



INSPIRE

Innovative Solutions for Plastic Free European Rivers

Deliverable 7.3

Data Management Plan

Version 2

Date of Delivery: 29.11.2023

Dissemination Level: PUBLIC

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Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them. This project has received funding under grant agreement No 101112879 (INSPIRE).

Document Information

Grant Agreement	101112879
Project Acronym	INSPIRE
Project Title	Innovative Solutions for Plastic-free European rivers

Deliverable Number	D7.3
Work Package Number	WP7
Deliverable Title	Data Management Plan
Lead Beneficiary	Vlaams Instituut voor de Zee (VLIZ), 999599939
Author(s)	VLIZ, WUR, INFOR, UCA, VITO
Due Date	29.11.2023
Submission Date	29.11.2023
Dissemination Level	PU ¹
Type of Deliverable	DMP ²

Version 1.0	19.11.2023, Charlotte A.L. Dhondt
Version 1.1	28.11.2023, Charlotte A.L. Dhondt (Reviewed by Ana Isabel Catarino, Tim H.M. van Emmerik, Marko Petelin, Daniel González Fernández, Liesbeth De Keukelaere)
Version 2.0	28.11.2023, Charlotte A.L. Dhondt, Ana Isabel Catarino, Tim H.M. van Emmerik, Marko Petelin, Daniel González Fernández, Liesbeth De Keukelaere, Gert Everaert

Citation: Dhondt, C.A.L.; Catarino, A.I.; van Emmerik, T.H.M.; Petelin, M.; González-Fernández, D.; De Keukelaere, L.; Everaert, G. (2023). Deliverable 7.3: Data management plan INSPIRE. Version 2. Vlaams Instituut voor de Zee (VLIZ): Oostende. 26 pp. <https://dx.doi.org/10.48470/112>



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¹ Dissemination level: **PU**: Public, information as referred to in European Commission Decision 2015/844

² Type of deliverable: **DMP**: Data Management Plan



Acronyms

Acronym	Description
AI	Artificial intelligence
D	Deliverable
DMP	Data Management Plan
DOI	Digital Object Identifier
DPIA	Data Protection Impact Assessment
EMODnet	European Marine Observation and Data network
EURIPOL	European River Plastic Pollution Index Model
FAIR	Findable Accessible Interoperable Reusable
GDPR	General Data Protection Regulation
IMIS	Integrated Marine Information System
INFOR	Infodata Sistemi, Italy
INSPIRE	Innovative Solutions for Plastic Free European Rivers
IPR	Intellectual Property Rights
M	Month
MDA	Marine Data Archive
PID	Persistent Identifier
RIDUC	River Plastic Reduction Calculator
RITA	River Plastic Transport and Accumulation Model
RLDB	Riverine Litter Database
T	Task
TADB	Technologies and Actions Database
TU Delft	Technische Universiteit Delft (Technical University Delft), The Netherlands
UCA	Universidad de Cádiz (University of Cádiz), Spain
VITO	Vlaamse Instelling voor Technologisch Onderzoek (Flemish Institute for Technological Research), Belgium
VLIZ	Vlaams Instituut voor de Zee (Flanders Marine Institute), Belgium
WP	Work Package





Executive Summary

This deliverable is the initial Data Management Plan (DMP) of the INSPIRE project. It provides an overview of the data and other research outputs that will be (re)used and generated within this project, and describes how these will be handled during and after the project. More specifically, the DMP addresses how the data will comply to the FAIR principles, and key data management aspects are being discussed, including documentation, quality control, standardization, storage, accessibility, reusability, security. In general, the INSPIRE project will apply the FAIR principles and current best practices and standards regarding management of (plastic) litter monitoring data as much as possible for managing its data and other research outputs. This DMP will get an update during the project's lifetime.



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1. Introduction

The INSPIRE project's primary objective is to significantly reduce litter, including macro- and microplastics, in European rivers, encompassing inland and transitional waters, through a holistic approach. The INSPIRE objectives fit within the EU Mission objective “to protect and restore the health of the ocean and waters through research and innovation, citizen engagement and blue investments.” INSPIRE has joined the Mission Ocean, Seas and Waters charter for joining efforts in preventing and reducing plastic pollution and the project brings together 20 technologies and actions to achieve this goal, using the following steps:

- Detection: Identifying pollution in rivers.
- Collection: Retrieving litter and plastics from rivers.
- Prevention: Implementing strategies to prevent litter, macro-, and microplastics from the aquatic environment. This involves a) collecting waste from its streams before it reaches the river and b) developing alternatives for currently non-degradable polluting products to avoid the latter entering rivers and ocean as litter.

