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CARDIMED

CLIMATE ADAPTATION AND RESILIENCE DEMONSTRATED IN THE MEDITERRANEAN REGION

Deliverable
1.2

Data Management Plan - first version

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Executive summary

Deliverable “D1.2 Data Management Plan – First Version” provides an analysis of the main elements of the data management policy that will be followed in CARDIMED. It describes the data management lifecycle during the lifetime of the project and after the project is completed. It illustrates what data will be collected, processed, or generated and which methodology and standards will be followed, whether and how this data will be shared and/or made open, and finally, how the produced data will be curated and preserved. The DMP has been developed based on the information that is currently known to the partners at this initial stage of the project. It will constitute a living document to be updated as needed according to the project developments and the Horizon Europe guidelines. The document will be further updated and a final version (D1.3) will be submitted at M54.

1 Introduction

This deliverable presents the first version of the CARDIMED Data Management Plan (DMP)¹, which provides an initial analysis of the main elements of the CARDIMED data management procedures, including data management life cycle for all datasets that will be collected, processed, or generated, related methodology and standards and data sharing.

The CARDIMED DMP has been developed based on the current information at this initial phase of the project. Details relating to the datasets presented in this document are provisional, as a comprehensive elaboration will be carried out in future project activities to further develop CARDIMED tools and platform, and their specific roles within the CARDIMED demo activities. The DMP, therefore, functions as a dynamic document, subject to further updates in response to the evolution of the project.

Revisions will be implemented as necessary in alignment with the project's advancements and whenever significant modifications occur and any updates in the DMP will be reported within project periodic reports:

- new datasets provided/generated by a partner
- changes in consortium policies (e.g., innovation policies, data exchange policies or standards)
- changes in consortium composition (e.g., new consortium members joining or existing members leaving)

This deliverable is public and is mainly intended for a readership comprising the members of CARDIMED consortium and the European Commission (EC) services. The plan set out in this document will govern the actions of all project partners throughout the project duration. It is therefore important that all partners have access to it and a possibility to consult it at all times.

The deliverable is structured as follows:

- **Chapter 1:** It provides a general overview of open science, intellectual property, ethical issues, sharing, security, archiving or preservation of the data used, generated, or processed throughout the CARDIMED project duration.
- **Chapter 2:** This section sets out the procedures that will be followed for the identification, description and management of the datasets generated during the project lifetime.
- **Chapter 3:** It presents a summary of the datasets generated in the project is presented. Complementary information regarding the datasets can be found in Annex 1.
- **Chapter 4:** This section sets out the Findable Accessible Interoperable Reusable (FAIR) principles to be adopted by CARDIMED, as well as recommendations on processes and actions to be followed to ensure proper data management.
- **Chapter 5:** The conclusions are presented, focusing on the most relevant points of the deliverable.

¹ This deliverable has used a standard methodology developed in THETIDA project (Grant Agreement number: 101095253), following EU recommendations. Ad hoc modifications were added to comply with the conditions of the Grant Agreement for CARDIMED project (Grant Agreement number: 101112731).

1.1 Overview of DMP aspects

In line with FAIR principles and with the objectives outlined in Horizon Europe's Open Science Policy [1], CARDIMED aims to follow open science practices into its proposed methodology and future activities to address the following aspects:

- **Intellectual Property Rights:** CARDIMED is expected to generate licensable results, based on the datasets produced. The executive board will further assist further in protecting licensable results of the project and to identify potential licensable products and services.
- **Ethical Issues:** CARDIMED will implement all necessary measures to handle personal data, including sensitive information, based on the European [2] and local regulations of partner countries. Ethical aspects are addressed in WP1 through deliverable D1.1 (submitted at M03).
- **Data sharing:** One of the main features of CARDIMED is that nine different demonstrators will be carried out, supported by citizen science and policy focused activities spread across Europe, to collect different sets of data. Based on the variety of demonstrators involved, data sharing among partners, including personal or sensitive data from external users, might be necessary (e.g., for research publications). The DMP follows data sharing guidelines and supports mechanisms for partners to implement appropriate data handling mechanisms for shared information. Based on this, all data exchanged among CARDIMED partners, containing sensitive details, will be thoroughly anonymized.
- **Data security:** CARDIMED aims to ensure robust data management security based on the following pillars:
 - Confidentiality: Encryption of CARDIMED data and their access to authorized persons.
 - Integrity: Implementation of robust security protocols and access controls to maintain the integrity and authenticity of the CARDIMED's data and information systems.
 - Availability: Employment of robust and reliable information services to prevent system crashes or malfunctions, guaranteeing access and availability to authorized users.
 - Authenticity: Verification of users through an authenticity system will ensure the secure transmission of information and restricts access to CARDIMED's systems and resources, minimizing unauthorized access and potential breaches.

2 CARDIMED Data Management procedures

This section outlines the procedures for managing data and is categorized into two main groups: a) identification and update of datasets, which is an ongoing task throughout the project and b) essential guidelines for the consortium to ensure uniformity in data handling, storage, and protection data storage, sharing, and protection.

2.1 Identification and update of datasets

Regular checks and updates will be conducted throughout the duration of CARDIMED to proactively address potential changes that could impact the information listed in this deliverable. These updates will be facilitated by the relevant task, while partners will receive email reminders to review existing datasets and assess the need for updates. The revised and consolidated dataset lists will be included in the final iteration of this deliverable. To assist the purpose of updating datasets a 'CARDIMED DMP' Word file, has been shared through the dedicated project SharePoint platform.

2.2 Tools for Data storage, sharing and protection

The CARDIMED coordinator has chosen Microsoft's SharePoint [3] as the project platform for sharing data and documents among partners. SharePoint, administered and hosted by ICCS's IT department, complies with the

General Data Protection Regulation (GDPR) regulations, and enables storage, organization, and sharing of information, but also document creation and management.

For the publication of final results derived from project activities, the EC recommends the utilization of the European Open Science Cloud Search (EOSC) [4], and Open Research Europe [5], dedicated to publishing scientific articles derived from Horizon Europe funded projects. CARDIMED partners are responsible for implementing appropriate mechanisms for shared data, ensuring proper anonymization for sensitive information. The following tools will be considered by CARDIMED for publishing research outputs and data:

- **Amnesia** [6]: A free tool by OpenAIRE [7] for data processing and correct anonymization of sensitive data.
- **Argos** [8]: Enables creation and management of DMPs. A version of the current DMP, accessible only to CARDIMED partners, will be available on the platform for consultation, providing guidance for description of metadata.
- **Zenodo** [9]: An OA repository which generates Digital Object Identifiers (DOIs) automatically for each deposited item.

3 CARDIMED Dataset summary

The successful realisation of CARDIMED project objectives is dependent on the collection and exploitation of various datasets. These datasets range from stakeholders' opinions and requirements to real or simulated data that can be used for supporting technology development at the initial stages of the project to data produced while using the digital solutions of CARDIMED throughout the project activities (e.g., data collection through satellite, in-situ, crowdsourcing). The datasets can vary in type as they can be a) visual (e.g., image and/or videos) data, b) textual information, c) system files (e.g., .exe, .json, .xml, etc.) and d) algorithms.

CARDIMED datasets initially serve as preliminary inputs, guiding system requirements and operational procedures. Processed datasets will also result from specific project activities, such as data normalization and classification. Output data, are datasets produced by the project activities.

3.1 Data lifecycle

The CARDIMED data lifecycle starts with the collection/generation of datasets, which involves both the collection of already existing data and the generation of new datasets by using the digital solutions of the project or by manually creating datasets whenever appropriate (e.g., stakeholder data). As a result, various processing activities on the data, will result in the creation of additional datasets and accompanying data that have to be managed based on the provision listed in this deliverable. Participants must give voluntary informed consent to participate in the activity, while they will be informed of their right to withdraw from project activities and there will be no discrimination against them.

3.2 Overview of CARDIMED datasets

Table 1 presents the template that has been used for collecting detailed information for the various datasets, including the description of the content of each dataset, the purpose for collecting/generating the dataset, data types and formats etc. Wherever possible, a fixed and unique format will be decided for accommodating the need for the project data to be findable.

Table 1.- Dataset template distributed to CARDIMED partners.

Dataset name	Name of the dataset
Dataset provider	Partner that provides the dataset to CARDIMED (and institution that produces the dataset, if different than the provider).
WP & Tasks	In which task or WP/task the dataset is generated?
Purpose and relation to the objectives of the project	What is the purpose of the data collection/generation and its relation to the objectives of the project?
Dataset description (content)	What is the content of the dataset? What does it include?
Data types	What are the data types of the dataset? Examples: text, table, image, audio, video, data structure, date, etc.
Data formats	What are the formats of included data? Examples: DOC, PDF, CSV, JSON, JPEG, PNG, MP4, .doc, .jpg, .g2m, .pptx, .json
Reuse of existing data	Is this dataset derived from an existing dataset already available (on the Web, in another project, used for internal testing...)? How will you re-use it?
Data production/collection methods	How was/will be the data produced/collected? Example: Data sampled from an operational system every minute; synthetic data generated from a python program (details provided).
Expected size of the data	What is the expected size of the data? Example: Size: GB, Velocity: GB/s + duration (s)
Data utility (for whom it might be useful)	To whom might it be useful? What is possible use-cases?
Input, Processed or Output dataset	Please provide which datasets can be regarded as initial input (to guide system requirements and operational procedures), processed (datasets that are produced after certain processing within the project, such as data normalisation and/or classification) and output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	Does the dataset have an existing confidentiality level? Are there some known security issues regarding some of the information in the dataset? Example: personal data, confidential data, possibility for misuse
Access Level	Level of public access (e.g., restricted to consortium, open access etc)

To facilitate dataset identification and updates, partners have received and filled the dataset template. At this early project stage, numerous datasets are subject to changes or require further detailing. A summary of the obtained information can be found in Table 2, with full dataset information available in Annex.

Table 2.- Overview of identified CARDIMED datasets.

Dataset type	Dataset name	Input, Processed or Output dataset	Source
Text, Table, Numeric, Maps, Images, Videos	Laboratory data, Water quality, Meteorological, Subsurface rainwater, Geo/hydro and land use, field visits and interviews	Input, Processed or Output dataset	Demo 1
Text, Table, Numeric	Water consumption, rainwater quality, Weather station, Lab measurements	Input, Processed or Output dataset	Demo 2
Numeric	Temperature, Salinity, Physical/chemical characteristic of water and soil, geographic data, Energy/Water consumption, Crop water status/yield/physiological status, Climatic conditions	Output	Demo 3
Numeric, Images	Climatic conditions, Georeferenced maps, Digital terrain model, Water quality/quantity, Visual evaluation, Air temperature	Input/Output	Demo 4
Numeric, Text, Table, Images, Videos, Maps (image, shapefiles)	Animal and plant species, Ortho-photos, satellite datasets, Environmental, Socio-economic, Citizen science	Input, Processed and/or Output	Demo 5
Numeric, Text, Table, Images, Videos	Climatic conditions, Forest monitoring	Output	Demo 6
Table, Spreadsheet, Maps (image, shapefiles)	Biodiversity monitoring	Input/Output	Demo 7
Numeric, Images, Text, Table, Audio, Videos	Biodiversity reporting and monitoring, Livestock capacity, Poaching reporting, Groundwater monitoring, Weather station, Biogas/PV energy production, Walking/Cycling routes	Input/Output	Demo 8
Numeric, Text, Table	Weather station, water quality, Lab measurements, Water treatment parameters (e.g. pH, temperature, chlorophyll)	Input/Output	Demo 9
Text, Table, Spreadsheet	Climatic indicators	Processed/Output	T4.1
Numeric	Upscaling NBS methodology	Output	T4.3
Text, Images	CARDIMED Application Generated Reports, User Experience Feedback	Output	T4.5.1
Text, Images, Audio, Video, 3d model, Quizzes	Citizen engagement application (reports on locally intense and adverse effects of climate events, biodiversity information, site-specific information, climate change impacts for baseline/future scenarios in local context)	Input/Output	T4.5.3
Numeric, Raster, Vector	Decision Support for NBS optimal location	Input, Processed and/or Output	T4.5.4
Numeric	WEFE nexus evaluation data, Energy-efficient solutions, resilience functions	Input/Output	WP5
Numeric, Image, Video	Monitor temperature conditions in replication areas	Output	WP7

Text, Image, Table, image, Audio, Video	Website, Dissemination monitoring, Communication	Processed and/or Output	WP8
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4 FAIR Data approach

CARDIMED is expected to generate a large amount of data that requires effective management, storage, and processing. CARDIMED is committed to follow established guidelines [10] concerning the treatment and publication of open access data, based on FAIR principles to ensure they are Findable, Accessible, Interoperable, and facilitating the Reuse of resources. By following FAIR principles, CARDIMED will promote the accessibility and usability of its data resources within the wider scientific community.

