NATURSEA-PV
NOVEL ECO-CEMENTITIOUS MATERIALS AND COMPONENTS FOR DURABLE, COMPETITIVE, AND BIO-INSPIRED OFFSHORE FLOATING PV SUBSTRUCTURES

D7.3 – Data Management Plan (DMP)

Project information

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Dissemination Level

PU	Public, fully open, e.g., web (Deliverables flagged as public will be automatically published in CORDIS project's page)	**x**
SEN	Sensitive, limited under the conditions of the Grant Agreement	
Classified R-UE/EU-R	EU RESTRICTED under the Commission Decision No2015/444	
Classified C-UE/EU-C	EU CONFIDENTIAL under the Commission Decision No2015/444	
Classified S-UE/EU-S	UE/EU-S – EU SECRET under the Commission Decision No2015/444	

Document Log

Version	Date	Description of Change
V1.0	31/03/2023	First draft
V2.0	11/04/2023	First draft of the whole document
V2.1	21/04/2023	Revisions
V3.0	24/04/2023	Final document

Explanatory note about the content of this document

This document has been created based on a template developed by Tecnalia's services for administrative deliverables in Horizon Europe projects and information extracted from the Data Management Plans of previous project coordinate or participated by Tecnalia. Therefore, although its content has been adapted for NATURSEA-PV, the overall structure and parts of the text might be common to other projects (mainly BASAJAUN-862942 and MIRACLE-964450).

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List of abbreviations

CC BY-NC	Creative Commons NonCommercial
CC BY-ND	Creative Commons NoDerivs
COMM	Commercialization
CRIS	Current Research Information System
DFT	Density Functional Theory
DMP	Data Management Plan
DOI	Digital Object Identifier
EU	End User
FAIR	Findable, Accessible, Interoperable, and Reusable
FEM	Finite Element Methods
Fig.	Figure
GB	Gigabyte
HTS	High-Throughput Screening
IPR	Intellectual Property Rights
KG	Knowledge Generation
LCOE	Levelized Cost Of Energy
TB	Terabyte
UHPC	Ultra High Performance Concrete
WP	Work Package

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1 Executive summary

The Data Management Plan (DMP) is the reference document for the appropriate management of the data collected, processed and/or generated within the project NATURSEA-PV. This document is produced in the context of task T7.3 Data management, and it will be issued as deliverable D7.3.

This document describes the types of data to be collected, processed and/or generated within the project; the data management procedures in line with FAIR (Findable, Accessible, Interoperable, and Reusable) principles; the resources allocated for data management and storage; the provisions made to ensure safety of the data; and the measures to prevent potential ethical and/or intellectual property issues.

This Data Management Plan will be available to the project participants in the relevant folder of the internal shared storage, and will also be published on the project's public website (www.natursea-pv.eu). This Data Management Plan will be reviewed in M18 and M36.

2 Introduction/Data summary

The purpose of the Data Management Plan is to describe:

- the types of data to be collected, processed and/or generated within the project;
- the data management procedures in line with FAIR (Findable, Accessible, Interoperable, and Reusable) principles;
- the resources allocated for data management and storage;
- the provisions made to ensure safety of the data;
- and the measures to prevent potential ethical and/or intellectual property issues.

This document will be issued as D7.3 Data Management Plan. This first version of the Data Management Plan will be delivered in M6 (April 2023) of the project, and it will be revised in M18 and M36.

The NATURSEA-PV project does not foresee the use of large amounts of external data, other than bibliographic documents (journal articles, standards, regulations…) and/or experimental data already owned by the participants. On the contrary, it will produce different types of data that will vary considerably in volume depending on the nature of the activities to be carried out. These activities can be divided in three main groups: technology development, impact and regulatory assessment, and outreach. Technology development will take place mainly in WPs 1-4, impact and regulatory assessment in WP5, and outreach in WP6. The types of data that will be generated and/or used in NATURSEA-PV are summarized in Table 2.1. Such data are necessary for the development of the project by NATURSEA-PV consortium. The preferred tool for internal data sharing is Microsoft SharePoint, and a shared folder has already been created by Tecnalia for the exchange of information with specific subfolders for each WP.

In addition, data of interest for professionals, the research community, and/or the general public not subjected to IP restrictions will be shared preferentially as part of peer-reviewed Open Access publications in accordance with the provisions of the Grant Agreement.

