable as long as the website hosting will be active. No indication has been discussed yet concerning the duration of the website hosting beyond the project lifetime (i.e., after February 2025).

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<sup>10</sup> Zenodo General Policies, available at <https://about.zenodo.org/policies/>



As part of the work under T1.3, "Ethics monitoring and IPR management," any new information will be available in the updated DMP version, since the process of decision-making linked to Data Use licences is currently in progress.

### *3.5 Allocation of resources*

This subsection presents the economic aspects of SYNERGIES commitment to making the data generated/collected available according to the FAIR principles.

In terms of cost, no expense is foreseen linked to making data available. Data (i.e., results) will be processed and stored within existing tools, which are already in place and whose costs are already covered. (Ex. Open access platform such as Zenodo to publish scientific results and anonymized data).

From the perspective of the data assets from the demo sites, the necessary costs of making the (public/private/confidential) demo data available, interoperable and accessible through the Energy Data Spaces have been already estimated in the project's DoA. All project partners are committed in ensuring that the necessary Energy Data Spaces infrastructures will be available as planned and that all necessary data to run the demo cases will be made available and accessible through the SYNERGIES Energy Data Spaces.

However, should any cost occur for DMP-relevant activities during the project execution, it will be evaluated whether no alternative option is available. If the cost is necessary, it will be covered entirely by the project coordinator. The cost will fall under the coordinator's budget allocated to "Other costs".

This is due to the coordinator's role as main responsible for the Data Protection Officer role (as described in D1.1).



## 4 Data Security

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Section 4 describes the main provisions that have been put in place to guarantee data security, applied to every data gathered, generated or reused by SYNERGIES. In the context of the DMP, data security is addressed in terms of data recovery as well as secure storage and transfer of sensitive data.

The general data of the project and of the consortium partners (such as the contractual documents, mailing lists including names, emails and telephone numbers, organisation logos, meeting minutes and interim working material for the project activities) is stored on the SYNERGIES shared repository, as described in detail in D1.1. Only people who are officially granted access by the folder owner (the Project Coordinator) according to the General mailing list can read and modify the contents on the shared repository. The shared repository is based on a SharePoint environment, belonging to the Project Coordinator within its server infrastructure. This ensures long-term preservation and curation of the files included in the folder, also beyond the project lifetime. Moreover, it does not entail additional costs to keep the shard folder active after the end of the project. The repository is based on Microsoft SharePoint on cloud Office 365 infrastructure. The SharePoint environment is created through Microsoft Office platform; therefore, data security will leverage on the Microsoft security standards.

As previously mentioned, the anonymised data about project results will be made openly accessible on several repositories and platforms. Thus far, these platforms include Zenodo and the SYNERGIES website.

The data on Zenodo are protected by the platform' security guarantees (as already described in section 3.4): files protected against unauthorized access at all selected access levels. All data files are stored in CERN Data Centres, primarily Geneva, with replicas in Budapest. Data files and metadata are backed up nightly and replicated into multiple copies in the online system. Moreover, to guarantee data authenticity, all data files are stored along with a MD5 checksum of the file content and regularly checked against their checksums to assure that file content remains constant. In case of closure of the repository, Zenodo ensures to integrate as possible all content into suitable alternative<sup>11</sup>.

Data security about data published and stored on the SYNERGIES website is managed in compliance to the existing legal regulation on the issue (e.g., EU Regulation 2016/679 - General Data Protection Regulation). Detailed information is available on the website Cookies<sup>12</sup> and Privacy Policy<sup>13</sup> sections. They will be subject to modification should any update in the general policies of reference occur.

From a data asset perspective, to assure data security and privacy, the SYNERGIES platform will leverage and extend the data security functionalities of the H2020-SYNERGY Platform with more sophisticated anonymization methods and access control, while enforcing contract terms monitoring in the different Data Fabric Environments, while anticipating on-demand, performant, transaction-based data encryption over the data transfer and the selection of the preferred storage modality (either on federated premises or in the SYNERGIES Energy Data Space cloud storage). This means that encryption keys will be automatically generated and securely exchanged in a peer-to-peer manner between the stakeholders with whom a data asset is shared. Therefore, only the required personnel will have access to the data and, even in the remote case of a possible data leak or server hack, the data will be fully encrypted and thus virtually fully non-accessible.