The following sections provides an overview of the management and treatment of the CARDIMED project's publications, documents, software, and datasets. The treatment of personal data, with a focus on their proper anonymization will follow the guidelines outlined in the Grant Agreement and the Consortium Agreement, as well as European and local legislations.

4.1 CARDIMED FAIR Measures

4.1.1 Findability

CARDIMED will deposit all public outcomes in a centralized repository accessible via a dedicated section on project's website. CARDIMED will also assign a DOI to project outcomes to enhance the findability of CARDIMED data within the community. CARDIMED datasets is also recommended to be described using a metadata schema (e.g. Dublin Core [11]). The specific repository for datasets will be determined at a later stage in the project, considering Zenodo as the most suitable one as it can accommodate various formats, including articles, presentations, and datasets, and provides each publication with a DOI. This approach ensures both the accessibility and traceability of CARDIMED's research outputs.

4.1.2 Accessibility

CARDIMED will analyze and provide access to datasets that can be published or modified to achieve public accessibility. However, due to the sensitive nature of certain data collected (e.g. from citizen science, demonstrations, or similar project activities) these datasets will not be immediately published, as they might have to undergo necessary processing, considering at the same time specific access restrictions. Even in the case that dataset contents will not be fully accessible, the metadata describing them will be openly available to ensure balance between transparency and the confidentiality of sensitive information.

CARDIMED publications will be registered under Creative Commons (CC) [12] licenses, following Consortium Agreement guidelines (refer also to the Open Science Practices of the CARDIMED Grant Agreement in Section 1.2.7), enabling usage with proper acknowledgment, ensuring data accessibility and potential for reusability. The specific license that will be used depends on publication rules and repositories (e.g. Zenodo), which usually operate under CC licenses.

All online tutorials, trainings, and courses developed by the CARDIMED project will be publicly accessible via the project's website, presentations will be published on SlideShare², and videos will be available through the CARDIMED YouTube channel³, ensuring availability and ease of access.

4.1.3 Interoperability

At this project stage the use of open software is recommended, since the exact nature of the data is under investigation and specific guidelines for ensuring data interoperability are not yet finalized. To ensure interoperability, it is recommended to employ controlled vocabularies and standardized terms that are widely adopted. For example, initiatives like the Dublin Core Metadata Initiative and the DataCite Metadata Schema [13] can be followed to ensure effective data management and interoperability at this early project stage.

4.1.4 Re-usability

CARDIMED partners will follow rigorous quality control processes, including peer reviews, to ensure high-quality and re-usability of data publications, with the use of CC licenses when this is possible. Data repositories like Zenodo, institutional repositories, or national repositories will be selected to be employed for depositing data. CARDIMED is also committed to support project partners in licensing datasets, facilitating access to third parties under appropriate licenses. For this, IP rights which have been defined in the consortium agreement will have to be considered.

5 Conclusions

The deliverable D1.2 focused on providing the initial version of CARDIMED Data Management Plan (DMP) outlining general guidelines on sharing, security, archiving, preservation and data storage, following FAIR principles. The initial identified datasets per CARDIMED service and tool for centralized management among partners have been gathered and provided. The CARDIMED DMP will be regularly assessed and updated as needed and more detailed information about input, output, and processed datasets will be provided as activities evolve in the respective work packages, while existing templates will be validated, supplemented, and maintained. The DMP will be finalized on M54, which will detail the defined data management procedures and will contain comprehensive descriptions of the data sets.

² <https://www.slideshare.net/>

³ <https://www.youtube.com/@CARDIMEDEU>

6 References

- [1] Open science. (n.d.). Research and innovation. https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science_en
- [2] Council of the European Union, European Parliament. (2016). 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 (General Data Protection Regulation) (Text with EEA relevance). Publications Office of the EU. <https://op.europa.eu/en/publication-detail/-/publication/3e485e15-11bd-11e6-ba9a-01aa75ed71a>
- [3] Microsoft Office. SharePoint. <https://www.microsoft.com/es-es/microsoft-365/sharepoint/collaboration>
- [4] Eosc. (2021). EOSC Portal. <https://eosc-portal.eu/about/eosc>
- [5] Open Research Europe (2023). <https://open-research-europe.ec.europa.eu/>
- [6] Amnesia (n.d.). <https://amnesia.openaire.eu/index.html>
- [7] OpenAIRE (n.d.). <https://www.openaire.eu/>
- [8] Argos (n.d.). <https://argos.openaire.eu/user-guide>
- [9] Zenodo (2023). <https://zenodo.org/>
- [10] Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. (2016). The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018 . <https://doi.org/10.1038/sdata.2016.18>
- [11] DCMI. DublinCore (n.d.). <https://www.dublincore.org/>
- [12] Creative Commons (2023). <https://creativecommons.org/>
- [13] DataCite Schema (n.d.). <https://schema.datacite.org/>

Annex: CARDIMED datasets in detail

Table 3.- Overview of Demo 1 (Lab performance assessment) dataset.

Dataset name	DEMO1.1 - lab data for performance assessment
Dataset provider	NTUA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	Evaluation of the wastewater treatment efficiency of the system, reclaimed water quality, side-streams exploitation (biogas production), WEFE nexus contribution
Dataset description (content)	Water quality parameters (temperature, pH, Alkalinity, Turbidity, Conductivity, DO, ORP, COD, BOD ₅ , NH ₄ -N, NO ₃ -N, TN, PO ₄ -P, TP, SO ₄ ²⁻), biogas composition parameters, efficiency indicators
Data types	Text, table, graph, date
Data formats	.xls
Reuse of existing data	This data set exists already since system operation for HYDROUSA project, and more data will be collected in the context of CARDIMED.
Data production/collection methods	Manual register from the lab logbooks to the specified .xls file
Expected size of the data	Few MBs (~5 MB)
Data utility (for whom it might be useful)	Future system operators, project partners
Input, Processed or Output dataset	Initial, processed & output
Confidentiality and known security issues (if applicable)	Confidential data, restricted to consortium
Access Level	Restricted to consortium

Table 4.- Overview of Demo 1 (Online sensors) dataset.

Dataset name	DEMO1.1 Online sensors
Dataset provider	NTUA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	Evaluation of the wastewater treatment efficiency of the system, reclaimed water quality (monitoring of the fluctuation of various parameters)
Dataset description (content)	Water quality parameters (pH, conductivity, Turbidity, T, ORP, DO, NH ₄ -N, NO ₃ -N, COD, E.Coli)
Data types	table
Data formats	.csv (comma or dot separated)
Reuse of existing data	This data set exists already since system operation for HYDROUSA project, and more data will be collected in the context of CARDIMED.
Data production/collection methods	Downloaded locally by operators or remote access to the local network for online collection
Expected size of the data	~400 MB/y
Data utility (for whom it might be useful)	Site operators, Future system operators, project partners
Input, Processed or Output dataset	Processed & output
Confidentiality and known security issues (if applicable)	Confidential data restricted to consortium
Access Level	Level of public access: restricted to consortium

Table 5.- Overview of Demo 1 (Meteorological station) dataset.

Dataset name	DEMO1.1 Meteorological station data
Dataset provider	NTUA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	Assess the ET losses for CW operation and irrigation needs
Dataset description (content)	Weather data (Temperature, rainfall, wind speed and direction), soil humidity
Data types	Table, graph
Data formats	.jpeg; .csv
Reuse of existing data	This data set exists already since system operation for HYDROUSA project and more data will be collected in the context of CARDIMED.
Data production/collection methods	Data will be collected locally by the operators
Expected size of the data	~50 MB/y
Data utility (for whom it might be useful)	Site operators, Future system operators, project partners
Input, Processed or Output dataset	Processed & output
Confidentiality and known security issues (if applicable)	Does the dataset have an existing confidentiality level? No Are there some known security issues regarding some of the information in the dataset? No
Access Level	Level of public access: open access

Table 6.- Overview of Demo 1 (Quantitative sensors) dataset.

Dataset name	DEMO1.1 Quantitive online sensors
Dataset provider	NTUA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	Monitoring of the wastewater volume of the system, reclaimed water volume, pipeline pressures, biogas flowrate
Dataset description (content)	Flowrates, pressure, temperature
Data types	table
Data formats	.csv
Reuse of existing data	This data set exists already since system operation for HYDROUSA project, and more data will be collected in the context of CARDIMED.
Data production/collection methods	Data will be collected locally by the operators
Expected size of the data	300 kB/d
Data utility (for whom it might be useful)	Site operators, Future system operators, project partners
Input, Processed or Output dataset	Processed & output
Confidentiality and known security issues (if applicable)	Does the dataset have an existing confidentiality level? Yes Are there some known security issues regarding some of the information in the dataset? confidential data restricted to consortium. confidential data, possibility for misuse
Access Level	Level of public access: restricted to consortium

Table 7.- Overview of Demo 1 (Agroforestry) dataset.

Dataset name	DEMO1.1 Operation data of agroforestry
Dataset provider	NTUA
WP & Tasks	WP6 (T6.2), WP5(T5.2), WP3 (T3.2)
Purpose and relation to the objectives of the project	Monitoring of the agroforestry operation parameters and outputs, WEFE nexus contribution, social acceptance
Dataset description (content)	Harvested yields, irrigation water needs, plant species, fertilizer needs
Data types	Text, table, graphs
Data formats	.xls
Reuse of existing data	This data set exists already since system operation for HYDROUSA project and more data will be collected in the context of CARDIMED.
Data production/collection methods	Manual recording by the operators
Expected size of the data	Few MBs
Data utility (for whom it might be useful)	Site operators, Future system operators, project partners
Input, Processed or Output dataset	processed & output
Confidentiality and known security issues (if applicable)	Does the dataset have an existing confidentiality level? No Are there some known security issues regarding some of the information in the dataset? No
Access Level	Level of public access: open access

Table 8.- Overview of Demo 1 (Subsurface rainwater) dataset.

Dataset name	DEMO1.2 Subsurface rainwater collection
Dataset provider	HYDRASPIS
WP & Tasks	WP6 (operation)/ T6.10 & WP7 (transferability & exploitation)
Purpose and relation to the objectives of the project	Monitoring rainwater capture Quantity & water storage Quality & water utilization (irrigation) quantity & quality. Rainwater collection & water management towards climate adaptation & resilience.
Dataset description (content)	• Weather station DATA Temperature: The current temperature at the weather station location. Humidity: The relative humidity level at the weather station location. Rainfall: The amount of rainfall that has occurred. Wind Speed: The current wind speed at the station's location. Wind Direction: The direction from which the wind is blowing. Pressure: The atmospheric pressure at the station's location • Water Sensors DATA Water Tank(s) Level Measurements. Water storage quantity • Flow meters: Outflow water quantity (from tank(s)) • Water quality Sensors DATA ph, Conductivity, temperature • FIELD data Soil moisture sensors DATA • Lab measurements, Lab analysis data (e.g. microbiological parameters, Metals, Anions & Cations)
Data types	text, table, Charts (numeric), photographs
Data formats	.txt , .CSV, table or charts, .jpeg
Reuse of existing data	No
Data production/collection methods	Data production/collection according the data parameter. On line monitoring data about water quality stored locally in a controller and monthly extracted by the operator. Water Quantity Data is stored on line in a web database. The operator is keeping log book and photos regarding the operation and issues may occurred. Also Lab analysis will be produce relevant data stored in datasheet digital format.
Expected size of the data	Size: max 1GB (probably a couple of hundred MBs) It depends from the data storage and visualisation platform to be chosen.
Data utility (for whom it might be useful)	For the NBS user, for the transferability cases & for the digital tools designers
Input, Processed or Output dataset	Input DATA Pipeline & Tank(s) dimensions – field sub-plots area Output DATA datasets produced by the NBS operation
Confidentiality and known security issues (if applicable)	No significant issues identified Minor possibility for misuse
Access Level	At first, restricted to consortium, can be publish to open data spaces and turned into publications after data analysis.

Table 9.- Overview of Demo 1 (Rooftop rainwater) dataset.