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Table 2.1 Data generated and/or used in NATURSEA-PV.

WP	Type of data	Description	Expected Size	Main Formats
1	Designs	Designs of precast concrete components of the substructure will be produced in the form of drawings, and the parametric study of different design options will consist of collections of numerical values.	50GB	.dwg .dat .xlsx
2	Experimental Results	The objective of WP2 is the development of eco-UHPCs and bio-based coatings. Therefore, generated data will refer to the composition and preparation procedure of the materials (T2.1, T2.2, T2.3), and their performance (T2.4): strength, durability, chemical/phase composition, rheology… Photos and videos will also be taken to document materials development process and their temporary evolution	100GB	.dat .xlsx .docx .xrdm .jpg
3	Simulation Results	The simulation toolkit uses experimental data for calibration and as required inputs, produces data regarding thermodynamic properties of eco-cements; chloride diffusion coefficients by DFT methods; high-throughput screening (HTS) of database of soft and hard biobased monomers; predictions of monomer reactivity ratios using a meta dynamic approach; and FEM meso-scale simulations of mechanical properties of eco-UHPC for the durability analysis.	1TB	.m .txt .docx .xlsx .pdf .lammpstrj
4	Experimental Results	Testing and validation of the conceptual substructure, materials and individual components will take place at the lab and at the sea. Some information will be recorded in live by sensors and cameras, and the rest will be obtained by analysis of the specimens in the laboratory at the end of the test.	100GB	.mp4 .dat .xlsx .csv
5	Non-Technical	This work package involves three different types of activities: The review of bibliographic information for the assessment of the potential environmental impact, and planning and regulatory requirements. Feedback activities (interviews, surveys…) with stakeholders to grasp the social perception. The estimation of the LCOE from the data obtained in technical WPs and external data.	5GB	.xlsx .dat .docx .pdf .mp4
6	Non-Technical	Dissemination activities involve the production of dissemination materials (videos, brochures, papers… and the registration and analysis of the feedback obtained from stakeholders (registry logs, questionnaires…)	50GB	.xlsx .dat .docx .mp4 .pdf
7	Non-Technical	Project meetings will be recorded. Besides, agendas, minutes, deliverables, etc. will be produced using preferentially Microsoft Word or equivalent text editing software. Final versions will be converted to pdf.	50GB	.mp4 .docx .pdf

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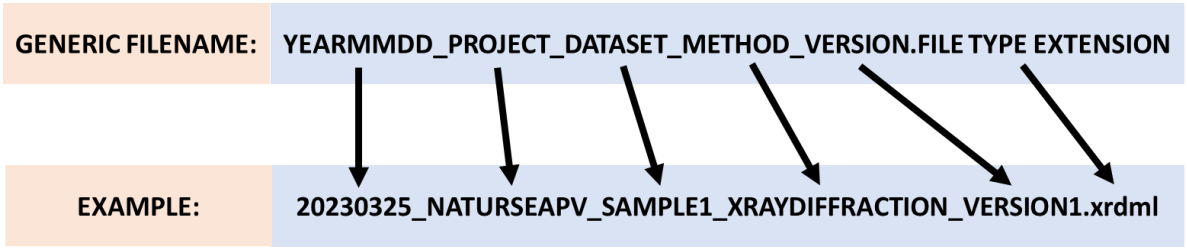
2.1 Making data findable, including provisions for metadata

According to the H2020 Program Guidelines on FAIR Data, data should be "as open as possible and as closed as necessary", "open" in order to foster the reusability and to accelerate research, but at the same time they should be "closed" to safeguard the privacy of the subjects and to allow exploitation. In consequence, NATURSEA-PV will share some datasets in a general-purpose repository like ZENODO.

The preferred identifier for the stored data will be the so called DOI (Digital Object Identifier) because it guarantees, at the same time, unique identification of the individual datasets and the possibility of automatic data retrieval. In addition, metadata will provide information such as the dataset title and description, the dataset creator and publisher (ownership and author, eventually with specific reference to other project outcomes), licenses, intellectual property rights, etc.

The consortium will give a clear and hierarchical structure to the generated datasets to facilitate their traceability. As far as possible, files will be uniquely identifiable and versioned according to the following convention (Fig. 2.1): date, project name, dataset name, method used, version number and file type extension.

Figure 2.1 Generic filename and example of name of a datafile.