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<sup>11</sup> Zenodo General Policies, available at <https://about.zenodo.org/policies/>

<sup>12</sup> SYNERGIES website Cookies Policy, available at <https://energydataspaces.eu/cookies-policy/>

<sup>13</sup> SYNERGIES website Privacy Policy, available at <https://energydataspaces.eu/privacy-policy/>





The responsible project partners for the project infrastructures will ensure that the data are backed up on an appropriate frequency and stored on a secure location for the project's lifetime.

The consortium will determine whether long-term data preservation is necessary at the project's completion. The EU's OpenAIRE recommendations should be taken into account while choosing a suitable repository. The relevant partners will maintain the datasets; hence each partner's data protection officer will be responsible for carrying out their individual data protection responsibilities. Any new policy (if required), will be present in the updated Data Management Plan versions in the Periodic Management Reports.



## 5 Ethical aspects

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This section discusses ethical aspects of data sharing and processing in SYNERGIES and gives particular emphasis to the notions of data ownership and control over data. In deploying data-driven technologies, especially those that collect and share personal data, it is crucial that the stakeholders retain control of the data generated by them. Adhering to one of the key principles set out in the European Union's Declaration on Digital Rights, namely putting people at the centre; enabling individual control represents, is a central element to this notion. Therefore, this section focuses on a number of legal considerations arising from the EU laws that may have impact over data processing activities in the project. Therefore, it is recommended for the consortium partners to take into account these legal considerations when processing data and to take necessary actions in order to empower the individuals and to give them control over their data. The work captured in this section including the recommended technical specifications for ethical compliance will be continuously developed in accordance with the tasks T2.4 - Architecture Design and Technical Specifications and T1.3 - Ethics Monitoring and IPR Management until the end of the project.

### 5.1 Introduction to Data Ownership and Control

The ownership of data is a complex issue which is far from straightforward, and it often leads to confusion between legal practitioners and non-legal professionals on the meaning of the term "ownership". In the legal domain, the concept of ownership is understood as an exclusive right to use, possess, and dispose of a property, which could be restricted only by the rights of persons having a superior interest and by agreement where the owner is a part of or by law. It is therefore considered as a property right enabling the right holder to enjoy, use, sell, rent, give away, or even destroy a property or a part of it.

However, the dominant view in legal theory rejects individual ownership of data and does not recognize property rights over mere facts or information.<sup>14</sup> Particularly the civil law, the dominant legal system in continental Europe, recognizes a limited number of property rights as an absolute right, *erga omnes*, and a limited number of objects that can be subjected to these property rights. In other words, property rights can only be vested in objects that are sufficiently specific and individualised.

Data as defined in the recent EU legislation, the Data Governance Act, "*any digital representation of acts, facts or information and any compilation of such acts, facts or information, including in the form of sound, visual or audio-visual recording*"<sup>15</sup> is limitless, can be endlessly duplicated, several people can use it at once. Therefore, it is difficult if not impossible to exclude third parties, unless one manages to keep data secret, it can be duplicated and used by others.<sup>16</sup> Due to the specific nature of data, it fits uneasily with the legal concept of "ownership". In that regard, neither EU nor its Member States currently provide for legislation that grant explicit "ownership right" on data from property law perspective.<sup>17</sup>

Instead of "ownership as property right", the concept of "ownership as control" is generally accepted and well-established in the European legal framework. In fact, this could be seen in the European Commission's Communication on "A European Strategy for Data", Open Data Directive, Data

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<sup>14</sup> Hummel, P., Braun, M. & Dabrock, P. Own Data? Ethical Reflections on Data Ownership. *Philos. Technol.* 34, 545–572 (2021)..

<sup>15</sup> Data Governance Act, Article 2(1). It should be noted that the same definition is also proposed by the European Commission in the proposal for a data act.

<sup>16</sup> Ibid.

<sup>17</sup> European Commission, Directorate-General for Communications Networks, Content and Technology, Legal study on ownership and access to data: final report, Publications Office, 2016.



Governance Act, General Data Protection Regulation (GDPR), Digital Markets Act<sup>18</sup> and the proposal for a Data Act<sup>19</sup>. These legislations basically focus on giving individuals and organisations “power” to control the flow of data and the way it is used including i.e. the availability of effective means for data subjects to exercise control over her data<sup>20</sup> or to a capability of being self-determined with regard to the use of its data.<sup>21</sup> Since it is about being in control of how the data is processed and of what purposes, there is no transfer of a property of data as such. Therefore, the use of the concepts of data holders, data controllers, data subjects and data producers instead of data owner in the project is suggested for the project deliverables.

