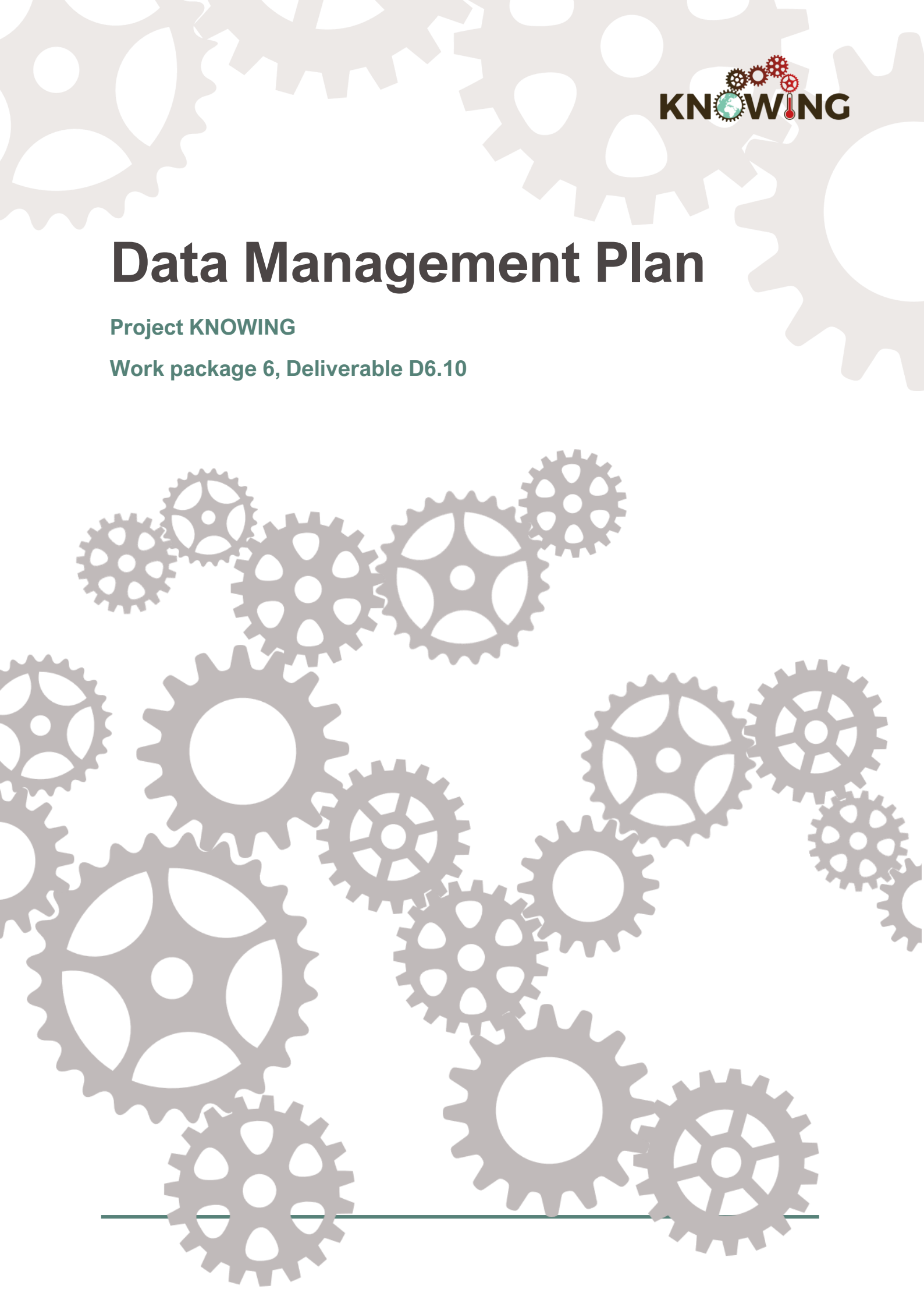


Data Management Plan

Project KNOWING

Work package 6, Deliverable D6.10




Data Management Plan

Work package 6, Deliverable D6.10

Please refer to this report as follows:

Havlik, D. (2025). Data Management Plan v2. Deliverable D6.10 of the Horizon Europe project KNOWING

| Project information | |
|---|---|
| Project name: | KNOWING – Framework for defining Climate Mitigation Pathways based on Understanding and integrated Assessment of Climate Impacts, Adaptation Strategies and Societal Transformation |
| Grant Agreement No. | 101056841 |
| Start date: | 01/06/2022 |
| Duration: | 48 months |
| Coordinator: | Tovaas Kristin, Research Engineer AIT Austrian Institute of Technology Giefinggasse 4, 1210 Vienna, Austria |
|  | Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them. |
| Deliverable details | |
| Description: | Updated Data Management plan of the KNOWING project, at M36 (May 2025) |
| Version: | Final |
| Dissemination level: | PUB |
| Due date: | 30/05/2025 |
| Submission: | 30/05/2025 |
| Lead: | Havlik, Denis (AIT) |
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List of Acronyms

| | |
|---------|---|
| CIC | Climate interaction context |
| DMP | Data Management Plan |
| DOI | Digital object identifier |
| FAIR | Findable, Accessible, Interoperable and Reusable |
| HE | Horizon Europe |
| ICARIA | Improving ClimAte Resilience of crltical Assets (HE project) |
| INSPIRE | Infrastructure for Spatial Information in Europe |
| IPCC | Intergovernmental Panel on Climate Change |
| JSON | JavaScript Object Notation (data format) |
| JSON_LD | JSON for Linking Data (data format) |
| KISS | Keep it simple, silly |
| MAIA | Maximising impact and accessibility of European climate research (HE Coordination Action) |
| OGC | Open Geospatial Consortium (Standardization organisation) |
| URI | Uniform Resource Identifier |
| W3C | World Wide Web Consortium (Standardization Organisation) |
| WFS | Web Feature Service (OGC Standard) |
| WCS | Web Coverage Service (OGC Standard) |
| WMS | Web Map Service (OGC Standard) |
| WMTS | Web Map Tile Service (OGC Standard) |
| XML | Extensible Markup Language (Markup language standardized by W3C) |

Glossary

Note: A project-wide glossary is currently under development. The following table only contains the most relevant terms for this Deliverable. The definition of system dynamics related terms has been taken over from (Ford, 2019).

| | |
|-------------------------|--|
| ActivityPub | Decentralized social networking protocol based on the ActivityStreams 2.0 data format. ActivityPub is an official W3C recommended standard (https://www.w3.org/TR/activitypub/) published by the W3C Social Web Working Group. It provides a client to server API for creating, updating and deleting content, as well as a federated server to server API for delivering notifications and subscribing to content. |
| Activity Streams | Data Format used by Activity Pub. W3C Recommendation (https://www.w3.org/TR/activitystreams-core/ , https://www.w3.org/TR/activitystreams-vocabulary/) |
| Climate impacts | The consequences of realized risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather and climate events), exposure, and vulnerability. Impacts generally refer to effects on lives; livelihoods; health and well-being; ecosystems and species; economic, social and cultural assets; services (including ecosystem services); and infrastructure (based on IPCC, 2018) |
| fediverse | The fediverse (a portmanteau of "federation" and "universe") is an ensemble of federated (i.e. interconnected) servers that are used for web publishing (i.e. social networking, microblogging, blogging, or websites) and file hosting, but which, while independently hosted, can communicate with each other. |
| GeoServer | An open-source server for sharing geospatial data (https://geoserver.org/) |
| mastodon | Mastodon is free and open-source software for running self-hosted social networking services. It has microblogging features similar those offered by Twitter service, which are offered by a large number of independently run nodes, known as instances, each with its own code of conduct, terms of service, privacy policy, privacy options, and moderation policies. |
| OpenAIRE | Pan-European open and sustainable scholarly communication infrastructure harvesting research output from connected data providers (https://www.openaire.eu/). |
| QGIS Server | QGIS Server is an open-source WMS, WFS, OGC API for Features 1.0 (WFS3) and WCS implementation that, in addition, implements advanced cartographic features for thematic mapping. (https://docs.qgis.org/) |
| Zenodo | a general-purpose open repository developed under the European OpenAIRE program and operated by CERN (https://zenodo.org/) |