The partner generating the data must ensure that research outputs and datasets are cross-referencing each other (for example scientific publications and related data). Apart from the data backup facilities of the participating institutions, the private Project SharePoint/Teams folder can also be used for additional backup.

2.2 Making data openly accessible

Sharing the outputs of the project is a part of the spirit of NATURSEA-PV in order to maximize its impact and outreach, and to accelerate scientific and technological development. However, prior to making them publicly available, it is necessary to ensure that this does not jeopardise their future exploitation.

According to Section 8 of the Consortium Agreement, any data generated in NATURSEA-PV will be owned by the Party that generated it. Besides, each beneficiary is responsible for their records and documentation in relation to data generated, which must be in line with the accepted standards in the respective field (if they exist). The owner of the data is also responsible for choosing the appropriate format and sharing it with the other partners if required for the development of the project. To avoid data losses, beneficiaries must take measures to ensure that data are backed-up.

All data generated in NATURSEA-PV will be initially considered as confidential by default. Non-personal data may be made public upon approval by its owner and the IPR Committee (Steering Committee). The general process followed for each dataset collected or generated prior to making it publicly available will be the following (Fig. 2.2):

- The partner that generated the data determines whether the data should be classified as personal data or not. Personal data will always be considered as confidential.
- A copy of the data is shared with project partners by uploading them to the SharePoint folder of the project. Project partners can use the data for the implementation of NATURSEA-PV. However, shared

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data and derived results will always be considered as confidential unless otherwise indicated by their owner and the Steering Committee.

- The IPR Committee (Steering Committee) will decide, altogether with the owner of the data, on the most convenient exploitation or dissemination path for the results derived from the data, if any.
- Data with commercial or academic interest will only be made public upon IP protection, or publication in peer-reviewed open access journals, of derived results. Non-exploitable data with potential social or academic interest will also be made public to maximize the impact of NATURSEA-PV. In any case, according to the provisions of Annex 5 of the Grant Agreement, a beneficiary that intends to disseminate its results must give at least 15 days advance notice to the other beneficiaries, who have 15 days to object.
- Data with a potential commercial interest that cannot be protected will stay confidential. Nevertheless, according to the provisions of Annex 5 of the Grant Agreement, it is the obligation of the beneficiaries to use their best efforts to exploit their results directly or to have them exploited indirectly by another entity.
- Each WP leader will be responsible for depositing public data in an appropriate open access online repository according to the provisions of the Data Management Plan.

Figure 2.2 Data lifecycle and publication routes.