In any case, the absence of ownership-related legal rights does not exclude the fact that there are numerous legislations at EU level that have an impact on data or that may grant some kind of protection to certain types of data or on datasets (i.e. copyrights, sui generis rights and trade secrets). These rights arise from IP law and confer the right holder broad protection and control over the use of certain types of data. The details of these rights are provided in the deliverable D1.1 Project Management Plan submitted in M3 of the project.

Depending on the type of the data, i.e. whether it is personal data or not, or depending on the identity of the data holder, i.e. whether data is held by public sector bodies or not, different EU regulations provide for different rules on the control over and access to data.

## 5.2 Control over Personal Data

For personal data, the GDPR aims to give control to the individuals over how their personal data is handled with private or public entities.<sup>22</sup> For this purpose, the regulation not only grants data subject a number of rights to further strengthen the control over his or her own data, i.e. data subject rights, and but also lays down several legal obligations for organisations limiting their use of such data.

As explained in detail in the deliverable D1.1 – Project Management Plan<sup>23</sup>, controllers are required to comply with the principles of data protection and the relevant legal requirements when processing personal data including duplicating or sharing such with third parties. For example, data controllers are prohibited to process personal data without having one of the legal bases in place or without providing information on data processing to data subject, to transfer personal data outside the EU is also prohibited except under certain conditions, to share personal data with third party for a purpose that is incompatible with those initial purposes for which personal data is collected or to keep the personal data longer than what is necessary for achieving the purposes for which the personal data is processed. It should be also noted that these limitations are also applicable to the secondary use of personal data or processing of personal data that has already become public.

In SYNERGIES project, the data subject rights, and the legal limitations will come into play if the data assets to be used in the project contains personal data. This means that the consortium partner processing personal data should take all necessary actions in order to respect the control of the data

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<sup>18</sup> Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act) (Text with EEA relevance).

<sup>19</sup> European Commission, Proposal for a Regulation (EP & Council) on harmonised rules on fair access to and use of data (Data Act), COM(2022)68.

<sup>20</sup> Hummel, P., Braun, M. & Dabrock, P. Own Data? Ethical Reflections on Data Ownership. *Philos. Technol.* 34, 545–572 (2021).

<sup>21</sup> European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "Building A European Data Economy", COM/207/09; N. Purtova, 'Do Property Rights in Personal Data Make Sense after the Big Data Turn?', *Tilburg Law School Legal Studies Research Paper No 21* (2017), at 8–9.

<sup>22</sup> General Data Protection Regulation, Recital 7.

<sup>23</sup> Please see Chapter 6.2.2 “Compliance with the EU Privacy and Data Protection Laws” of D1.1-Project Management Plan dated 30/11/2022.



subject concerned. Therefore, it would be prudent for the consortium partners to evaluate whether the datasets that they process contain personal data or not. As noted in D1.1, in case personal data is processed, it is recommended for the consortium partners first to determine the applicable legal basis. In the context of prosumers, the legitimate interest of the consortium partners or the performance of the contract to be executed with the participants are the recommended legal basis under the GDPR to consider. It should be also taken into account that individuals can withdraw their consent at any time and once withdrawn, the data controller should immediately delete the personal data and cease the processing of the personal data concerned. Therefore, the consortium partners are suggested to start with assessing whether their legitimate interest could apply or whether there is a contract that require processing of personal data of the individuals. If these legal bases could be not used, the consortium partners may rely on consent for their data processing activities.

In case of the use of consent, it should be unambiguous, free and informed to assure the individual's control over his and her data. In other words, the data subject has to be well informed about the processing and give a statement or a clear affirmative action of his or her agreement with that processing without being and feeling compelled to do so. Accordingly, consent will not be considered to be free if the data subject is unable to refuse or withdraw his or her consent without detriment or the consent is bundled up as a non-negotiable part of terms and conditions.<sup>24</sup> Moreover, for the consent to be informed, it is recommended that the consent form includes the following information:

- (a) the controller's identity,
- (b) the purpose of each of the processing operations for which consent is sought
- (c) what (type of) data will be collected and used,
- (d) the existence of the right to withdraw consent,
- (e) information about the use of the personal data for automated decision-making that could have significant impact over the individuals concerned,
- (f) on the possible risks of transfers of their personal data without having the Commission's adequacy decision and appropriate safeguards in place.<sup>25</sup>

To avoid detrimental impact of withdrawal of consent, as mentioned in the previous sections, it is recommended to anonymise the personal data which has been collected based on that consent. In this way, once consent is withdrawn, the controller would not be required to delete anonymised data since it is no longer considered as personal data as per the GDPR.