Dataset name	DEMO1.2 Rooftop rainwater collection
Dataset provider	HYDRASPIS
WP & Tasks	WP6 (operation)/ T6.10 & WP7 (transferability & exploitation)
Purpose and relation to the objectives of the project	Monitoring rainwater & surface runoff capture Quantity & water storage Quality & water utilization (irrigation & aquifer recharge) quantity & quality. Rainwater & surface runoff collection, stormwater & water management towards climate adaptation & resilience.
Dataset description (content)	• Weather station DATA Temperature: The current temperature at the weather station location. Humidity: The relative humidity level at the weather station location. Rainfall: The amount of rainfall that has occurred. Wind Speed: The current wind speed at the station's location. Wind Direction: The direction from which the wind is blowing. Pressure: The atmospheric pressure at the station's location • Water Sensors DATA Water Tank(s) Level Measurements. Water storage quantity • Flow meters: Inflow & Outflow water tank quantity • Water quality Sensors DATA ph, Conductivity, temperature, DO • FIELD data Soil moisture sensors DATA • Lab measurements, Lab analysis data (e.g. microbiological parameters, Metals, Anions & Cations).
Data types	text, table, Charts (numeric), photographs
Data formats	.txt , .CSV, table or charts, .jpeg
Reuse of existing data	No
Data production/collection methods	Data production/collection according the data parameter. Tank Level data is stored locally on the PLC database extract once a week via usb stick. Flow meters data are analogic and noted by the operator. On line monitoring data stored in a web database. (e.g. In daily base and some parameters such us water levels in wells). The operator is keeping log book and photos regarding the operation and issues may occurred. Also Lab analysis will be produce relevant data stored in datasheet digital format.
Expected size of the data	Size: max 1GB (probably a couple of hundred MBs) It depends from the data storage and visualisation platform to be chosen.
Data utility (for whom it might be useful)	For the NBS user, for the transferability cases & for the digital tools designers.
Input, Processed or Output dataset	Input DATA Pipeline & Tank(s) dimensions – field sub-plots area Output DATA datasets produced by the NBS operation
Confidentiality and known security issues (if applicable)	No significant issues identified Minor possibility for misuse of data by the public.
Access Level	At first, restricted to consortium, can be publish to open data spaces and turned into publications after data analysis.

Table 10.- Overview of Demo 1 (Sifnos weather station) dataset.

Dataset name	DEMO1.3 SIFNOS island weather station
Dataset provider	MedINA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	DEMO1 interventions: meteorological data - Monitor the climate conditions. Nexus assessment.
Dataset description (content)	Meteorological data (temperature and humidity, wind speed and strength, precipitation) - <i>TEMPERATURE (°C), RAIN (mm), WIND SPEED (km/hr)</i>
Data types	• numeric • excel files
Data formats	txt, xlsx, JSON
Reuse of existing data	Yes: the meteorological data are derived from an existing dataset already available on the Web (https://meteosearch.meteo.gr/data/index.cfm)
Data production/collection methods	Data sampled from the weather station system every day.
Expected size of the data	Size: KB.
Data utility (for whom it might be useful)	Weather analysis, climate reports, and forecasting are to be fed to DSS and inform local and other relevant stakeholders, nexus analysis.
Input, Processed or Output dataset	Meteorological input data
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 11.- Overview of Demo 1 (Geo/hydro and land use) dataset.

Dataset name	DEMO1.3 Geological and hydrological and land use data
Dataset provider	MedINA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	DEMO1 interventions – Mapping the current conditions
Dataset description (content)	• geological and hydrological data • relevant datasets regarding the land uses - agricultural areas, statistics as well as biodiversity data
Data types	• numeric • excel files • QGIS or ArcGIS • videos/images
Data formats	DOC, PDF, CSV, JPEG, PNG, MP4, .shp, .kmz
Reuse of existing data	Only limited data on land uses are partially available, which will be combined with the data generated from the hydrogeological study.
Data production/collection methods	Most of the data will be derived primarily from the hydrogeological study to be submitted. Gathered data will be analyzed through a multi-criteria methodology for the needs of next-step interventions Visuals: videos, images, maps, figures.
Expected size of the data	Size: KB, MB, GB.
Data utility (for whom it might be useful)	The collected data will be crucial for the successful implementation of DEMO1 interventions, which will contribute to the final placement of the stone weirs.
Input, Processed or Output dataset	Input data
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Restricted to the consortium, it can be published to open data spaces after the approval of the hydrogeological study

Table 12.- Overview of Demo 1 (Monitoring & Impact) dataset.

Dataset name	DEMO1.3 Monitoring & impact
Dataset provider	MedINA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	DEMO1 interventions – Monitoring & impact of NBS and nexus analysis.
Dataset description (content)	• Remote sensing data • Water level and conductivity data
Data types	• numeric • excel files • videos/images
Data formats	TXT, DOC, PDF, CSV, JPEG, PNG, MP4, .kmz
Reuse of existing data	No, primarily data will be generated.
Data production/collection methods	Data will be collected through sensors employed to measure a wide range of physical properties of water (such as temperature, pH levels, and conductivity), to be able to implement remote monitoring solutions. Visuals: videos, images, maps, figures.
Expected size of the data	Some MB
Data utility (for whom it might be useful)	The collected data will be crucial for the successful monitoring of the impact of DEMO1 interventions and will contribute to nature-based policy recommendations. The data will be useful for the local communities, farmers, local stakeholders
Input, Processed or Output dataset	Output data
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Restricted to consortium, can be publish to open data spaces and turned into publications after data analysis

Table 13.- Overview of Demo 1 (Filed visits and interviews) dataset.

Dataset name	DEMO1.3 SIFNOS island field visits and interviews
Dataset provider	MedINA
WP & Tasks	WP6 (T6.2)
Purpose and relation to the objectives of the project	DEMO1 interventions – field visits for the positioning and implementation of the stone weirs.
Dataset description (content)	fieldwork data collection: 1. GPS coordinates (geolocations of Points of Interest – POIs) 2. community input
Data types	• numeric • excel files • QGIS or ArcGIS • CAD • videos/images
Data formats	TXT, DOC, PDF, CSV, JPEG, PNG, MP4, .shp, .kmz, .dwg
Reuse of existing data	Primarily data will be generated.
Data production/collection methods	Data will be collected during field visits and through participatory methods such as community engagement during the fieldwork conducted at the POIs. Visuals: videos, images, maps, figures.
Expected size of the data	Size: KB, MB, GB.
Data utility (for whom it might be useful)	The collected data will be crucial for the successful implementation of DEMO1 interventions and will contribute to nature-based policy recommendations. The data will be useful for the local communities, farmers, local stakeholders
Input, Processed or Output dataset	Input data Community input data
Confidentiality and known security issues (if applicable)	No security issues – no personal or confidential data will be collected and informed consent will be asked before data collection
Access Level	Restricted to the consortium, can be published to open data spaces and turned into publications after data analysis

Table 14.- Overview of Demo 2 (AS-IS:Water network meters) dataset.

Dataset name	SCADA SYSTEM (AS-IS:Water network meters- utility water for production)
Dataset provider	Halcor
WP & Tasks	WP1, WP4, WP6
Purpose and relation to the objectives of the project	Water consumption- process and water management - 16 central water supply meters for the utility water . We monitor the quantity. These meters are after the RO system.
Dataset description (content)	For it's meter we monitor water consumption in m3 and we can monitor: • Daily consumption • Hourly consumption • Last day consumption • Last hour consumption The SCADA system keeps the data for 30 days. We need in the project to store data in an inhouse database at Halcor for historical records and trends in real time. To be defined during the design.
Data types	Scada Tags
Data formats	Text, CSV
Reuse of existing data	AS-IS The data is within Halcor's systems. We use it for historical purposes and for reporting and cost allocation.
Data production/collection methods	AS-IS: Data sampled and refreshed from sensors every 2sec. We need to discuss with the rest of the team data storage.
Expected size of the data	Sample rate 2sec
Data utility (for whom it might be useful)	<u>Maintenance Department</u> Using sensor data and predictive analytics, the system identifies anomalies and potential issues before they escalate into costly failures. Proactive interventions can then be planned and executed, minimizing downtime and optimizing operational efficiency. Monitor the operational status of our systems. <u>Environment Department</u> This system integrates environmental sensors and data analysis techniques to assess factors such as water quality, usage patterns, and ecosystem health. The department can identify areas of concern and implement measures to minimize ecological impact and promote sustainability. <u>Industrial Engineering department</u> Align environmental data collection and compliance reporting with MES/ERP systems maintained by the Industrial Engineering. This integration ensures seamless data flow between environmental monitoring systems and operational management platforms, facilitating accurate reporting and compliance with regulatory standards. <u>Water officer</u> Establish a dynamic system to optimize water distribution, reducing wastage and ensuring efficient utilization of water resources. Utilizing real-time data on water demand, supply, and infrastructure conditions, this system employs algorithms to dynamically adjust water distribution networks. By optimizing distribution routes and flow rates, wastage is minimized, and water resources are utilized more efficiently, meeting demand while conserving resources. <u>Plant Manager</u>

	Plant manager can use this digital twin to conduct scenario analysis, predict system behavior, and make informed decisions to optimize water management strategies and ensure operational efficiency. <u>Chief Technical Manager</u> Develop a predictive modeling feature to identify and mitigate potential risks in the water infrastructure. The aim is to provide decision-makers with actionable insights for proactive management and maintenance, thereby enhancing resilience and reliability in water supply and distribution networks.
Input, Processed or Output dataset	Initial Input Datasets: Existing Monitoring System Data: Data collected from the current monitoring system- SCADA, exports data of water consumption, meter readings, and operational procedures. Processed Datasets (within the project): Normalized Data: Water consumption data processed to ensure consistency and comparability across different meters and time intervals. Aggregated Data: Summarized data derived from the raw consumption data, such as daily, hourly, or weekly averages, totals, or trends. Dataset prepared for further analysis, for example correlations between water consumption and other variables. Output Data: Real-time Monitoring Data: Output data produced for real-time monitoring and visualization, allowing stakeholders to track water consumption and trends as they occur. Historical Records: Long-term storage of historical water consumption data in the in-house database at Halcor, including trends, patterns, and anomalies over time. Suggestions for process improvements based on SPC analyses, identifying shifts, trends, or out-of-control conditions in water usage. To be defined during the design.
Confidentiality and known security issues (if applicable)	Confidential data, Halcor's permission is needed.
Access Level	Restricted to consortium and demo 2 team, analyses may be published with Halcor's consent.

Table 15.- Overview of Demo 2 (AS-IS:Pumpstations) dataset.

Dataset name	SCADA SYSTEM (AS-IS:Pumpstations)
Dataset provider	Halcor
WP & Tasks	WP1, WP4, WP6
Purpose and relation to the objectives of the project	Water consumption- process and water management
Dataset description (content)	- Pump station of Industrial wastewater - Quantity: Water consumption (input, output): m3, m3/day, m3/h - Quality (output): Water Conductivity μS, Ph level, oil concentration (ppm), - System status: upper & low limit of tank, emulsion, pumps (m3), tank occupancy percentage, oil skimmer - Chemical Analysis by sampling once per month externally for process verification - Pump station of Reverse Osmosis (RO) - tank occupancy percentage (%) (input) upper-low level - Quantity: process water consumption meters (input-output): m3, m3/h - Quality (input RO): Water Conductivity (μS), redox (mV) - Quality (output RO): Water Conductivity μS, - System status: upper & low level of osmosis tanks, pumps, bypass (m3), pressure (bar) - Specs for treated water to use in production are limits of potable water externally for process verification. - Pump station of Junker 3 - Quality: temperature (oC) - System status: tank occupancy percentage (%), circulation pump, ventilator pump, upper low limit tank level - Pump station of municipal wastewater - tank occupancy percentage for four (4) different tanks - Pump Station of utility water (elval make up water) - water consumption m3 (input& output) - tank occupancy percentage (%) - pump operation - Pumpstation Industrial wastewater PRS (old tank) - tank occupancy percentage (%) - upper-low level - pump operation - Pumpstation of Radyne - tank occupancy percentage (%) - upper-low level - pump operation SCADA system doesn't store data. In the project, we need to store data in an in-house database at Halcor for historical records and real-time trends. This will be defined during the design.
Data types	Scada Tags,
Data formats	Text, CSV
Reuse of existing data	AS-IS The data is within Halcor's systems. We use it for historical purposes and for reporting and cost allocation.