The project defines six use cases where partners will develop, deploy, install, and test these technologies and actions. These elements converge to form a Master Plan, addressing the challenges and contributing to the objectives of Mission Ocean and Clean Waters. The technical feasibility is supported by a techno-economic analysis, including the development of business cases, action plans for upscaling and replication, and comprehensive mapping and modelling.

The INSPIRE project ensures visibility through dissemination efforts, targeted activities, such as participation in festivals promoting the use of 100% biodegradable products resulting from INSPIRE, and participation in international conferences and policy events.

The INSPIRE consortium comprises 26 partners from countries across Europe and Thailand with complementary expertise, fostering a balance of academia, industry, communication specialists, and other organizations. Together, they are dedicated to achieving successful solutions that can effectively enter the market, placing INSPIRE at the forefront of implementation and use by both industry and civic society, fostering innovation, citizen engagement and blue investment.

INSPIRE is a Horizon Europe project funded by the European Union under Grant Agreement No 101112879. For more information follow us on social media or visit our website:

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2. Data Management Plan

This initial Data Management Plan is part of WP7 of the INSPIRE project. It gives an overview of the data and other research outputs that will be (re)used and generated within this project and describes how these will be handled during and after the project. This DMP is based on the “Horizon Europe – Data Management Plan” template (V1.0, 2021-05-05). The first draft version of the DMP was created by using the DMPonline tool (<https://dmponline.be/>) in which this template and additional guidelines are incorporated. Internal reviewers have been selected from the project consortium to review this first draft and provide specific input. The first draft was adapted accordingly and resulted in a second version, which is this deliverable. The purpose of the DMP is to ensure that the project provides qualitative and harmonized research outputs which are findable, accessible, interoperable, and reusable (FAIR) and open (as much as possible).

The DMP is closely linked to deliverables 1.2 and 6.1 of the INSPIRE project. More detailed information can also be found in the project Proposal and the Grant Agreement.

2.1. Data overview

Several different research outputs, including data, will be generated and (re)used within the INSPIRE project. An overview of these research outputs, together with their format, volume and origin, is given in Table 1.

New data on riverine litter will be generated in WP1 under Task 1.2 (Monitoring of microlitter) and Task 1.3 (Monitoring of macrolitter) and in WP2. Existing data and information on riverine litter will be collected via a literature review and integrated into a newly generated Riverine Litter Database (RLDB) [Task 1.1.1, WP1]. Data sources to be consulted include: scientific publications, scientific datasets, technical reports, formal national assessments, and citizen science data.

Since this project will deploy several litter retention and removal technologies, the impact and efficiency of these technologies will be assessed in WP1 and WP2. Therefore, new environmental data will be generated in WP1 under Task 1.4 (Environmental impact assessment of litter & plastic removal technologies). Also, existing (historical) biological, physical, and chemical data, and related monitoring and environmental datasets, will be used to perform an environmental impact assessment of the technologies used within this project and improve benchmarking Key Performance Indicators and advanced reporting in the Impact Evaluation Dashboard [T4.4, WP4].

Information on existing technologies and actions to tackle (plastic) litter pollution will be gathered in a Technologies and Actions Database (TADB).

Two modelling tools and one decision support tool will be developed based upon existing and new data [WP1, WP4]. Data coming from these tools will flow to the Impact Evaluation Dashboard. An AI



model for detection of litter will be built, based upon earlier developed tools and trained by images collected within this project [WP1].

Furthermore, another aspect of this project is that stakeholder groups (identified within the project) will be consulted via a survey to assess their needs and concerns [WP6].

Another type of research output generated is the protocols and reports used and written for this project. These documents serve for knowledge transfer and also provide relevant and necessary information to better understand the methodologies used and the data that was collected.