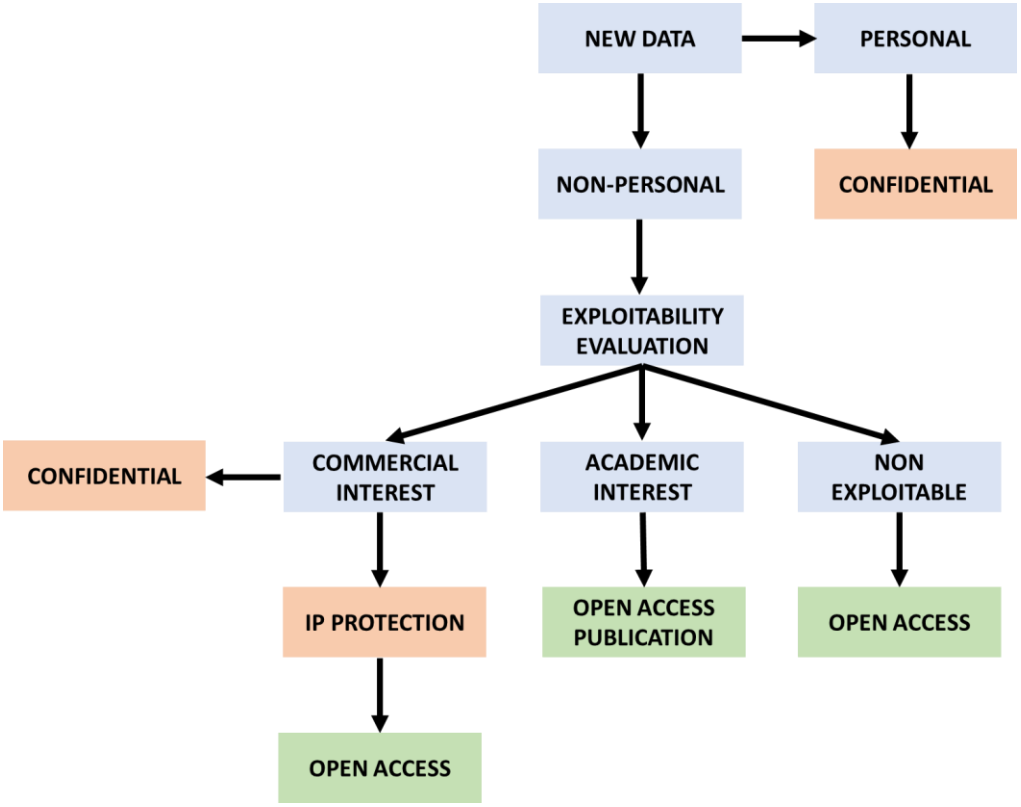

Table 2.2c of part B of the grant agreement (see Table 2.2 below) already foresaw some exploitable results that might require, at least, temporal confidentiality of the obtained results. Such table will be revised and updated in coming versions of the Data Management Plan.

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Table 2.2 Preliminary exploitable results identified in the Grant Agreement.

Key Exploitable Result	Type of exploitation*	Steps required for actual exploitation	Application - Target Groups (Time to exploitation after project)	Link to objectives and impacts
New mix design for the production of eco-UHPC	IPR/KG	Patenting/Further ID/Industrial scale up	Construction sector, ready mix concrete makers, builders, precast companies (0-2 years)	EO1, EO3, EO4, MI1, MI3, MI5
Method for the synthesis of biobased waterborne polymer dispersion for concrete	IPR/KG	Patenting	Latex producers, paint and coating sectors (2-3 years)	EO1, EO3, EO4, MI1, MI3, MI5
Curing methods to enhance the performance of concrete	IPR/KG	Patenting/Further ID/Industrial scale up	Construction sector, builders, precast industry (0-2 years)	EO1-EO3, MI1-MI6
Definition of human, social, and environmental aspects of Floating PV	KG/EU	Regulatory compliance to ensure acceptability of new technology	Regulators, marine users, commercial developers, local communities (0 years)	EO3, EO4, MI3, MI5
Guidelines for planning and management requirements of Floating PV	KG	Regulatory compliance to be used by regulators in planning future floating PV structures	Regulators, planners, commercial developers (0 years)	EO1, EO2, MI3, MI4, MI5, MI6
Substructure's components (beams, floater, and connection ring) design and production technology	IPR/COMM	Industrial scale-up, regulatory compliance	Offshore floating PV project developers, (2.5 years)	EO1, EO3, EO4, MI1-MI6
Improved predictive models/tools for materials properties	IPR/KG	Optimization, licensing, protection, regulatory compliance.	Construction/ Engineering/Software companies (3 years)	EO1, EO2, EO3, MI1, MI2, MI4, MI6

*KG: Knowledge generation; EU: End User; IPR: Development; COMM: Commercialization

The preferred tools of NATURSEA-PV for sharing public information are:

- Peer-reviewed open access scientific journals
- NATURSEA-PV website
- ZENODO repository

NATURSEA-PV has strong research component that should produce a relevant number of peer-reviewed open access scientific articles and publications. All of them will be based, with a different degree of processing and analysis, on the datasets collected and generated within the project. Sharing the original research dataset

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is part of the FAIR principles' implementation that, whenever possible, will be applied by publishing the datasets linked to scientific papers in open data repositories. Besides, as stated in Section 5 of the Quality Assurance Plan, project partners must ensure that:

- A machine-readable electronic copy of the published version or the final peer-reviewed manuscript accepted for publication is deposited in a trusted repository for scientific publications no later than the time of publication.
- Immediate open access is provided to the deposited publication via the repository, under the latest available version of the Creative Commons Attribution International Public Licence (CC BY) or a licence with equivalent rights; for monographs and other long-text formats, the licence may exclude commercial uses and derivative works (for example CC BY-NC, CC BY-ND).
- Information about any research output is given via the repository, or any other tools and instruments needed to validate the conclusions of the scientific publication.
- They retain sufficient intellectual property rights to comply with the open access requirements.
- 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.