Data production/collection methods	Data sampled from tags every 2sec but we don't storage the data. We need to discuss with the rest of the team data storage.
Expected size of the data	Sample rate 2sec
Data utility (for whom it might be useful)	<u>Maintenance Department</u> Using sensor data and predictive analytics, the system identifies anomalies and potential issues before they escalate into costly failures. Proactive interventions can then be planned and executed, minimizing downtime and optimizing operational efficiency. Monitor the operational status of our systems. <u>Production Engineers:</u> Implement a system that continuously monitors both the quantity and quality of water used in production processes and compares them with Standard Operating Procedure (SOP) specifications. This system integrates sensors and data analysis techniques.
Input, Processed or Output dataset	Initial Input Datasets: Existing Monitoring System Data: Data collected from the current monitoring system- SCADA, exports data of water consumption, meter readings, and operational procedures. Processed Datasets (within the project): Normalized Data: Water consumption data processed to ensure consistency and comparability across different meters and time intervals. Aggregated Data: Summarized data derived from the raw consumption data, such as daily, hourly, or weekly averages, totals, or trends. Dataset prepared for further analysis, for example correlations between water consumption and other variables. Output Data: Real-time Monitoring Data: Output data produced for real-time monitoring and visualization, allowing stakeholders to track water consumption and trends as they occur. Historical Records: Long-term storage of historical water consumption data in the in-house database at Halcor, including trends, patterns, and anomalies over time. Suggestions for process improvements based on SPC analyses, identifying shifts, trends, or out-of-control conditions in water usage.
Confidentiality and known security issues (if applicable)	Confidential data, Halcor's permission is needed.
Access Level	Restricted to consortium and demo 2 team, analyses may be published with Halcor's consent.

Table 16.- Overview of Demo 2 (AS-IS:Rainwater system) dataset.

Dataset name	SCADA SYSTEM (AS-IS:Rainwater)
Dataset provider	Halcor
WP & Tasks	WP1, WP4, WP6
Purpose and relation to the objectives of the project	Existing monitoring system for rainwater reuse in our processes.
Dataset description (content)	Rainwater tank (pre-treatment) Rainwater treatment quality meters (treated water): redox (Mv), Conductivity, ph, turbidity Quantity:m3 of treated water are sent to the production central tank before osmosis Chemical analysis of collected rainwater before treatment by sampling
Data types	Scada Tags
Data formats	Text, CSV,
Reuse of existing data	The data is within Halcor's systems. To be discussed
Data production/collection methods	Data sampled from tags every 2sec but we don't storage the data. We need to discuss with the rest of the team data storage.
Expected size of the data	Sample rate 2sec
Data utility (for whom it might be useful)	<u>Maintenance Department</u> Using sensor data and predictive analytics, the system identifies anomalies and potential issues before they escalate into costly failures. Proactive interventions can then be planned and executed, minimizing downtime and optimizing operational efficiency. <u>Environmental Department:</u> Monitoring rainwater reuse, in order to contribute to water conservation and minimize the environmental impact of water-related activities.
Input, Processed or Output dataset	Initial Input Datasets: Existing Monitoring System Data: Data collected from the current monitoring system, meter readings, and operational procedures. Processed Datasets: Normalized Data: Water consumption data processed to ensure consistency and comparability across different meters and time intervals. Aggregated Data: Summarized data derived from the raw consumption data, such as daily, hourly, or weekly averages, totals, or trends. Dataset prepared for further analysis, for example correlations between water consumption and other variables. Output Data: Treated Water Quality Data: Data on the quality of the treated water, including redox potential, conductivity, pH, and turbidity after treatment. Quantity Output Data: Data on the volume of treated water sent to the production central tank before osmosis after treatment processes. Reused Rainwater Reports: Reports summarizing the amount of rainwater reused in processes.
Confidentiality and known security issues (if applicable)	Confidential data, Halcor's permission is needed.
Access Level	Restricted to consortium and demo 2 team, analyses may be published with Halcor's consent.

Table 17.- Overview of Demo 2 (Monitoring rainwater task) dataset.

Dataset name	Monitoring of the quality of the existing rainwater tank before treatment (within the project)
Dataset provider	Halcor
WP & Tasks	WP1, WP4, WP6
Purpose and relation to the objectives of the project	Monitoring the quality of rainwater
Dataset description (content)	Water quality sensors: pH, conductivity, turbidity.
Data types	not specified yet, depending on type of sensors selected
Data formats	not specified yet, depending on type of sensors selected
Reuse of existing data	No
Data production/collection methods	Online monitoring water quality parameters will be stored in digital form automatically.
Expected size of the data	To be determined
Data utility (for whom it might be useful)	Environmental department: Monitor the quality of the rainwater NBS providers for the designing phase of the system and NTUA partners involved in laboratory NBS simulations, other stakeholders interested in transferability (creating a network with other industries nearby).
Input, Processed or Output dataset	Initial input: rainwater quality parameters will be used for the design of the NBS units and for monitoring. Output data: Treated water quality parameters.
Confidentiality and known security issues (if applicable)	Confidential data, Halcor's permission is needed.
Access Level	Restricted to consortium and demo 2 team, analyses may be published with Halcor's consent.

Table 18.- Overview of Demo 2 (Smart water management) dataset.

Dataset name	Monitoring of smart water management in HALCOR (DEMO2)
Dataset provider	NTUA
WP & Tasks	WP6, T6.3
Purpose and relation to the objectives of the project	Monitoring water management parameters of a bioswale/wetland treating/collecting urban runoff. Monitoring treatment parameters of a biofiltration unit treating harvested rainwater and wastewater (focusing on heavy metals removal).
Dataset description (content)	Data needed for both systems (bioswale & biofiltration) Weather Station Data (Online measurements) Temperature: The current temperature at the weather station location. Humidity: The relative humidity level at the weather station location. Rainfall: The amount of rainfall that has occurred. Wind Speed: The current wind speed at the station's location. Wind Direction: The direction which the wind is blowing from. Water quality Sensors Data (Online measurements) pH, temperature, conductivity. Lab measurements, Lab analysis data (Offline measurements requiring manual sampling methods) inflow and outflow parameters such as heavy metals (e.g. copper concentration), nutrients concentration for bioswale plants, other parameters needed prior to RO treatment.
Data types	Text, table, charts (numeric)
Data formats	.txt, .doc, .xls, .csv (not specified yet, depending on type of sensors selected)
Reuse of existing data	No
Data production/collection methods	Online monitoring of weather parameters, data will be stored in digital form automatically.
Expected size of the data	Size: Mb (data velocity not specified)
Data utility (for whom it might be useful)	Digital tools designers, HALCOR employees supervising the NBS solutions, NTUA partners involved in laboratory NBS simulations.
Input, Processed or Output dataset	Weather conditions can be regarded as initial input as they will provide information on the right selection of materials and system setup.
Confidentiality and known security issues (if applicable)	Confidential data, Halcor's permission is needed.

Table 19.- Overview of Demo 3 (Water, energy and carbon use efficiency and quality) dataset.

Dataset name	Decarbonization agriculture, livestock and improvement of water, energy and carbon use efficiency and quality
Dataset provider	UNIVPM
WP & Tasks	WP6, T6.4
Purpose and relation to the objectives of the project	Implementation of innovative NBS (Nature Based Solution) aiming to decarbonize agriculture, livestock and improve water, energy and carbon use efficiency and quality.
Dataset description (content)	• Temperature: The current temperature of the water • Salinity: The current salinity of the water • GHG emission • Physical, chemical characteristic of water and soil: information about the main pollutant in soil and water • Geodata: geographic data • Energy consumption • Water consumption • Crop water status • Biomass production • Crop yield • Crop physiological status
Data types	• Temperature: Numeric (float or integer) • Salinity: Numeric (float or integer) • GHG emission: Numeric (float or integer) • Physical, chemical characteristic of water and soil: Numeric (float or integer) • Geodata: Numeric (float or integer) • Energy consumption: Numeric (float or integer) • Water consumption: Numeric (float or integer) • Crop water status: Numeric (float or integer) • Biomass production: Numeric (float or integer) • Crop yield: Numeric (float or integer) • Crop physiological status: Numeric (float or integer)
Data formats	DOC, PDF, JPEG, PNG, MP4, .xlsx, .gis
Reuse of existing data	NO
Data production/collection methods	Data sampled by operators and operational system
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	Agricultural analysis, characterization of water studies, Life cycle Analysis, climate change studies, inform relevant stakeholders
Input, Processed or Output dataset	Output dataset
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 20.- Overview of Demo 3 (Climatic conditions – Catania) dataset.

Dataset name	Micro-climate weather station dataset
Dataset provider	UNICT
WP & Tasks	WP6, T6.5
Purpose and relation to the objectives of the project	Monitor the climate conditions of North Catania
Dataset description (content)	• Temperature: The current temperature at the weather station location • Rainfall: The total amount of rainfall that has occurred • Solar Radiation: The total amount of radiation (W/m²) or mean Solar radiation (MJ) at the station's location • Wind Speed and Direction: The mean Wind speed and Direction at the station's location • Pressure: The mean vapour and barometric pressure at the station's location • Relative Humidity: The relative humidity at the station's location
Data types	• Temperature: Numeric (float or integer) • Relative Humidity: Numeric (float or integer) • Rainfall: Numeric (float or integer) • Wind Speed: Numeric (float or integer) • Wind Direction: Categorical (text or numeric, depending on the format chosen) • Pressure: Numeric (float or integer)
Data formats	• 10 minutes data (raw):.txt • Processed data: .xls
Reuse of existing data	YES, already available raw data (10 minutes) and processed data (1 hour, 24 hours) from December 2023
Data production/collection methods	Data manually sampled from the weather station system every week. Planned to integrate remote download of the data by the end of the year.
Expected size of the data	Size: about 250 kB/week (raw data every 10 minutes)
Data utility (for whom it might be useful)	Monitoring station for the green roof in the Catania University, installation of GIFLUID project (ended in 2023).
Input, Processed or Output dataset	Output - Dataset: • Excel file with analyses at 1 hour and 24 hours. Output – Processing: • ET0 potential evapotranspiration (Penman-Monteith) • Precipitation pattern (e.g. frequency-density function daily precipitation)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 21.- Overview of Demo 4 (Sicily climate conditions) dataset.

Dataset name	Micro-climate weather station dataset
Dataset provider	UNICT via SIAS (Servizio Informativo Agrometeorologico Siciliano - www.sias.regione.sicilia.it)
WP & Tasks	WP6, T6.5
Purpose and relation to the objectives of the project	Monitor the climate conditions of Sicily Region
Dataset description (content)	• Temperature: The current temperature at the weather station location • Humidity: The relative humidity level at the weather station location • Rainfall: The total amount of rainfall that has occurred (raw data) from December 2023 • Wind Speed and Direction: The mean Wind speed at the station's location. • Temperature: The mean temperature at the station's location (raw data) • Pressure: The mean vapour and barometric pressure at the station's location • Relative Humidity: The relative humidity at the station's location • Daily Solar Radiation: The mean Solar radiation (MJ/m2) at the station's location.
Data types	• Temperature: Numeric (float or integer) • Relative Humidity: Numeric (float or integer) • Rainfall: Numeric (float or integer) • Wind Speed: Numeric (float or integer) • Wind Direction: Categorical (text or numeric, depending on the format chosen) • Pressure: Numeric (float or integer)
Data formats	• .txt
Reuse of existing data	NO
Data production/collection methods	Data manually extracted from the webpage (to be copied and past from the webpage) after applying time period by a filter.
Expected size of the data	Size: about 50 kB/week for two parameters (raw data every day for 1 year)
Data utility (for whom it might be useful)	Sicily Region for agronomic and weather monitoring and analyses.
Input, Processed or Output dataset	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	Account to be accepted by Sicily Region dedicated office. Request by certificated email (@pec.it) UNICT has a registered account. Data area provided after a justified request (typically research) in about 3 days. Data requirement limitations: • 65000 record per request • 8 request per day
Access Level	Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 22.- Overview of Demo 4 (GIS at Sicily region) dataset.

Dataset name	GIS information at Sicily Region scale				
Dataset provider	UNICT	via	Protezione	Civile	Sicilia
WP & Tasks	(http://www.protezionecivilesicilia.it:8080/cfd_sicilia/)				
Purpose and relation to the objectives of the project	WP2, T2.4				
Dataset description (content)	Georeferenced maps of Sicily Region				
	• Road infrastructure • Hydrography: maps of major and minor streams • Orography: terrain slope • Land use: maps of vegetation and other type of land use. • Administrative constraint: area under national or regional constraints • Flood maps: vulnerability and risk maps according to Water Framework Directive • Geological maps: maps with geological characterization of the land • Droughts maps: maps of area sensitive to droughts event				
Data types	Only visual consultation				
Data formats	Only visual consultation				
Reuse of existing data	NO				
Data production/collection methods	Only visual consultation				
Expected size of the data	Only visual consultation				
Data utility (for whom it might be useful)	Identification of current status at Sicilian regional scale				
Input, Processed or Output dataset	Consultation of DAP (DEMO Action Plan)				
Confidentiality and known security issues (if applicable)	Public				
Access Level	Public				

Table 23.- Overview of Demo 4 (DTM at Sicily region) dataset.