Data and results (re)used and generated during the INSPIRE project will be used to populate the RLDB, to feed the modelling framework and the decision support tool and, eventually, to develop action plans to help achieve the overall objective (see section '1. Introduction' for the project description). See also the project Proposal and Grant Agreement for further details.

Outside of the INSPIRE project, the data and other research outputs of this project might also be useful for:

- Policymakers (such as local, regional, national and European authorities)
- Researchers and research performing institutes
- Companies and institutes involved in detection, prevention and mitigation of plastic pollution

Table 1. Overview of the data and other research outputs generated or reused in this project, with the expected digital file formats, the expected size and the origin/provenance.

Research output	Generate/reuse	Expected file format(s)	Estimated total data volume	Origin/provenance
Data (type):	Generate:	-	-	-
Macro-, meso- and microlitter and microplastic experimental data (release-catch)	Generate [WP1]	.csv .xlsx Documentation: .pdf	<1GB	<ul style="list-style-type: none"> ● Release – catch experiments ● Mantanet ● Ferrybox
Microplastic monitoring data	Generate [WP1]	.csv Images: .jpg; .png	<10GB	<ul style="list-style-type: none"> ● Mantanet ● Ferrybox ● Van veen grab ● Spectroscopy



Macro- and mesolitter monitoring data, observations, and capture and cleanup data	Generate [WP1; WP2]	.csv .xlsx Documentation: .pdf; Bridge-mounted cameras: <ul style="list-style-type: none"> Operational RGB set-up: .mp4, .JPEG Ad-hoc Multispectral set-up: .tiff (16-bit); Drone data: <ul style="list-style-type: none"> Multispectral or RGB: .tiff; Floating Litter: <ul style="list-style-type: none"> Object detection: JSON Flux: .csv; Litter at riverbanks: <ul style="list-style-type: none"> Object detection: JSON Litter maps: mosaicked image .tiff 	>1TB	<ul style="list-style-type: none"> Visual observations Cleanups (manual and technologies applied) Smartphone app and citizen science Drone Camera Floating and suspended nets
Biodiversity, physical and chemical data	Generate [WP1]	.csv	<1GB	In situ measurements
Noise, carbon emission and energy	Generate [T1.4, WP1]	.csv .xlsx	<5GB	Technologies used



consumption data from instruments		.pdf Images with graphs: .png		
Micro- and nanoplastics data	Generate [WP2]	.csv .xlsx Documentation: .pdf	<1GB	Filtration and retention systems
Questionnaires, surveys, interviews	Generate [WP6]	.csv .xlsx .pdf .docx	<1GB	Stakeholders, experts
Retention efficiency data for micro- and nanoplastics	Generate [WP2]	.csv .xlsx Documentation: .pdf	<5GB	Technologies applied
Microplastic detection data (tyre wear particles)	Generate [WP2]	.csv .xlsx Documentation: .pdf	<10GB	<ul style="list-style-type: none"> • Spectroscopy • Chromatography • Spectrometry
Data (type):	Reuse:	-	-	-
Biodiversity, physical and chemical data	Reuse [T1.4, WP1]	.csv .xlsx .pdf	To be determined	Existing sources of monitoring data
Other research output:	-	-	-	-
Two modelling tools (EURIPOL and RITA) and one decision support tool (RIDUC)	Generate [T1.5, WP1; WP4]	To be determined	To be determined	Based upon existing and newly generated data



AI model for imaging data	Reuse + generate [WP1]	Software Code: Python	-	<ul style="list-style-type: none"> Built further on earlier developed tools (developed within DroneSED, MONOCLE, PLUXIN, WasteWatchers) Training based upon newly generated images
Code	Generate	Plain text (with an extension that represents the source language)	<1GB	-
Monitoring and analysis protocols	Generate [T1.1.2, WP1]	.docx .pdf	<1GB	Based on existing (standardized) protocols, methodologies and best practices
Retention efficiency protocols	Generate [WP2]	.docx .pdf	<1GB	Technologies used
Reports	Generate	.docx .pdf	<1GB	-
Scientific publications, scientific datasets, technical reports, formal national assessments, and citizen science data	Reuse [WP1]	.docx .pdf	<10GB	Literature
RLDB	Generate [WP1]	SQL database	<10GB	<ul style="list-style-type: none"> Scientific publications, scientific datasets, technical reports, formal national assessments, and citizen science data



				<ul style="list-style-type: none"> • .xlsx or .csv files with data and metadata
Impact Evaluation Dashboard	Generate [T4.4, WP4]	MySQL database and online user interface	To be determined	Based upon newly generated data from monitoring, cleanup activities and modelling
TADB	Generate [T1.5, WP1]	To be determined	To be determined	Inventory of available technologies and actions

2.2. FAIR data

2.2.1. Findability

Data and other research outputs will be identified by a Persistent Identifier (PID) as much as possible.