Executive summary

Second version of the Data Management Plan (DMP) confirms and where necessary updates the general policy and approach to data management in KNOWING that handles data management related issues on the administrative and technical level. This includes for example topics like data and metadata collection, publication and deposition of open data, the data repository infrastructure and compliance to the Open Access Infrastructure for Research in Europe (OpenAIRE). The KNOWING Data Management Policy is explained in section 2 of this document, following the structure of the Horizon Europe DMP template¹. As a general guideline, KNOWING Data Management Policy follows three main principles:

- **KISS:** both the data management within the project and discovery, access, and reuse of data during and after the project will be made as transparent and as simple as possible.
- **FAIR:** all data used in the project shall be easily Findable, Accessible, Interoperable and Reusable.
- **Societally Responsible:** data produced by the project will be made publicly available unless there is a compelling ethical or commercial reason against such publication. All project outputs (e.g. data, algorithms) will be explicitly checked for Ethics issues.

In addition, it includes the overview of datasets collected, processed, or generated by the project so far, as well as the information on methodology and standards, access and use rights, data curation and preservation.

1 KNOWING summary

Climate change has been globally recognised as an existential threat requiring urgent action to avoid catastrophic consequences. Hence, the EU's Green Deal has been proposed "to make Europe the first climate neutral continent in the world". This includes not only the elimination of net emissions of greenhouse gases by 2050; this is to be achieved while decoupling economic growth from resource use and striving for a fair implementation, leaving no person and no place behind. This ambitious goal is additionally challenged by the need to adapt to unavoidable impacts.

¹ <https://enspire.science/wp-content/uploads/2021/09/Horizon-Europe-Data-Management-Plan-Template.pdf>

According to the EU’s Climate Adaptation Strategy (COM(2021) 82), “improving knowledge and managing uncertainty” is key for realising the vision of a climate neutral and climate-resilient Union, as “Climate change is having such a pervasive impact that our response to it must be systemic”. Thus, there is an **urgent need for an integrated approach for enhanced understanding of the interaction, complementarity and trade-offs** between adaptation and mitigation measures, especially regarding the expected increase in regional mean temperature, changing precipitation pattern and soil moisture (IPCC AR6 WG I). Furthermore, this **understanding and knowledge needs to be provided to a broad audience to support local authorities** in EU countries for developing regional programmes.

KNOWING aims to develop a **modelling framework to help understand and quantify the interactions** between impacts and risks of climate change, mitigation pathways and adaptation strategies. The framework will be used to assess the **interrelations between public and private adaptation and mitigation strategies** in order to **identify mitigation pathways along optimised combinations of interventions** in different sectors (e.g. energy, mobility, land use, construction, agriculture). The framework will focus on **three main Climate Impact Contexts (CICs)**: (1) Heat waves & health, (2) Soil fertility & agriculture, and (3) Flooding & infrastructure (including river and coastal flooding). It will be applied **in four Demonstrator and five Follower Regions by involving authorities, stakeholders and citizens** to develop **enhanced activation and empowerment services, providing target-group-specific awareness, education and decision support tools** to improve the comprehensibility of complex interrelations and support strategic planning of combined adaptation and mitigation measures.

To achieve this goal, KNOWING will produce the following **key exploitable results (KERs)**:

- KER1 an **Impact Interaction Knowledge Base** comprising causal relations of climate and intervention impacts, rebound effects, coping strategies, etc. to inform Climate-ADAPT and IPCC Working Groups I, II & III
- KER2 an **Impact Interaction Model Framework** consisting of a system dynamics model, climate and sector models for integrated assessment of impacts (direct and indirect) of climate change and countermeasures.
- KER3 a Typology of transferable **Climate Mitigation Pathways** including optimised bundles of adaptation and mitigation measures for different typical Climate Impact Contexts (heat waves, soil fertility, flooding).
- KER4 **Climate Activation and Empowerment Services** addressing different target groups (citizens, businesses, authorities) to enhance climate literacy, provide playful trainings and support decision making.

These results, developed with the support of an External Expert Advisory Board (EEAB) and a Stakeholder Reference Group (SRG), will **accelerate the transition to a climate-neutral and resilient society and economy** enabled through advanced climate science, mitigation and adaptation pathways and behavioural transformations.

This Deliverable is part of WP6 Project Management and provides the draft version of the Data Management Plan describing all data management activities defined in Task T6.6.