Dataset name	DTM Sicily Region
Dataset provider	UNICT via Sitr (Sistema Informativo Territoriale Regionale - https://www.sitr.regione.sicilia.it/)
WP & Tasks	WP2, T2.4; WP6, T6.5
Purpose and relation to the objectives of the project	Terrain model of Sicily Region
Dataset description (content)	Digital Terrain Model: 2x2 m
Data types	Numeric (float or integer)
Data formats	.tif
Reuse of existing data	No
Data production/collection methods	- WMS uploaded on QGIS or ArcGIS (https://www.sitr.regione.sicilia.it/geoportale/mobile/record.html?id=r_sicili:091c2e6b-2c5a-47b2-8f81-0e2509697efc) - Manually extracted the area of interest from QGIS or ArcGIS
Expected size of the data	Size: about 600 Mb for a catchment of about 1 km ²
Data utility (for whom it might be useful)	Sicily Region for consultancy
Input, Processed or Output dataset	Hydrological-hydraulic model for DAP (DEMO Action Plan T2.4) and basic and detailed design of rain gardens (T6.5)
Confidentiality and known security issues (if applicable)	None (public access)
Access Level	Restricted to consortium, analyses can be published

Table 24.- Overview of Demo 4 (Raingarden - Catania) dataset.

Dataset name	Monitoring of Rain Garden of Catania (DEMO4.1)
Dataset provider	IRIDRA, UNICT, MUCA
WP & Tasks	WP6, T6.5
Purpose and relation to the objectives of the project	Monitoring multipurpose benefits of the rain garden of Catania
Dataset description (content)	Water quantity - Level sensor, moisture sensor or flow meter (to be decided) to estimate the hydraulic functioning of the rain garden during rain events - Flow meter: n° 2 sensors, one for stormwater entering the rain garden and treated stormwater out of the raingarden before the infiltration Water quality - IN and OUT water quality samples, for estimating treatment performance of rain garden before the potential infiltration in the soil
Data types	Sensors: Numeric (float or integer) Water quality: Numeric (float or integer)
Data formats	Sensors: .csv Water quality: .pdf or .xls
Reuse of existing data	NO
Data production/collection methods	Sensors: to be decided Biodiversity: Data collected by citizen science with a local citizen Water quality: sampling campaign to be agreed in collaboration with UNICT
Expected size of the data	Unknown
Data utility (for whom it might be useful)	Monitoring multiple benefits of the rain garden within CARDIMED project KPI estimation (infiltration, detention)
Input, Processed or Output dataset	To be defined.
Confidentiality and known security issues (if applicable)	No issues identified.
Access Level	Restricted to consortium, analyses can be published

Table 25.- Overview of Demo 4 (Green wall - Ferla) dataset.

Dataset name	Monitoring of Green Wall of Ferla (DEMO4.2)
Dataset provider	IRIDRA, SVIMED
WP & Tasks	WP6, T6.5
Purpose and relation to the objectives of the project	Monitoring multipurpose benefits of the green wall of Ferla
Dataset description (content)	Sensors - Air Temperature: n° 3 sensors, one for each facades (NE, NW, SW) - Flow meter: n° 2 sensors, one for greywater to be treated, one for greywater reused (WC toilet flush) Water quality - IN and OUT water quality samples, for estimating treatment performance of green wall for greywater treatment and reuse Biodiversity - pictures for visual evaluation of plant status
Data types	Sensors: Numeric (float or integer) Water quality: Numeric (float or integer) Biodiversity: Image
Data formats	Sensors: .csv Water quality: .pdf or .xls Biodiversity: .jpg
Reuse of existing data	YES, Sensors - temperature: - raw data every hours from 23 April 2023 to 21 August 2023 - raw data every day from 23 April 2023 to 21 August 2023 Biodiversity: five photographic campaigns in 2023 (11 April; 15 May; 22 June; 26 July; 7 October)
Data production/collection methods	Sensors: - online access to agronicweb.com, Login with IRIDRA's account - Data manually downloaded from the webpage of Agronic after applying time period by a filter. Biodiversity: Data collected by citizen science with a local citizen Water quality: sampling campaign to be agreed in collaboration with SVIMED and UNICT
Expected size of the data	Sensors - temperature: - raw data every hours from 23 April 2023 to 21 August 2023 – 1.2 Mb - raw data every day from 23 April 2023 to 21 August 2023 – 40 Kb Biodiversity: minimum 13 photographs per campaign, about 600 Kb for each photo
Data utility (for whom it might be useful)	Monitoring campaign for the NAWAMED project, concluded in 2023 Monitoring multiple benefits of the green wall
Input, Processed or Output dataset	To be defined. R script has been developed for the analyses of temperature data. See for instance the publication of a PhD that has done an internship during the Nawamed project – link
Confidentiality and known security issues (if applicable)	No issues identified.
Access Level	Open access.

Table 26.- Overview of Demo 5 (Biodiversity) dataset.

Dataset name	Biodiversity inventory
Dataset provider	AMU (Aix-Marseille University)
WP & Tasks	WP6 / T6.6 – Demo 5
Purpose and relation to the objectives of the project	- Studying the impact on the biodiversity nearby (green corridor optimization) - Analyzing the potentials sanitary risks for humans due to the local insect and animal population linked to NBS implemented
Dataset description (content)	List of animal and plant species (potentially fungus)
Data types	Table and pictures (potentially movies)
Data formats	Xlsx, Jpeg, Png, Mp4 and Mkv
Reuse of existing data	Different lists of Marseille area local biodiversity exist. These lists will be used to confirm the actual inventory and may be updated with the data collected.
Data production/collection methods	Experts will manage different field inventory on the studied area.
Expected size of the data	Unknown at this stage Size: MB
Data utility (for whom it might be useful)	Animal/vegetal/fungus population dynamics studies, public studies, Naturalist, Naturalist association, Citizens association, Research teams working on zoonosis and human health. Can be use for animal/vegetal/fungus population or biodiversity monitoring studies, zoonosis and human health studies.
Input, Processed or Output dataset	Existing inventory will be used and compared to what will be found on the field. The initial dataset comes from the French national biodiversity observatory: https://nature.silene.eu/ An exhaustive biodiversity inventory will be produce using order, family and species classification.
Confidentiality and known security issues (if applicable)	The dataset will be public after the official publication in the scientific reviews. No issues identified
Access Level	Open access after the official publication in the scientific reviews.

Table 27.- Overview of Demo 5 (Qualitative geographical) dataset.

Dataset name	Qualitative geographical data
Dataset provider	AMU (Aix-Marseille University)
WP & Tasks	WP6 / T6.6 – Demo 5
Purpose and relation to the objectives of the project	Analyzing the historical use of lands and the vegetation repartition and compare it through the years.
Dataset description (content)	- Ortho-photos, satellite datasets - Geographical layers with land cover and infrastructure (buildings, road, green areas, trees) changes
Data types	- Ortho-photos/satellite images as a set of historical pictures, taken from the sky, showing the evolution of the lands use and vegetation repartition in the study area and nearby. - Geographical layers for comparison with a GIS software
Data formats	- Ortho-photos: georeferenced images. - Geographical layers: GeoPackage, Shapefiles,
Reuse of existing data	Historical dataset already existing (e.g. EU Urban Atlas for Marseille)
Data production/collection methods	The historical ortho-photos will be search through the existing and accessible records. The physical one will be digitized and compile as an entire set of data. This set will be transformed as geographical layers on the mapping software.
Expected size of the data	Size: MB or few GB (to be confirmed)
Data utility (for whom it might be useful)	Any people interested in the analysis of the land use evolution of the area. Geographic laboratories, local community and municipality. Can have a use in the reflexion of the local urbanism plan.
Input, Processed or Output dataset	The physical and digitized historical ortho-photos will be used as an input. They will all be digitized, normalize and compile in geographical layers useable on mapping software. The output will be a digital set of geographical layers focused on the studied area.
Confidentiality and known security issues (if applicable)	The dataset is public. No issues identified
Access Level	Open access

Table 28.- Overview of Demo 5 (Environmental) dataset.

Dataset name	Environmental data
Dataset provider	AMU (Aix-Marseille University)
WP & Tasks	WP6 / T6.6 – Demo 5
Purpose and relation to the objectives of the project	Monitor the water, air and soil conditions of the studied area and the impact of NBS
Dataset description (content)	• Temperature: The current temperature at different locations, including inside buildings • Humidity: The relative humidity level at the weather station location • Daily Rainfall: The total amount of rainfall that has occurred in the past 24 hours. • Hourly Rainfall: The amount of rainfall that has occurred in the past hour. • Water quality: composition of the runaway water, the interstitial water and the groundwater of the area • Air quality: the amount of different component of the air • Wind Speed: The current wind speed at the station's location • Wind Direction: The direction from which the wind is blowing • Soil quality: composition of the soil and permeability (before and) after the works.
Data types	• Temperature: Numeric (float or integer) • Humidity: Numeric (float or integer) • Daily Rainfall: Numeric (float or integer) • Hourly Rainfall: Numeric (float or integer) • Water quality: Numeric, percentages of components • Air quality: Numeric, percentages of components • Wind Speed: Numeric (float or integer) • Wind Direction: Categorical (text or numeric, depending on the format chosen) • Soil quality: Numeric, percentages of components
Data formats	Xlsx or JSON, database (not defined)
Reuse of existing data	No, only new collected ones.
Data production/collection methods	Collection from sensors (automatic and manual), lab analysis (water, soil).
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	Information to local stakeholders (dashboard) NBS impact assessment Scientific research
Input, Processed or Output dataset	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	The dataset will be public after the official publication in the scientific reviews. No issues identified
Access Level	Open access after the official publication in the scientific reviews.

Table 29.- Overview of Demo 5 (Economic) dataset.

Dataset name	Economic data
Dataset provider	AMU (Aix-Marseille University)
WP & Tasks	WP 8 / T8.6
Purpose and relation to the objectives of the project	Defining the cost of Demo 5 for replication and transferability opportunities (other university campus from AMU, PACA region,
Dataset description (content)	- Investment costs (CAPEX) - running costs (OPEX) - Socio-environmental benefits including the estimation of the improvement on the rainfall management. - Financing streams
Data types	Table
Data formats	Xlsx
Reuse of existing data	No, only new collected ones.
Data production/collection methods	Costs analysis and efficiency at the different steps of the project from implementing partners
Expected size of the data	Size: MB
Data utility (for whom it might be useful)	All the stakeholders and other people interested in setting up the same project. All the financial partners. Cost-benefits analysis
Input, Processed or Output dataset	Output datasets
Confidentiality and known security issues (if applicable)	Confidential data
Access Level	Restricted to consortium, can be accessible on demand for interested stakeholders

Table 30.- Overview of Demo 5 (Citizen science) dataset.

Dataset name	Citizen science
Dataset provider	AMU (Aix-Marseille University)
WP & Tasks	WP6 / T6.6 – Demo 5
Purpose and relation to the objectives of the project	Understanding the feeling of the local citizens on the Demo 5 implementation
Dataset description (content)	The dataset will include results from citizen survey on their feelings about the Demo 5 implementation and different result extract from the application designed in the WP4
Data types	- Citizen survey (table) - WP4 Application results (table) - Presentation (PowerPoint)
Data formats	Xlsx, databases
Reuse of existing data	No, only new collected ones.
Data production/collection methods	The survey will be sent to the local citizens of Marseille. Because it affects the tram railway all the citizens of the city are concerned. The Saint-Jerome and Saint-Charles districts citizens, students and employees will be the most affected by these changes. The survey will be directly addressed to them as a digital or a physical one to complete. The smartphone application developed in WP4 will be promoted to the local citizens, students and employees in the local newspaper, radio and on the social media. People will just have to download it and participate. Part of the survey will provide qualitative results.
Expected size of the data	Size: MB
Data utility (for whom it might be useful)	All the social analyst interest on how people felt the implementation of NBS in urban area. It will be helpful to understand their apprehension and doubts to have a better communication on the replication projects. The results will be published in any media as a result of the project, and accessible to anyone. Dashboards, inputs for further analysis/research.
Input, Processed or Output dataset	Output: results of the survey will be analysed and transformed in graphics for a large public presentation.
Confidentiality and known security issues (if applicable)	All the personal data collected will follow all the RGPD rules and won't be communicate. Only the transformed results will be accessible.
Access Level	Restricted for the raw data and open access for the transformed ones.

Table 31.- Overview of Demo 5 (Qualitative documentation) dataset.