- Data, data processing scripts and code for data analysis that can be openly available will be archived and published with a DOI.
- The option to get a PID for data that is closed or under restricted access, is being considered.
- Models, RLDB and TADB: options to get a PID for these research outputs are considered.
- Other research output such as protocols and reports will get a PID.

General metadata will be provided to allow for discovery. This will be made available via Zenodo or 4TU.ResearchData, and IMIS. The Zenodo and IMIS information systems provide the possibility to harvest the metadata information via OAI-PMH.

- For Zenodo, see also: <https://about.zenodo.org/policies/>
- For IMIS, see also: <https://vliz.be/nl/imis?module=webservices>

IMIS is an information system, developed and maintained by VLIZ, Belgium, that provides and links metadata information on people, institutes, projects, datasets, publications and events related to marine, coastal, estuarine and riverine topics. IMIS also provides a direct link to the research output or gives more information on how to access it in case of restricted access. Via this system, datasets can be made findable and accessible in the MarineInfo catalogue (<https://marineinfo.org/imis-search>). Also a DOI service for data publication is coupled to IMIS.



The general (discovery) metadata that will be provided with the data include the following:

- Data creator(s)/data owner(s)/contributor(s)
- Contact
- Title
- Citation
- PID
- Usage license or conditions, and any restrictions if relevant
- Link or information on how to access the data
- Context, including link to the INSPIRE project
- Geographical coverage
- Temporal coverage
- Taxonomical coverage if relevant
- Keywords
- Parameters measured, units, methodologies and instruments
- Linked references (publications, reports) if relevant
- Related data if relevant

Searchable keywords describing the geographical and temporal scope and the data type and topic will be provided in the metadata to optimize the possibility for discovery and potential reuse.

Specific metadata and documentation to understand and reuse the data will also be provided with the data (see further in this DMP).

2.2.2. Accessibility

Data and other research outputs will be deposited in a trusted repository, which will either be Zenodo, 4TU.ResearchData or the Marine Data Archive (MDA) of VLIZ. Data deposited in MDA will also be made accessible via IMIS (see also '2.2.1. Findability').

The MDA (<https://mda.vliz.be/>) is an online secured repository that can be used as a closed or open access repository by individuals, consortia, working groups, projects and institutes to archive data files and other research output. The development, backup and maintenance of the MDA is an institutional activity of VLIZ. It ensures long term preservation of the data. The VLIZ Marine Data Centre (VMDC) of



VLIZ is accredited by the ISC (International Science Council) as a World Data Center since 2011 and by IODE (International Oceanographic Data and Information Exchange) as a National Oceanographic Data Centre (NODC) for Belgium since 2019.

The 4TU.ResearchData repository (<https://data.4tu.nl/>) is an online secured repository hosted and managed by the TU Delft Library. This repository is a CoreTrustSeal certified data repository (<https://amt.coretrustseal.org/certificates>).

Raw drone images will be uploaded to the MAPEO-water platform (<https://mapeo.vito.be/en>) of VITO, especially adapted to imaging data.

Code will be uploaded to GitHub.

Options to host the RLDB after the end of the project are being explored.

In addition, the litter data collected via monitoring and cleanup technologies and the modelling data will also be integrated into an Impact Evaluation Dashboard, this will be an online portal with a public user interface (based on a MySQL database) [T4.4, WP4] and will also act as a project repository. The data ingested by the portal from the different monitoring technologies will be harmonized and dedicated export tools will allow exporting it in different formats like .csv, .xlsx, .pdf or images. The INSPIRE Impact Evaluation web Dashboard (web domain still to define) will be securely accessible to consult datasets collected by the monitoring, cleanup tools and data retrieved from the riverine litter models. The tool will be available for at least 3 years after project completion.