2.3 Making data interoperable

A large percentage of NATURSEA-PV data result from a relatively small number of experimental and monitoring activities. Nevertheless, project partners will be encouraged to use, as far as possible, standard data exchange formats and protocols. In particular, it is recommended to follow OpenAIRE guidelines for online interoperability, publication repositories, data archives, Current Research Information Systems (CRIS), etc. Such guidelines can be found at: https://guidelines.openaire.eu/en/latest/.

More detailed information on how to make data interoperable will be included in subsequent versions of the Data Management Plan, once first data are generated making it possible to estimate more realistically their volume and characteristics.

2.4 Increase data re-use (through clarifying licences)

NATURSEA-PV will produce novel experimental and simulation data of interest for the industrial and scientific communities. As explained in section 2.2 and depicted in Fig. 2.2, most of such data are intended to be made public. In general, exploitable data will require an embargo period to allow their protection or the publication of related results in open access scientific articles. Non-exploitable data will be made available as soon as possible. Besides, a whole portfolio of dissemination activities is foreseen to let scientists and professionals know about the obtained results (including the existence of the datasets), and to increase the outreach and the impact of the project.

Datasets uploaded in the ZENODO repository will be freely accessible after an embargo period determined per dataset if required.

More detailed information on how to make data interoperable will be included in subsequent versions of the Data Management Plan, once the first sets of data are generated, when it is possible to estimate more realistically their volume and characteristics.

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3 Allocation of resources

Data management is part of Task 7.3 of the work plan included in the Grant Agreement. Specific budget allowance has been allocated to Tecnalia for data storage in the cloud. This includes the storage space and required services to collect and query the data. Tecnalia has created a SharePoint folder for the exchange of information among partners. Access to the folder is restricted to the participants of NATURSEA-PV.

Publication of peer-reviewed open access research papers, and other public technical documents, is part of WP6 Dissemination, Communication, and Exploitation. Costs related to publication in full open access venues for peer-reviewed scientific publications are eligible for reimbursement, under the conditions defined in Annex 5 of the Grant Agreement. Specific budget has been allocated to all project partners, under the category of "Other goods and services", for dissemination, communication, and exploitation activities, including open access publication of peer-reviewed research articles.

4 Data security

Data security addresses two main issues: data preservation and access control. Data preservation makes reference to the safe storage of raw data, understanding as safe their preservation free from any type of alteration. It is the responsibility of the data owner, i.e. the party that generated the data, to store the original version of the data in his own facilities and protecting it from unauthorised access. It is also the responsibility of the data owner to upload a copy of the generated data to the SharePoint project folder (hosted by Tecnalia) for back up and for sharing with the other partners. If some data cannot be shared with all project partners for a justified reason, the owner of the data must ensure their back up his own means. Besides, he must also find the way to control and restrict the access to the data, granting free access only to the authorised partners. Public datasets will be stored in trusted and verified repositories for public data like ZENODO.

Access control relates to the prevention of unauthorized access to the original data or any of their copies. In general terms, all project partners will be granted access to all data generated in the project. The preferred tool for data sharing within NATURSEA-PV is the SharePoint project folder hosted by Tecnalia. Tecnalia will grant access to the SharePoint project folder only to the people designated by each project partner. Each project partner must ensure that only authorized people make use of the granted permissions. In case any person stops taking part in the project, the related project partner must communicate it to Tecnalia, at least 15 days in advance, so that Tecnalia can revoke their access to the SharePoint project folder by the time the person leaves the project. Project partners must also prevent unauthorized access to any project data, either original or not, stored by them anywhere different from the SharePoint project folder.

5 Ethical aspects

Section 14.1 of the Grant Agreement states that "The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles". Specific measures to ensure the implementation of NATURSEA-PV to such ethical standards are described in Section 5 of D7.2 Quality Assurance Plan. In the particular case of data management, such measures can be summarized as:

- All NATURSEA-PV partners will ensure that personal data will be kept confidential and treated according to the European National personal data protection laws applicable in their respective country.
- All NATURSEA-PV partners will ensure that generated data are sound and have been obtained by good practices like the scientific method.

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- All NATURSEA-PV partners will ensure that research data are processed and communicated in an honest, transparent, fair, and unbiased way.
- All NATURSEA-PV partners must use data in a responsible way and recognise each other's legitimate ownership.

No particular ethical issues related to the nature of the data are envisaged. All data resulting from interviews, questionnaires, or any other types of interaction with people will be analysed taking into account the gender perspective.

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