Dataset name	Documentation on demos implementation
Dataset provider	AMU (Aix-Marseille University)
WP & Tasks	WP6 / T6.6 – Demo 5
<i>Purpose and relation to the objectives of the project</i>	Communicate on the advancement of the Demo 5
<i>Dataset description (content)</i>	Pictures and video shooting
<i>Data types</i>	Image, video
<i>Data formats</i>	JPEG, PNG, MP4, MKV
<i>Reuse of existing data</i>	No
<i>Data production/collection methods</i>	Data collected by local stakeholders
<i>Expected size of the data</i>	MB
<i>Data utility (for whom it might be useful)</i>	Information to be fed to relevant stakeholder and final users.
<i>Input, Processed or Output dataset</i>	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified.
Access Level	Open access.

Table 32.- Overview of Demo 6 dataset.

Dataset name	Climatic conditions at urban areas and forest management
Dataset provider	CIRCE
WP & Tasks	WP6, T6.7 (Demo 6)
Purpose and relation to the objectives of the project	<u>School's part</u>: Monitor the climate conditions of urban areas. <u>Forest management</u>: Monitor presence of mistletoe.
Dataset description (content)	<u>School's part</u>: Temperature: The current temperature at the weather station location Humidity: The relative humidity level at the weather station location Wind speed: The current wind speed at the station's location Radiation: The current radiation at the station's location <u>Forest management</u>: Surface cover by mistletoe: Dispersal of mistletoe in forest Mistletoe weight: Quantity removed
Data types	<u>School's part</u>: Temperature: Numeric (float or integer) Humidity: Numeric (float or integer) Wind speed: Numeric (float or integer) Radiation: Numeric (float or integer) <u>Forest management</u>: Surface cover by mistletoe: Numeric (float or integer) Mistletoe weight: Numeric (float or integer)
Data formats	DOC, PDF, JPEG
Reuse of existing data	<u>School's part</u>: No <u>Forest management</u>: Maybe. We have information from DRUIDA PROJECT
Data production/collection methods	<u>School's part</u>: Data sampled from the weather station system every hour. <u>Forest management</u>: Field visit & drone information
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	<u>School's part</u>: Weather analysis, climate studies, and forecasting to be fed to DSS and inform relevant stakeholders. <u>Forest management</u>: Invasive species analysis and forecasting to be fed to DSS and inform relevant stakeholders
Input, Processed or Output dataset	Output data (datasets produced by the project activities)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 33.- Overview of Demo 7 dataset.

Dataset name	Monitoring biodiversity
Dataset provider	UEVORA and CIMAC
WP & Tasks	WP6, T6.8
Purpose and relation to the objectives of the project	Monitor Biodiversity in restored riparian habitats and “dehesa”
Dataset description (content)	Biodiversity dataset with the following variables measured along time: • Vegetation total cover • Cover of Typical plants • Plant richness and diversity • Trees Planted • Cover of Invasive Alien Species • Birds richness and diversity • Mammals richness and diversity • Reptiles and amphibian’s richness and diversity Location of the monitoring areas
Data types	Biodiversity: Table and data analysis graphs Location of the monitoring areas: vector
Data formats	Biodiversity: CSV, Access database Location of the monitoring areas: shapefile
Reuse of existing data	Is this dataset derived from an existing dataset already available (on the Web, in another project, used for internal testing...)? How will you re-use it? no
Data production/collection methods	Through fieldwork, mainly through random sampling, plots or permanent transects
Expected size of the data	Less than 1 GB
Data utility (for whom it might be useful)	Academics and Local Administrative Authorities, land owners
Input, Processed or Output dataset	All imputes will be done by our own data collection (data collection before intervention and after intervention).
Confidentiality and known security issues (if applicable)	No issues foreseen
Access Level	Open access.

Table 34.- Overview of Demo 8 (Reporting biodiversity) dataset.

Dataset name	Establishing of biodiversity database of the derivation channel region
Dataset provider	IZDOGA, DOGA
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	Establishing and reporting the biodiversity database around the Diversion Canal to be built to provide freshwater to the Gediz Delta
Dataset description (content)	Species observation records including date, coordinates and the number of individuals
Data types	Numeric (integer), date, point data Images and text for reporting
Data formats	DOC, PDF, CSV, JPEG, PNG, JPG, KMZ
Reuse of existing data	Yes (eBird and other published records), we will combine existing datasets with new records.
Data production/collection methods	The censuses carried out by experts during fieldwork
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	Biodiversity-related studies The data can also be useful for the local stakeholders and decision-makers for decision-making regarding the pilot site.
Input, Processed or Output dataset	Input (to guide system requirements and operational procedures)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 35.- Overview of Demo 8 (Monitoring biodiversity) dataset.

Dataset name	Monitoring biodiversity change a year after freshwater entry into the area
Dataset provider	IZDOGA, DOGA, IZSU
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	Monitoring biodiversity change a year after freshwater inflow from Çiğli Wastewater Treatment Plant to the south of Gediz Delta through the derivation channel
Dataset description (content)	Bird, amphibian, reptile, damselfly, plant and wild mammal records including date, coordinates and the number of individuals Records of changes in land use after restoration activities
Data types	Numeric (integer), date, point data Images and text for reporting
Data formats	DOC, PDF, CSV, JPEG, PNG, JPG, KMZ
Reuse of existing data	Yes (eBird and other published records), we will combine existing datasets with new records.
Data production/collection methods	The censuses carried out by experts during fieldwork
Expected size of the data	Size: MB
Data utility (for whom it might be useful)	Biodiversity-related studies It can be used for transferability and studies on impacts of nature-based solutions. The data can also be useful for the local stakeholders and decision-makers for decision-making regarding the pilot site.
Input, Processed or Output dataset	Output data (datasets produced by the project activities)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 36.- Overview of Demo 8 (Livestock capacity) dataset.

Dataset name	Determination of herbivorous wild mammals and livestock carrying capacity
Dataset provider	DOGA, IZDOGA, IZMM, IZSU
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	Determination of current numbers of goats, sheep and cows in the project area and reporting Establishing European hare inventory Determination of the buffalo carrying capacity in the region
Dataset description (content)	European hare, goat, sheep and cow numbers in the delta
Data types	Numeric (integer), date Images and text for reporting
Data formats	DOC, PDF, CSV, JPEG, PNG, JPG
Reuse of existing data	No
Data production/collection methods	The censuses carried out by experts during fieldwork
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	Biodiversity-related studies Local stakeholders for decision-making
Input, Processed or Output dataset	Initial input (to guide system requirements and operational procedures)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 37.- Overview of Demo 8 (Reporting of poaching) dataset.

Dataset name	Determining and reporting the severity of the poaching in the project area
Dataset provider	DOGA
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	Determining and reporting the severity of the poaching in the project area
Dataset description (content)	Number of illegal hunters
Data types	text, image, audio and video
Data formats	DOC, PDF, JPEG, PNG, JPG, MP4
Reuse of existing data	Yes, we will combine the video recordings taken in our studies with new recordings.
Data production/collection methods	Camera traps Experts will evaluate recordings.
Expected size of the data	Size: MB
Data utility (for whom it might be useful)	Biodiversity, conservation-related studies Local stakeholders and decision-makers in decision-making processes regarding conservation actions/policies
Input, Processed or Output dataset	Initial input (to guide system requirements and operational procedures)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 38.- Overview of Demo 8 (Monitoring groundwater) dataset.

Dataset name	Monitoring groundwater and taking samples
Dataset provider	IZTECH, IZMM
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	Due to climate change and serious environmental problems such as soil salinisation, sea level rise, coastal erosion, water pollution and seawater intrusion, it is important to monitor groundwater levels, water budget and measure the salinity and pollution of water and soil.
Dataset (content) description	These include records of divers data on groundwater levels over time and taking samples from groundwater and surface water for the analysis of pollution. Also, the data sets include measurements of major ions and cations, heavy metals, groundwater temperature and pH, electrical conductivity and groundwater level. In addition to these data, data on precipitation, temperature and evaporation are also used to calculate the water budget in the study area.
Data types	What are the data types of the dataset? text, table, image, and date
Data formats	What are the formats of included data? DOC, PDF, CSV, JPEG, PNG, JPG, KMZ
Reuse of existing data	No.
Data production/collection methods	For monitoring groundwater level change, data is sampled every minute from an operational system and recorded and stored on this device. Also, data samples are taken from the weather station system every hour. For other data collection, it can be carried out by experts during seasonal fieldwork.
Expected size of the data	Size: kB and MB
Data utility (for whom it might be useful)	Weather analysis, climate studies, groundwater and pollution-related studies. The data can also be helpful for the local stakeholders and decision-makers for decision-making regarding the pilot site. Academic studies, public institutions and organisations, and non-governmental organisations.
Input, Processed or Output dataset	Input (to guide system requirements and operational procedures).
Confidentiality and known security issues (if applicable)	Dataset has no existing confidentiality level, and no issues have been identified.
Access Level	First, restricted to the consortium, after then the completed project, the access level can be open access.

Table 39.- Overview of Demo 8 (Eucalyptus cutting) dataset.

Dataset name	Determining the pilot area where eucalyptus cutting will be carried out & informing the public about cutting
Dataset provider	IZTECH & IZMM & DOGA & IZDOGA
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	There is an eucalyptus plantation in the northside of the demo zone that creates a barrier that blocks water diffusion. By thinning the plantation and swapping eucalyptus with native species this barrier is planned to be broken. Preparing a social media communication plan to inform the public accurately about tree cutting
Dataset (content) description	The number and region of eucalyptus trees to be cut, Brochure explaining why the trees were cut down and how they will be reused. A visually supported informational campaign will be disseminated to the public through social media and other appropriate platforms. Information dissemination will take place prior to the eucalyptus cutting
Data types	text, image, photos, brochure,
Data formats	DOC, JPEG, PNG, PDF, KMZ
Reuse of existing data	NO
Data production/collection methods	Fieldworks. In addition, articles related to priority areas for eucalyptus replacement in the Gediz Wetland Management Plan will also be taken into consideration.
Expected size of the data	Size: MB, GB
Data utility (for whom it might be useful)	Biodiversity, conservation-related studies Local stakeholders and decision-makers in decision-making processes regarding conservation actions/policies
Input, Processed or Output dataset	input (to guide system requirements and operational procedures)
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 40.- Overview of Demo 8 (Weather station) dataset.

Dataset name	Micro-climate weather station dataset
Dataset provider	IZTECH
WP & Tasks	WP6, T6.9 WP5, T5.1.4
Purpose and relation to the objectives of the project	Monitor the climate conditions on the demo site
Dataset description (content)	Temperature: The current temperature at the weather station location Relative Humidity: The relative humidity level at the weather station location Solar Radiation: The solar irradiance at the weather station location Wind Speed: The current wind speed at the station's location Wind Direction: The direction from which the wind is blowing
Data types	Temperature: Numeric (float or integer) Relative Humidity: Numeric (float or integer) Solar Radiation: Numeric (float or integer) Wind Speed: Numeric (float or integer) Wind Direction: Categorical (text or numeric, depending on the format chosen)
Data formats	csv
Reuse of existing data	Yes (Historic meteorological data from a location nearby the demo site will also be used)
Data production/collection methods	Data will be collected by a weather station every 5 minutes. A portable device to measure surface temperatures will be used when necessary
Expected size of the data	Size: MB
Data utility (for whom it might be useful)	Weather analysis, climate studies (Urban Heat Island Effect), PV analysis. The data will be useful for relevant stakeholders.
Input, Processed or Output dataset	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 41.- Overview of Demo 8 (PV energy production) dataset.

Dataset name	PV panel energy production dataset
Dataset provider	IZTECH
WP & Tasks	WP6, T6.9 WP5, T5.1.4
<i>Purpose and relation to the objectives of the project</i>	Roofs of animal barns will be equipped by PV panels for lighting and/or heating purposes to increase the renewable energy use.
<i>Dataset description (content)</i>	PV energy production: Energy production in kWh daily.
<i>Data types</i>	PV energy production: Numeric (float or integer)
<i>Data formats</i>	csv
<i>Reuse of existing data</i>	No
<i>Data production/collection methods</i>	Data will be collected by data acquisition system of PV system
<i>Expected size of the data</i>	Size: MB
<i>Data utility (for whom it might be useful)</i>	The collected data will be used to produce feasibility analysis of PV use in the area which will be useful for the local partners, barn owners, farmers and decision-makers.
<i>Input, Processed or Output dataset</i>	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 42.- Overview of Demo 8 (Biogas energy production) dataset.