Some of these data can also be incorporated in EMODnet Chemistry or another thematic data system like “Danubius RI” (<https://www.danubius-ri.eu/>). In specific for EMODnet, the following protocols will be applied to be able to integrate the data into this data system:

- Microlitter data: [Proposal EMODnet Micro Litter Data Management v0.2.pdf](#) (DOI: [10.6092/D3E239EC-F790-4EE4-9BB4-C32EF39B426D](https://doi.org/10.6092/D3E239EC-F790-4EE4-9BB4-C32EF39B426D))
- Meso- and macrolitter data: [Guidelines-Litter Data v7 EP.pdf](#) (DOI: [10.6092/15C0D34C-A01A-4091-91AC-7C4F561AB508](https://doi.org/10.6092/15C0D34C-A01A-4091-91AC-7C4F561AB508))
- Seafloor/Sediment meso-and macrolitter data and images: [Proposal-EMODnet-Seafloor-litter-Data-Management 22012021.pdf](#) (DOI: [10.6092/0DE4DF9B-0589-48BB-B620-8EBD70A40159](https://doi.org/10.6092/0DE4DF9B-0589-48BB-B620-8EBD70A40159))
- Floating meso-and macrolitter: [Proposal for Floating Marine Macro litter data management at European level.pdf](#) (DOI: [10.6092/A0E453B0-100B-4A9E-8F27-BBFB2337717C](https://doi.org/10.6092/A0E453B0-100B-4A9E-8F27-BBFB2337717C))

Remark: The EMODnet Seafloor and Floating litter protocols are still under review but will be considered to collect consistent data for future analysis and uploads to the EMODnet data system.

The possible repositories and information systems (MDA/IMIS, Zenodo, 4TU.ResearchData) can ensure that data and other research output will get a PID and that this identifier resolves to a digital object (see also ‘2.2.1. Findability’).



Most data will be made openly available, but there are some exceptions (see also ‘2.2.4. Reusability’):

- Raw drone images will not be openly available because they might contain personal data (GDPR regulation), people could be present on the images. Processed data of these drone images will be made available.
- Some other data cannot be made openly available because of following reasons: it contains confidential information, it is third-party data or it has commercial valorization potential (for example data regarding the efficiency of the technologies used).

An embargo could be applied to make research output, including data, openly available. If this is the case, the embargo will only be applied for a limited period of time to be able to publish scientific results. It will last up until scientific output on data analysis or data modelling have been published.

Data and other research output that will be openly available will be accessible through a free and standardized access protocol, via the repository/data system where the data will be deposited and/or be discoverable.

Data and research output that will be under restricted access will only be available and accessible upon request by contacting the data provider. If the data can be archived in the MDA or 4TU.ResearchData, then these repositories provide a free and standardized access protocol (via an online request form) for restricted data as well.

If use of the data is restricted, then it will be possible to request the data via MDA and IMIS or via 4TU.ResearchData, both during and after the end of the project. The data managers of VLIZ or 4TU.ResearchData will then ask the data owner if these data can be shared for the purposes stated by the person requesting the data. The data will only be transferred to the requester after approval of the data owner/creator. There is no need for a data access committee to evaluate or approve access requests for personal or sensitive data, the data creators or owners will approve these requests.

If the data are openly available, the identity of the person accessing the data is not ascertained. If the data are under restricted access in MDA or 4TU.ResearchData, then the data can be requested via a standardized procedure which registers the identity of the person requesting the data.

General (discovery) metadata information of the data and other research output will be added to the Integrated Marine Information System (IMIS) of VLIZ and to Zenodo or 4TU.ResearchData. This will result in an online metadata record that is discoverable and available to everyone. In all of these systems the metadata is public domain, as per the Grant Agreement. See also ‘2.2.1. Findability’. This general discovery metadata will contain information on how to access the data, either via a direct download link or another direct link to the data, or a request form and contact information of the data creator/owner (see also above and ‘2.2.1. Findability’).

The repositories and data systems used, will ensure that the data will remain findable and available in the long term. Zenodo, 4TU.ResearchData and IMIS ensure that metadata will remain available, even if the data is no longer available.