Another limitation on the use of datasets containing personal data is the transparency obligation. Accordingly, the data controller is required to provide certain information, relating to processing to the data subject in a concise, transparent, intelligible and easily accessible form, i.e. privacy notice, using clear and plain language. The privacy notice should be given in a written format, including by electronic means. According to the GDPR and the EDPB, where personal data are collected directly from the data subject, the privacy notice should be provided to the data subject, at the time when personal data are obtained, with all of the following information:

- a) the identity and the full contact details of the data controller,
- b) the contact details of the data protection officer, where applicable,
- c) the purposes of the processing for which the personal data are intended as well as the legal basis for the processing,
- d) if the processing is based on the legitimate interest, the legitimate interests pursued by the controller or by a third party,
- e) the types of personal data to be processed,

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<sup>24</sup> European Data Protection Board, Guidelines 05/2020 on consent under Regulation 2016/679, Version 1.1, 4 May 2020.

<sup>25</sup> European Data Protection Board, Guidelines 05/2020 on consent under Regulation 2016/679, Version 1.1, 4 May 2020.

- f) where is the personal data obtained from, if it wasn't from directly data subject. In other words, the source from which the personal data originate, and if applicable, whether it came from a publicly accessible source,
- g) whether or not the personal data will be shared with a third party and if so, information about that party, including whether the personal data will be transferred to outside the EU and if so, to which third countries and what are the relevant safeguards implemented to protect the rights and freedoms of the data subject,
- h) how long the data controller holds personal data for before getting rid of it securely,
- i) data subject rights, including right to withdraw consent, when processing is based on consent and right to lodge a complaint with a supervisory authority,
- j) the existence of automated decision-making including profiling and, if applicable, meaningful information about the logic used and the significance and envisaged consequences of such processing for the data subject.

If the personal data is not obtained directly from the data subject, the privacy notice should be provided at the latest within one month after obtaining the personal data.<sup>26</sup> It should be noted that by the provision of these information to the data subject, the limits of the data use has already been drawn up by the controller and any data processing activity not complying with these information could be considered as breach of the GDPR.

In the specific case of the SYNERGIES project, it should be noted that the partners leading the pilots are likely to be considered as data controller of the data processing in their respective pilot and the consent form/privacy notice should be tailored to each pilot in their local languages. Therefore, it is recommended for the pilot partners to ensure the compliance of their pilot activities with the GDPR and to draft privacy notice and where applicable, consent form accordingly.

### 5.3 Control over Non-Personal Data

Concerning non-personal data, control over or access rights to such data are often regulated by contractual norms. But the proposal for a Data Act aims to introduce certain access rights with respect to non-personal data, similar to the data portability rights for personal data set out under the GDPR, for individuals and legal entities. Furthermore, Data Governance Act lays down a supervisory framework for the provision of data intermediation services where certain limitations on data sharing activities including bilateral or multilateral exchanges of data or the creation of platforms or databases enabling the exchange or joint use of data are introduced in order to strengthen the control of individuals and to support them in the exercise of their rights including with respect to the use of certain data including making informed choices. Lastly, Digital Market Act<sup>27</sup> sets forth obligations and limitations for certain group of platform service providers with respect to use of non-personal data generated by the business user or individuals. Overall, these horizontal regulations have a significant impact in data ecosystems as they empower the individuals and where applicable businesses over the use of the non-personal data generated by them.

### 5.4 Control over Data Held by Public Sector Bodies

Open Data Directive<sup>28</sup> and Data Governance Act regulate access rights to data held by public sector bodies in the EU. Particularly, the directive lays down a legal framework for the reuse of public-sector information, including high value datasets, held by public-sector bodies or public undertakings, and of

<sup>26</sup> General Data Protection Regulation, Articles 13 and 14; Article 29 Working Party, Guidelines on transparency under Regulation 2016/679, 11 April 2018.