Dataset name	Biogas plant energy production dataset
Dataset provider	IZTECH
WP & Tasks	WP6, T6.9 WP5, T5.1.4
Purpose and relation to the objectives of the project	A small scale biogas plant will be implemented in the demo site to introduce the local people and farmers that they can use animals and plants waste for energy production for heating, cooking and lighting.
Dataset description (content)	Biogas plant energy production: Energy production in kWh daily.
Data types	Biogas plant energy production: Numeric (float or integer)
Data formats	csv
Reuse of existing data	No
Data production/collection methods	Data will be collected by data acquisition system of biogas plant
Expected size of the data	Size: MB
Data utility (for whom it might be useful)	The collected data will be useful for the local partners, farmers and decision-makers.
Input, Processed or Output dataset	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 43.- Overview of Demo 8 (Walking and cycling routes) dataset.

Dataset name	Creating walking and cycling routes in the demo area & reporting suggestions on artistic structures Design and reporting of structures for different uses on routes
Dataset provider	IZTECH & IZMM & DOGA & IZDOGA
WP & Tasks	WP6, T6.9
Purpose and relation to the objectives of the project	Green Route for cyclists and pedestrians will be created for promotion of the delta. Suggestions regarding artistic structures, such as land art on routes, will be reported. Along the route, units such as nature puzzles, a nature classroom in the sea, wooden platforms, salty wetland plains, birdwatching towers, and bird perches will be designed and constructed.
Dataset description (content)	Maps and coordinates of routes and structures.
Data types	text, image, audio, video, map
Data formats	DOC, PDF, JPEG, PNG, MP4, KMZ
Reuse of existing data	YES
Data production/collection methods	Fieldworks, feedback from the public.
Expected size of the data	MB
Data utility (for whom it might be useful)	The collected data will be useful for the public and transferability.
Input, Processed or Output dataset	Initial input (to guide system requirements and operational procedures) and output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	Open access

Table 44.- Overview of Demo 9 (Rainwater harvesting) dataset.

Dataset name	Rainwater harvesting
Dataset provider	eBOS (DEMO 9 Leader)
WP & Tasks	WP6 (operation)/ T6.10 & WP7 (transferability & exploitation)
Purpose and relation to the objectives of the project	1. Monitoring rainwater capture Quantity & water storage Quality & water utilization (irrigation) quantity & quality. Rainwater collection & water management towards climate adaptation & resilience. 2. Vertical greening systems (vertical plant walls), Public – Green Space, Hydroponic vertical food production.
Dataset description (content)	• Weather station DATA Temperature: The current temperature at the weather station location. Humidity: The relative humidity level at the weather station location. Rainfall: The amount of rainfall that has occurred. Wind Speed: The current wind speed at the station's location. Wind Direction: The direction from which the wind is blowing. Pressure: The atmospheric pressure at the station's location • Water Sensors DATA Water Tank(s) Level Measurements. Water storage quantity • Flow meters: Inflow & Outflow water quantity (into or from tank(s)) • Water quality Sensors DATA ph, Conductivity, turbidity • Soil moisture sensors DATA • Lab measurements, Lab analysis data *To be defined during the design, construction and during the operational status
Data types	text, table, Charts (numeric)
Data formats	DOC, PDF, CSV, JSON, JPEG, PNG, MP4, .doc, .jpg, .g2m, .pptx, .json
Reuse of existing data	No
Data production/collection methods	Data production/collection according the data parameter (on line monitoring stored in a database or extract once a week via usb stick) in daily base and some parameters such us water inflow or water outflow in 10min base. *To be defined
Expected size of the data	Size: max 1GB (probably a couple of hundred MBs) It depends from the data storage and visualisation platform to be chosen. *To be defined
Data utility (for whom it might be useful)	For the NBS user, for the transferability cases & for the digital tools designers (?)
Input, Processed or Output dataset	Input DATA Pipeline & Tank(s) dimensions Output DATA datasets produced by the NBS operation
Confidentiality and known security issues (if applicable)	No significant issues identified Minor possibility for misuse
Access Level	At first, Restricted to consortium, can be publish to open data spaces and turned into publications after data analysis.

Table 45.- Overview of Demo 9 (Phytoplankton) dataset.

Dataset name	Water treatment using phytoplankton
Dataset provider	eBOS(DEMO9 leader, NTUA)
WP & Tasks	WP6 (operation) T6.10 & WP7 (transferability & exploitation)
Purpose and relation to the objectives of the project	Water treatment using phytoplankton to be used for irrigation
Dataset description (content)	• pH – indirect measurements of CO₂, important to be maintained within levels that allow microalgal growth • Light radiation – required for microalgal photosynthesis and growth • Temperature – growth of microalgae is temperature dependent • Chlorophyll – important parameter relevant to microalgal growth and quality • Biomass – growth efficiency and productivity of the systems • Nutrients (nitrate, ammonium, phosphate) – monitoring of nutrient removal, determination of nutrient supplementation requirements • Trace minerals – removal of metals, monitoring of salinity, monitoring of hardness • Microalgae predators – can cause sudden crash of the system • Biomass content – shows the quality of biomass and shows the potential for further application • Dissolved oxygen – indirect measurement of photosynthetic activity that is crucial for microalgal survival • Water input and output – cost calculation, important for KPIs • Electricity consumption - cost calculation, important for KPIs • Turbidity – indication of water clarity and indirect measurement of biomass production, crucial parameter as it may affect the light distribution inside the pond
Data types	• pH: Numeric (float or integer) • Light radiation: Numeric (float or integer) • Temperature: Numeric (float or integer) • Chlorophyll: Numeric (float or integer) • Biomass: Numeric (float or integer) • Nutrients (nitrate, ammonium, phosphate): Numeric (float or integer) • Trace minerals: Numeric (float or integer) • Microalgae predators: Numeric (float or integer) • Biomass content: Numeric (float or integer) • Dissolved oxygen: Numeric (float or integer) • Water input and output: Numeric (float or integer) • Electricity consumption: Numeric (float or integer) • Turbidity: Numeric (float or integer)
Data formats	DOC, PDF, CSV, JSON, JPEG, PNG, MP4, .doc, .jpg, .g2m, .pptx, .json
Reuse of existing data	NO
Data production/collection methods	Data sample from sensors available in the setup. • pH: 30 -60 min • Light, temperature: 10 min • Chlorophyll: Daily / Hourly • Biomass: Daily/ twice a week

	• Nutrients, Trace minerals: Daily /weekly • Microalgae predators, Biomass content, Water input and output, electricity consumption & turbidity: Daily • Dissolved oxygen: Hourly/ every 30 min
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	The collected data will be useful for the local partners to determine the microalgal biomass production rate, efficiency under the conditions in Cyprus
Input, Processed or Output dataset	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified
Access Level	At first, restricted to consortium, can be publish to open data spaces and turned into publications after data analysis

Table 46.- Overview of T4.1 (Climate indicators) dataset.

Dataset name	Name of the dataset
Dataset provider	CREAF
WP & Tasks	WP4, T4.1
Purpose and relation to the objectives of the project	Catalogue indicators for evaluating NBSs regarding climate resilience
Dataset description (content)	Types of indicators
Data types	Excel type file with indicators divided by category and subcategory, with examples
Data formats	.xlsx or similar csv, together with a .docx or .pdf document
Reuse of existing data	Will be derived in part from other data sources
Data production/collection methods	Data collected via literature review and expert consultation
Expected size of the data	Low, a few KB
Data utility (for whom it might be useful)	To NBS implementers who want to test the climate resilience of the solution implemented.
Input, Processed or Output dataset	No processed output
Confidentiality and known security issues (if applicable)	No
Access Level	Open access

Table 47.- Overview of T4.3 (Upscaling methodology) dataset.

Dataset name	Upscaling methodology
Dataset provider	ICCS
WP & Tasks	WP4, T4.3
Purpose and relation to the objectives of the project	Upscaling NBS from local to regional scale
Dataset description (content)	• NBS benefit indices • Maps • Proposed NBS solutions
Data types	• NBS benefit indices: Numeric (float or integer) • Maps: Numeric (float) • Proposed NBS solutions: Categorical (text or numeric)
Data formats	CSV
Reuse of existing data	NO
Data production/collection methods	Data collected from AI models.
Expected size of the data	MB
Data utility (for whom it might be useful)	CARDIMED digital platform.
Input, Processed or Output dataset	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No confidentiality of security issues.
Access Level	Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 48.- Overview of T4.5.1 (Reports) dataset.

Dataset name	CARDIMED Application Generated Reports
Dataset provider	UBRU
WP & Tasks	T4.5.1: CARDIMED NBS definition and scenario-based impact assessment interface
Purpose and relation to the objectives of the project	The dataset includes reports generated by the CARDIMED digital platform, which provide detailed insights into scenario-based impact assessment of NBS.
Dataset description (content)	The report will comprise (a) data visualizations and analyses, reflecting user interactions and findings from the data exploration functionality, and (b) comprehensive reports outlining the outcomes, observations, and implications of various scenarios tested within the application.
Data types	textual data, images
Data formats	RDF, PDF
Reuse of existing data	NO
Data production/collection methods	Automatically generated by the application upon completion of data exploration activities and scenario-based testing by the users.
Expected size of the data	Size: MBs
Data utility (for whom it might be useful)	Useful for analysts, decision-makers, and stakeholders for reviewing and understanding the outcomes of data exploration and scenario testing
Input, Processed or Output dataset	Output data
Confidentiality and known security issues (if applicable)	The reports may contain sensitive or proprietary information requiring secure storage and restricted access.
Access Level	Restricted to authorized personnel and stakeholders with relevant clearance.

Table 49.- Overview of T4.5.1 (User experience) dataset.

Dataset name	CARDIMED User Experience Feedback
Dataset provider	UBRU
WP & Tasks	T4.5.1: CARDIMED NBS definition and scenario-based impact assessment interface
Purpose and relation to the objectives of the project	This dataset aims to collect and analyze user feedback to improve the CARDIMED interface functionality and user satisfaction.
Dataset description (content)	This dataset is a collection of qualitative feedback data provided by users regarding their experience with the CARDIMED NBS definition and scenario-based impact assessment interface. This includes comments on usability, functionality, and overall user satisfaction
Data types	textual feedback
Data formats	JSON
Reuse of existing data	NO
Data production/collection methods	Feedback collected via in-app feedback forms, or direct user comments within the interface.
Expected size of the data	Size: kB
Data utility (for whom it might be useful)	Essential for project developers, UX designers, and stakeholders to understand user needs, improve the interface, and ensure effective deployment of NBS models.
Input, Processed or Output dataset	Output data
Confidentiality and known security issues (if applicable)	Feedback may contain personal user information or opinions, requiring data anonymization and secure data handling practices.
Access Level	Primarily for internal project team members for analysis and development purposes

Table 50.- Overview of T4.5.3 (Citizen engagement application) dataset.

Dataset name	Citizen engagement application
Dataset provider	ICCS
WP & Tasks	WP4 / Task 4.5.3
Purpose and relation to the objectives of the project	Data will be collected from the citizens using the application (such as, reports on locally intense and adverse effects of climate events, micro-climate conditions) to understand the citizen perception of benefits or risks, with particular focus on heatwave and flood risks; biodiversity information and to enable feedback collection for the acceptance of the proposed NBS solutions.
Dataset description (content)	There are two functionalities. The first is to gather information from the user, such as: - reports on locally intense and adverse effects of climate events and micro-climate conditions - citizen perception of benefits or risks, with particular focus on heatwave and flood risks - biodiversity information The second is to foster the user's engagement by employing the AR technology to visualize information, namely: - site-specific information - climate change impacts for baseline/future scenarios in local context
Data types	Data can be collected by the user through assessment forms which consist of: Text: reports on climate events and their effects Images: helping to visualize the reports The multimedia presented to the user can be of type: Text: site-specific information and news about climate events Images: visualized multimedia content for engagement through AR Audio: visualized multimedia content for engagement through AR Video: visualized multimedia content for engagement through AR 3d model (animated or not): visualized multimedia content for engagement through AR Quiz: text in the form of question/answers
Data formats	Text: string Images: JPEG, PNG, TIFF, BMP Audio: MP3, WAV Video: MP4, MOV 3d model: FBX, OBJ Quiz: string The data can be transferred between (to/from) the user and the CMS (Content Management System) through JSON files
Reuse of existing data	NO
Data production/collection methods	Information is presented to the user when they visit a specific Point of Interest. Data is collected from the user when they fill in a corresponding assessment form
Expected size of the data	Size: Hundreds of MB, mainly because of the images, videos and 3d models

Data utility (for whom it might be useful)	Technology providers and other NBS solution owners, DEMO leaders, and other major stakeholders who aim to understand the citizens perception on the proposed solutions. Plus, the exchange of data will facilitate the citizen engagement and awareness towards the proposed solutions. The tool will be accessible to all DEMO sites of the project where solutions and new technologies will be implemented.
Input, Processed or Output dataset	The Input dataset can be regarded the visualized information presented to the user by the AR app when they visit a specific Point of Interest. The Output dataset is the data generated by the user through the assessment forms
Confidentiality and known security issues (if applicable)	There are no security issues identified. The data collected by the user can be anonymized.
Access Level	Restricted to consortium

Table 51.- Overview of T4.5.4 (NBS DSS) dataset.