Documentation or references about any software needed to access or read the data will be included in the metadata. Code will be made openly available (for example via the use of GitHub).



2.2.3. Interoperability

This section describes the (meta)data vocabularies, standards, formats, methodologies and best practices that will be followed to make the data interoperable and thus to allow data exchange and reuse within and across disciplines.

Protocols for data collection of litter sampling data are described in detail in deliverable 1.2 of the INSPIRE project and follow current best practices and standardized methodologies as much as possible and where available.

The protocol for collecting survey data of stakeholders is described in deliverable 6.1 of INSPIRE and follows methods often applied in social sciences.

Data and metadata will be available in open and standard file formats.

For litter data, several (meta)data standards and vocabularies will be used and combined:

- MarineRegions (<https://www.marineregions.org/>) as a standard for geographical place names
- EMODnet Chemistry (<https://emodnet.ec.europa.eu/en/marine-litter>) because some data could possibly be integrated in this international data system and for its (meta)data standard and format, and vocabularies to facilitate possible future integration of the rest of the data in this or other data systems. See also '2.2.2. Accessibility' regarding protocols and formats for integration in EMODnet.
- Marine Strategy Framework Directive (MSFD, 2008/56/EC) (guidelines, protocols, vocabularies)
- The Joint List of Litter Categories for Macrolitter Monitoring (Fleet et al., 2021) used by EU Member States to classify litter under the MSFD Descriptor 10 (Marine Litter) for litter monitoring.
- Regional Seas Conventions: OSPAR, HELCOM, UNEP/MAP, Black Sea Commission (guidelines, protocols, vocabularies)

The newly generated RLDB will be an SQL database that will incorporate existing standards as much as possible. It will be possible to select and export data from this database.

See also '2.2.4. Reusability'.

In case it is unavoidable that uncommon or project specific ontologies or vocabularies are being used, a mapping to the more commonly used ontologies/vocabularies will be provided where possible. Documentation about these new ontologies/vocabularies will be provided with the data.

References to other relevant data and research outputs of this project or previous research will be mentioned in the discovery metadata, in the RLDB and in reports/publications. See also '2.2.1. Findability'.



2.2.4. Reusability

This section gives more information about the measures that will be taken in this project to allow for data reuse: documentation about the provenance of the data and data analysis, data usage license, data quality assurance processes.

Sampling protocols, data processing scripts, code for data analysis, and reports will be made openly available, unless there are legal constraints (confidential or sensitive information). For the sampling protocols, see also deliverable 1.2 of the INSPIRE project.

General metadata information (including provenance of the data) will be documented in IMIS and MDA, Zenodo or 4TU.ResearchData (see '2.2.1. Findability'). These systems have standardized formats to document this information.

More specific metadata information (including provenance of the data) will also be documented and provided with the data file in the chosen repository. This specific metadata information (such as coordinates and coordinate reference system, depth and depth reference system, river compartment, instruments used, calibration information, variable definitions, units, ...) will be provided with the data in the data file itself or as a README file accompanying the data file. See also '2.2.3. Interoperability'.

International metadata standards will be used as much as possible. Some examples of standards that could be used are:

- Date and time (ISO 8601 - <https://www.iso.org/iso-8601-date-and-time-format.html>);
- Coordinates (decimal degrees; in WGS84 EPSG:4326 - <https://epsg.io/4326>);
- Geographical region (Marine Regions - <https://www.marineregions.org/>);
- Instruments (BODC vocabularies - <https://vocab.nerc.ac.uk/collection/>), where possible.

By default, research outputs (including data) and its metadata will be made openly available with an open (usage) license (CC0 or CC BY, <https://creativecommons.org/share-your-work/cclicenses/>), in accordance with the Open Definition (<http://opendefinition.org/>) and the Grant Agreement. As stated earlier, a limited embargo period is possible (see '2.2.2. Accessibility'). The principle 'as open as possible, as closed as necessary' will be applied. This means exceptions can be made for data and other research output that is subject to commercial valorization, GDPR, intellectual property rights, ... or contains confidential or sensitive information that cannot be open access. These outputs will be closed or available under restricted access. See also '2.5. Ethics'. In general, the generated data and other research outputs will be usable by third parties (see information on usage license above), also after the end of the project.