<sup>27</sup> Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act).

<sup>28</sup> Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information.



publicly funded research data for commercial and non-commercial purposes by private entities. According to Article 5 of Open Data Directive, public-sector bodies and public undertakings must make their data available in any pre-existing format or language and, where appropriate, by electronic means in formats that are open, machine readable, accessible, findable and reusable, complete with their metadata. Given that these Union laws limits the control of public-sector bodies over the datasets they hold, the relevant limitations and obligations will be taken into account by the consortium partners qualifying as public-sector body or public undertaking (as described in section 2 and section 3).



## 6 Conclusions and Next Steps

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The present DMP illustrates the current methodology and tools set up by SYNERGIES to manage and guarantee the protection of data generated, gathered and processed within the project.

Precise roles have been identified within the consortium in order to create a system of shared responsibility where each entity (DPO, Technical Coordinator, Communication and Dissemination Manager) plays a complementary part in data management, in terms of data protection and compliance with existing data management regulations (DPO), identification of suitable data for publication (Technical Coordinator) and subsequent identification of suitable platform for publication and dissemination (Communication and Dissemination Manager). Support by consortium partner with strong expertise in legal matters will be fundamental to guarantee that the data management within SYNERGIES is carried out in compliance with the existing policies.

In terms of the data that will be generated and collected, the detailed definition of the different types, formats and standards of such data is in progress. During the first six months of the project, data asset landscaping and specific dataset specification has been the focus activity. The information was provided by the demonstration site partners (DSOs and TSOs), who own the data assets. Data generated will also be in the form in project results, such as deliverables and technology solutions.

In compliance with the European Commission's guidelines on Open Access to publicly funded Research Data, SYNERGIES data and results will be made available openly in order to enhance the efficiency in research collaboration and speed up innovation, according to the widely recognised FAIR principles.

However, the majority of the SYNERGIES data assets are confidential (proprietary or private), hence none of it can be shared openly as primary data. Therefore, the disseminated data will be anonymised before being shared openly, observant of the GDPR issues.

Anonymised data and results will be made openly accessible and disseminated through various channels, (e.g., thematic events and workshops, Open Access platforms, Open Access journals, the project website, Github...) depending on the data kinds that are available for release.

Identification and localisation means will be used for the data to be available and processed during the SYNERGIES project. Moreover, specific strategies have been envisioned to enable cross-disciplinary interoperability. In addition, the SYNERGIES solution will make data more interoperable through its novel mechanisms to map and transform the data according to the provisions of the SYNERGIES network of sectorial data models.

As previously mentioned, data about the project and its results will be made public solely in an anonymised form. However, the SYNERGIES consortium aims to maximise the potential outreach of all data assets in the SYNERGIES Energy Data Spaces, making them accessible at metadata level to eligible third parties according to the applicable access policies, and at the actual data level to stakeholders with an active data contract.

Data security, in terms of data recovery as well as secure storage and transfer of sensitive data, will be guaranteed by the policies foreseen by the specific platform where the data is stored. From a data asset perspective, to assure data security and privacy, the SYNERGIES platform will leverage and extend the data security functionalities of the H2020-SYNERGY Platform with more sophisticated anonymization methods and access control. The responsible project partners for the project infrastructures will ensure that the data are backed up on an appropriate frequency and stored on a secure location for the project's lifetime.



Ethics considerations play a critical role in the management of data, especially considering the multiple actors that are involved in the data management and processing within SYNERGIES. Therefore, it is crucial that project partners follow the general guidelines provided in this in terms of possible legal limitations on data use including duplicating, sharing, collecting data from different perspectives, i.e. use of personal data, non-personal data and the data held by public sector bodies, under the context of data ownership and control.

In compliance with the EC guidelines on data management, the provisions set out in this DMP will be updated over the course of the project whenever significant changes arise, such as (but not limited to):

- new data
- changes in consortium policies
- changes in consortium composition and external factors<sup>29</sup>.

Moreover, the DMP will be maintained up to date with any significant change of the EC's policies on Open Access and Data Management.

However, if no such event occurs, the present document will be updated with the most recent available information in time with the periodic evaluation/assessment of the project in the management reports at M12, M30 and M42.

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<sup>29</sup> European Commission, Data Management. Available at [https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management\\_en.htm](https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm)





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