Dataset name	NBS Decision Support System
Dataset provider	CETAQUA, Demos
WP & Tasks	WP2, WP4, T4.5.4
Purpose and relation to the objectives of the project	Propose optimal place location of NBS
Dataset description (content)	The dataset is composed of various GIS data describing the site. It may include the following layers: • Land use / land cover: describes the type of coverage in a certain place. • Geological description • Climate data • Topography • Social indices
Data types	GIS data can be of two types, depending on the nature of the layer: • Raster: pixel-based layer covering the area with a grid layer system. Each cell is represented by a pixel whose value determines the variable value (e.g., mean temperature). Common formats include .tiff, .geotiff, and .jpeg. • Vector: vector-based layer covering the area with a set of geometrical entities. Each entity is georeferenced in space and can contain as much information as needed. Common formats include .shp and .geojson. The encoded information can be of any data type (floats, integers, booleans, strings, categoricals, etc.).
Data formats	Mainly .tiff, geotiff, .jpeg, .shp and .geojson
Reuse of existing data	All the data has already been produced and is available on the web. Some of it is published by national institutions.
Data production/collection methods	Given the long update periods (at least once a year), the data is manually downloaded from web sources only once.
Expected size of the data	GIS data, especially raster data in high resolutions, can be heavy. The expected size may range between 50 MB and 300 MB per layer, totaling around 1 GB per site.
Data utility (for whom it might be useful)	Local authorities, urban planners, policy makers, etc.
Input, Processed or Output dataset	From the list, all datasets except social indicators are input datasets. Social indicators is a processed dataset. The output is expected to be a heatmap (raster layer).
Confidentiality and known security issues (if applicable)	No confidential data or security issues expected.
Access Level	If the demo sites do not specify otherwise, the data may be open to the public

Table 52.- Overview of WP5 (WEFE evaluation) dataset.

Dataset name	CARDIMED_WEFE_Nexus_Evaluation_Data
Dataset provider	UBRU
WP & Tasks	T5.2 - CARDIMED integrated WEFE nexus evaluation
Purpose and relation to the objectives of the project	The dataset is intended to evaluate the Water-Energy-Food-Ecosystems (WEFE) nexus within the CARDIMED project. It aims to allow the impact assessment of the solutions from societal, environmental, and circular economy viewpoint, and, thereby, support integrated resource management.
Dataset description (content)	Tentative list containing but not limited to: Water Usage Data • Total volume of water consumed • Water use efficiency • Water quality indicators Energy Consumption and Production • Total energy consumed • Energy use in agricultural and industrial processes • Renewable vs non-renewable energy sources ratio Food Production Statistics • Crop yields (tons per hectare) • Land use for agriculture (hectares) • Input use in agriculture (fertilizers, pesticides, etc.) Ecosystem Services Indicators • Biodiversity indices (species richness, abundance) • Soil health metrics (organic matter content, erosion rates) • Carbon sequestration rates (tons of CO2 equivalent) Socio-Economic Data • Population demographics (total population, population density) • Economic indicators (GDP, sector-wise economic outputs) • Employment statistics in WEFE sectors Resource Efficiency Metrics • Water use efficiency per sector • Energy efficiency in food production Sustainability Indicators • Carbon footprint • Energy footprint • Water footprint • Other LCA-based indicators Risk and Vulnerability Indices • Drought risk indices • Energy security vulnerability indices Projected indicators • Projected changes in water availability • Future energy demands based on population and economic growth models. Ecosystem Impact Measures • Changes in land use patterns • Impact on biodiversity (changes in species abundance or diversity)

	Policy Impact Assessment - Quantitative assessment of policy interventions (e.g., water pricing impacts on agricultural productivity) Economic Impacts - Cost-benefit analysis of different WEFE management strategies - Economic value of ecosystem services
Data types	Numeric data (float)
Data formats	HDF5 for output data (Resource Efficiency Metrics, Sustainability Indicators, Risk and Vulnerability Indices, Projected Indicators, Ecosystem Impact Measures, Policy Impact Assessment, Economic Impacts) CSV, GeoTIFFs, GeoJSON for input data (Water Usage Data, Energy Consumption and Production, Food Production Statistics, Ecosystem Services Indicators, Socio-Economic Data)
Reuse of existing data	Data are partially derived from existing environmental and socio-economic datasets. They will be complemented with new data collected specifically for this project.
Data production/collection methods	Data are collected from existing databases (to be determined explicitly in the future per subset of data) and produced through simulations and analytical models.
Expected size of the data	Size: ~several hundreds of MB
Data utility (for whom it might be useful)	- Support integrated resource management and policymaking, - Data to be fed to DSS to assist relevant stakeholders in decision-making processes
Input, Processed or Output dataset	The dataset includes input data (Water Usage Data, Energy Consumption and Production, Food Production Statistics, Ecosystem Services Indicators, Socio-Economic Data), and output data (Resource Efficiency Metrics, Sustainability Indicators, Risk and Vulnerability Indices, Projected Indicators, Ecosystem Impact Measures, Policy Impact Assessment, Economic Impacts).
Confidentiality and known security issues (if applicable)	The dataset may contain some confidential data related to proprietary research methods or sensitive environmental data. In this case, adequate security measures should be in place to prevent misuse (answer will be updated in the future).
Access Level	Restricted access to consortium members; selected part of the data available for public access under open licenses.

Table 53.- Overview of WP5 (Energy efficiency) dataset.

Dataset name	CARDIMED_EnergyEfficiency_Resilience_Analysis
Dataset provider	UBRU
WP & Tasks	T5.1.4 - Introduction of energy-efficient solutions, flexibility, and resilience functions
Purpose and relation to the objectives of the project	The dataset is intended to evaluate and optimize energy efficiency, resilience, and reliability in DEMOs under extreme events. It focuses on the interrelated impacts among the nexus components like renewables, bioenergy, water treatment, and climate change.
Dataset description (content)	Tentative list containing but not limited to: • Energy Consumption Data Detailed records of energy usage in different sectors, including baseline energy consumption and variations due to implementation of energy-efficient solutions. • Energy Production Data This would include data on the capacity, output, and efficiency of energy sources (particularly from renewable sources). • Energy Flow Metrics Quantitative measurements of energy flows within the system, illustrating how energy moves and is utilized across different areas. • Resilience and Reliability Data This could include metrics on system downtime, recovery times, and energy supply stability. • Climate and Environmental Data Relevant climate data, such as temperature and precipitation patterns. Environmental data might also include land use patterns influenced by renewable energy installations. • Efficiency Indicators This could include energy savings, reduction in carbon emissions, and improvements in energy intensity (energy use per unit of output). • Waste Heat Recovery Data Information related to the potential and actual recovery of waste heat from various processes, contributing to energy efficiency. • Economic Data Cost-benefit analysis of energy-efficient solutions, including investment costs, operational savings, and payback periods.
Data types	Numeric data (float)
Data formats	HDF5 for output data CSV, GeoTIFFs, GeoJSON for input data (climate, environmental and energy usage data)
Reuse of existing data	Incorporates existing data on energy consumption and production, and climate change projections.
Data production/collection methods	Data are collected from existing databases (climate, environmental and energy usage data) and produced through simulations and analytical models (efficiency indicators, resilience and reliability data, economic data).
Expected size of the data	Size: ~100 MBs
Data utility (for whom it might be useful)	• Data to be fed to the WEFE nexus models.

Input, Processed or Output dataset	Input data include climate, environmental and energy usage data; output data include data from resilience and efficiency analyses.
Confidentiality and known security issues (if applicable)	The dataset may include proprietary information on energy-efficient technologies and sensitive data on energy infrastructure vulnerabilities. In this case, adequate security measures should be in place to prevent misuse (answer will be updated in the future).
Access Level	Restricted access; public access to aggregated data and findings in regional reports.

Table 54.- Overview of WP7 (Replication) dataset.

Dataset name	Documentation of demos
Dataset provider	SEO/BirdLife
WP & Tasks	WP7
<i>Purpose and relation to the objectives of the project</i>	Monitor the temperature conditions of schools involved in the replication case (in Catalonia)
<i>Dataset description (content)</i>	• Pictures and video shooting • Temperature: The current temperature at the weather station location • Humidity: The relative humidity level at the weather station location
<i>Data types</i>	• Image, video • Temperature: Numeric (float or integer) • Humidity: Numeric (float or integer)
<i>Data formats</i>	JPEG, PNG, MP4, XLXS
<i>Reuse of existing data</i>	No
<i>Data production/collection methods</i>	Data collected by divers/under water photographer and video operator Data sampled from the thermometer station system every day (along three years).
<i>Expected size of the data</i>	MB
<i>Data utility (for whom it might be useful)</i>	Information to be fed to relevant stakeholder and final users. Climate comparisons between playgrounds design in schools (concrete surfaces vs covered and vs naturalised areas).
<i>Input, Processed or Output dataset</i>	Output data (datasets produced by the project activities).
Confidentiality and known security issues (if applicable)	No issues identified.
Access Level	Open access. Climate: Restricted to consortium, can be publish to open data spaces after the data cleaning

Table 55.- Overview of WP8 (Website) dataset.

Dataset name	CARDIMED Website
Dataset provider	BIOAZUL
WP & Tasks	WP8 Milestone; T8.1 Project communication plan and dissemination of project results;14 Project Website
Purpose and relation to the objectives of the project	Collation of information for profile of each partner for the website, including details of DEMOs
Dataset description (content)	Short description of organisation, role in CARDIMED, photo representing organisation, website, address and central email contact
Data types	Text & image
Data formats	DOC and JPEG
Reuse of existing data	No
Data production/collection methods	Data collated via word template and uploaded onto project sharepoint. Requested via email.
Expected size of the data	Word template per partner 85,9 Ko plus image approx 2,20 Mo
Data utility (for whom it might be useful)	Information to be fed to relevant stakeholder and final users.
Input, Processed or Output dataset	DEMO info can be regarded as initial info and information will be complemented as the project progresses.
Confidentiality and known security issues (if applicable)	N/A open access for the website
Access Level	Open access

Table 56.- Overview of WP8 (Dissemination monitoring) dataset.

Dataset name	Dissemination monitoring
Dataset provider	BIOAZUL
WP & Tasks	WP8 Milestone; T8.1 Project communication plan and dissemination of project results
Purpose and relation to the objectives of the project	CARDIMED Dissemination Monitoring
Dataset description (content)	Dissemination & Communication Activity, Scientific Publication & Media Activity (related to CARDIMED)
Data types	Table for collation, but data collated can be in form of text, image, audio or video
Data formats	XLSX for collation and dissemination element can be in any format (DOC, PDF, CSV, JSON, JPEG, PNG, MP4, .doc, .jpg, .g2m, .pptx, .json)
Reuse of existing data	No
Data production/collection methods	Data collated via excel archive
Expected size of the data	Kb
Data utility (for whom it might be useful)	Information to be fed to relevant stakeholder and final users. Used to disseminate through project website and social media channels and at relevant conferences & events (Scientific publications)
Input, Processed or Output dataset	Output data
Confidentiality and known security issues (if applicable)	N/A open access for the website and social media channels
Access Level	Open access

Table 57.- Overview of WP8 (Communication and Dissemination) dataset.

Dataset name	Communication plan
Dataset provider	SEMIDE
WP & Tasks	WP8 Milestone; T8.2 Project communication plan and dissemination of project results
Purpose and relation to the objectives of the project	Cooperation with external actors who work on similar and cross-linked areas to CARDIMED. The aim is to maximise the impact, make synergies, share experiences and promote results. Collaborations will take various forms, e.g. organising joint sessions in conferences, publishing common articles and policy briefs, making cross links on websites and sharing posts on social media.
Dataset description (content)	Compilation of related projects and initiatives.
Data types	Table for collation.
Data formats	XLSX
Reuse of existing data	No
Data production/collection methods	Data collated via excel archive
Expected size of the data	Kb
Data utility (for whom it might be useful)	Information to be fed to relevant stakeholder and final users.
Input, Processed or Output dataset	Processed data
Confidentiality and known security issues (if applicable)	N/A open access for the website and social media channels
Access Level	Open access