The following data quality assurance processes will be performed:

- Standardized protocols and procedures for data collection, measurements, and analysis [WP1] will be established to ensure consistency and comparability across different project components. Sampling and analysis protocols for monitoring data are all being described in



deliverable 1.2 prior to the sampling events to ensure monitoring methodologies are clear to all partners and to ensure data quality.

- Modelling tools for riverine litter data will be validated using the data that will be generated during this project and the existing data that will be integrated into the RLDB.
- The performance of the AI litter classification model results – based on image recognition from cameras – will be assessed with the excellence model to measure algorithm performance, fairness and robustness. In specific for the performance, a confusion matrix to visualize the scores will be set.
- Drone images will be uploaded to MAPEO (see '2.2.2. Accessibility'). This platform will perform quality control of the images and will also provide calibration and georeferencing of images.
- Project partners will adhere to relevant ethical guidelines and legal requirements (such as GDPR and (local) regulations concerning water systems). This includes obtaining necessary approvals for the deployment of instruments, informed consent from participants, and protecting sensitive data.
- Data and documentation will be securely stored, and backups will be made regularly.

2.3. Costs, responsibilities and long term preservation

No costs for data management are expected. If there would be any costs, these will be covered by the project budget. There will be no extra costs for making data and other research outputs findable, accessible, interoperable and reusable. Existing infrastructures will be used (free of costs) for storing and archiving (meta)data and documentation. The RLDB, the Impact Evaluation Dashboard and the models and tools that will be created are all INSPIRE project deliverables and covered by the project budget.

Every project partner generating or (re)using data will be responsible for the management of the (meta)data and documentation they will generate or (re)use. The overall responsibility for data management will be with the University of Cádiz (UCA) who is leading Work Package 1 'Monitoring riverine litter' and who is responsible for the RLDB, and the Flanders Marine Institute (VLIZ) who is coordinating the INSPIRE project and who is responsible for the DMP. Specific responsibility lies with Infordata Sistemi (INFOR) who will integrate monitoring and cleanup activities data into the INSPIRE Impact Evaluation Dashboard in T4.4 [WP4].

Long term preservation of (meta)data, other research outputs and documentation will be ensured by archiving them in a trusted repository (MDA/IMIS, Zenodo, 4TU.ResearchData, GitHub). See also '2.2. FAIR data'.



2.4. Data security

The following provisions for data security will be in place.

Data will be securely stored and archived in trusted repositories and data systems for long term preservation and curation, see '2.2.2. Accessibility'.

Before data publishing, data will only be accessible by project partners within the Consortium.

Regular backups of the data and documentation will be made.

Personal or sensitive data will be securely stored and only accessible by authorized persons. These types of data will only be stored for the time needed. See also '2.5. Ethics' and '3. GDPR record'.

To maintain the security of personal data, it is essential to implement effective measures against illegal processing, accidental loss, or damage. This includes establishing secure procedures and technologies from data collection to destruction. Additionally, personal data transfer to third parties is contingent on their agreement to adhere to these security protocols or their implementation of adequate measures.

Project Partner INFOR is a certified company UNI CEI EN ISO/IEC 27001:2017. Therefore, it will provide guidelines to ensure the data are securely processed according to this standard for information security management. As such, it complies with the following security principles:

- Confidentiality: all sensitive information will be protected from unauthorised access or disclosure;
- Integrity: all information will be protected from accidental, malicious and fraudulent alteration or destruction
- Availability: information services will be available throughout the times agreed with the users and be protected against accidental or malicious damage or denial of service.

Also, the following specific measures will be taken for:

- Entry control: any unfamiliar individuals in entry-controlled areas will be reported.
- Secure storage: desks and cupboards containing confidential information, especially personal data, will be locked
- Data storage:
 - company servers with confidential data will be kept in a secure room
 - file systems will be encrypted to prevent offline access
 - databases will be protected with strong passwords
 - all sysadmin access and maintenance activities will be logged
- Equipment use:
 - monitors will be prevented from displaying confidential information to bystanders
 - PCs will be logged off when unattended
- Breach protocol: any data protection breaches will be reported to the Data Protection Officer for logging and investigation.



2.5. Ethics

Ethics or legal issues that can have an impact on data sharing are:

- GDPR regulations when personal data are involved (including camera images). All data will be collected based on the European Union's General Data Protection Regulation (GDPR). INSPIRE will only collect the data required to perform necessary tasks. All participants in the citizen science project will be informed on the Privacy Policy and what data is collected and for what purposes.
- Intellectual Property Rights are applicable, and this can have an impact on data sharing. The INSPIRE project Results are owned by the Party/Parties or employees where applicable that generate(s) them. There may be cases of joint ownership of Results, which are specified and governed by the Consortium Agreement. 'Results' means any tangible or intangible effect of the action, such as data, know-how or information, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights. Details about the IPR are stipulated in the Grant Agreement.
- If EU classified information is used or generated by the action, it must be treated in accordance with the security classification guide (SCG) and security aspect letter (SAL) and Decision 2015/4441 and its implementing rules, until it is declassified. EU classified information may not be disclosed to any third party (including participants involved in the action implementation) without prior explicit written approval from the granting authority (see Grant Agreement).
- During the Project, and for a period of 1 year after the end of the Project, the dissemination of own Results by one or several Parties including but not restricted to publications and presentations, shall be governed by the Grant Agreement. Details about the dissemination of results are stipulated in the Grant Agreement.

See also 'Deliverable 7.2 Plan to implement the technical Coordination of INSPIRE', the Grant Agreement and the 'Annual Ethics reports' of the INSPIRE project.



Questionnaires, surveys or interviews will be conducted in accordance with the GDPR regulations and the involved people will be informed. Informed consent for data sharing and long term preservation will be included in the questionnaires if applicable.

- Research Participants/Stakeholders will be informed fully about the purpose, methods and intended possible uses of the research, what their part in the research entails and what risks, if any, may arise.
- The confidentiality of information supplied by research subjects and the anonymity of respondents will be respected and secured.
- Participation will be entirely voluntary, free from any coercion, duress or any other offer of inappropriate incentives.
- Harm to human research participants will be avoided.

Privacy Policy INSPIRE: <https://inspire-europe.org/privacy-policy/>

Terms of Use INSPIRE: <https://inspire-europe.org/terms-of-use/>



3. GDPR record

Personal data processing activities have been registered for the INSPIRE project. Personal data are subject to the EU's General Data Protection Regulation (GDPR). Within the INSPIRE project, all Consortium members will adhere to this regulation and take the necessary measures to protect these data. In addition, the collection of personal data is not the focus of this project and is only being done in support of other data collection activities (stakeholder information and litter monitoring). No more personal data than is strictly necessary for the project will be collected. Any personal data that will be collected will not be kept longer than deemed necessary for data processing purposes within this project. Data and other research outputs that will be made publicly available will not contain personal data. See also sections '2.4. Data security' and '2.5 Ethics' of this deliverable for more information on how personal data will be handled.

4. DPIA record

A Data Protection Impact Assessment (DPIA) for some of the personal data processing activities in this project will be performed in the near future. This will only be done for the camera and drone imaging data, since the other personal data processing activities within this project do not require a DPIA. An update of this DPIA record will be provided in Deliverable 7.8, the new version of this DMP that will be published at the end of M18 of the INSPIRE project.

5. Conclusion

This Data Management Plan has outlined the current plan of actions for the management of the data and other research outputs generated or (re)used within the INSPIRE project. The FAIR principles will be followed as much as possible, as is considered best practice for management of research data and as is required for Horizon Europe projects. All necessary measures for data protection and security will be taken where applicable. A DMP is a living document that can be adapted as the project progresses if necessary, and an update of this deliverable will be published at the end of M18 [D7.8].



6. References

Fleet, D., Vlachogianni, T. and Hanke, G., A Joint List of Litter Categories for Marine Macrolitter Monitoring, EUR 30348 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-21445-8, doi:10.2760/127473, JRC121708.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC121708>

Horizon Europe – Data Management Plan Template. Version 1.0, 2021-05-05.
https://www.openaire.eu/images/Guides/HORIZON_EUROPE_Data-Management-Plan-Template.pdf







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Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them. This project has received funding under grant agreement No 101112879 (INSPIRE).