2 KNOWING Data Management Policy

As mentioned in executive summary, KNOWING Data Management Policy follows three main principles:

- **KISS:** both the data management within the project and discovery, access, and reuse of data during and after the project will be made as simple as possible.
- **FAIR:** all data used in the project must be easily Findable, Accessible, Interoperable and Reusable.
- **Societally Responsible:** data produced by the project will be made publicly available, unless there is a compelling ethical or commercial reason against such publication.

By following these principles, KNOWING aims to minimise the effort required for data management during and after the project, while maximising the positive societal and scientific impact of the project and minimising the potential negative side-effects on project partners and society. Key rules of KNOWING Data Management can be summarised as:

1. **All KNOWING data sets will be referenced in Zenodo**, to assure that the information is easily discoverable and can be referenced by unique DOI – during and after the project.
2. **All Open Data produced in the project or published by the project for the first time will be also published in Zenodo**, to assure its long-term storage through OpenAIRE.
3. Some of the data sets used by the project may not be suitable for publication as Open Data, e.g. due to ethical / security or commercial confidentiality concerns. **For data that cannot be made public, the reasons for non-disclosure and conditions and procedures for accessing the data will be clearly stated both in Zenodo and in the DMP.** Such data will be managed by the owner and kept for at least five years after the project end.
4. **All KNOWING deliverables published after January 2023 also provide an annex document listing the data used or produced in preparation of that deliverable** – with references to data sources for input data and references to KNOWING Zenodo entries for data produced by the project. This information will be also reproduced in updated versions of the DMP.

2.1 Related work

Each KNOWING deliverable published after January 1st 2023 will provide a data summary as an annex to the main document. This annex answers the following questions:

1. What existing data has been considered for reuse in preparation of this deliverable? Why was a decision made to use or discard specific data sets?
2. What data has been generated in preparation of this deliverable?
3. What input and output data types and formats were used in preparation of the deliverable?
4. How does the data generated or re-used contribute to the objectives of the project?
5. Data provenance
6. Data Size
7. Conditions for re-use (e.g. Open Data, Commercial License, special conditions such as commercial confidentiality or ethical constraints)

8. Potential utility of the data outside project.
9. Unique identifier (URI or DOI) for extended data information and access instructions.

Template for this Annex document was provided as Annex A of D6.9 Draft Data Management Plan. A copy of this template is also attached to this document.

2.2 FAIR data

2.2.1 Making data findable, including provisions for metadata

KNOWING project has introduced a project-specific channel on Zenodo where all the relevant data produced by the project needs to be advertised (<https://zenodo.org/communities/knowing>)

For each data set produced by the project, a record containing all necessary meta-information needs to be published in Zenodo. Such records follow the standard Zenodo data model for data description² and contain at least the following information:

- Dataset name
- Human-readable description of the data (what is it, what can it be used for)
- Documentation needed to validate data analysis and facilitate data re-use (e.g. readme files with information on methodology, codebooks, data cleaning, analyses, variable definitions, units of measurement, etc.) or a reference to such documentation.
- Reference to the project
- Reference to partner(s) owning the data
- Data Format
- Data Size
- Conditions for reuse: license, price, confidentiality or ethical limitations, publishing embargo date (if any)
- Instructions for data access or URI (unless the data is attached to the record)
 - o Information on how to contact the data owners.
 - o If necessary, also instructions on special software that is needed to read the data.
- Unique ID: either a reference to existing unique data identifier (e.g. URI, DOI) or a new DOI generated by Zenodo

For input data that is used in the project, existing unique IDs is used when available. In the case such information is difficult to find or no open references are available, consortium may publish relevant meta-information records on Zenodo also for existing data sets used in the project.

2.2.2 Making data accessible

As a rule, the data produced in the project will be published as Open Data and published on Zenodo. Following exceptions are foreseen:

- If Open Data is published on a different, but equally sustainable platform or service, only a meta-information record, with a link to actual data will be published on Zenodo.
- Exceptions from Open Data policy can be made for commercial, ethical, legal or security reasons.

Proprietary and sensitive data used by or generated in the project will be managed by the partner owning the data / data usage rights. Project partners managing such data will keep it available on a storage of their choice (e.g. company-internal data repository) for a minimum of five years after the project end.

² KNOWING data scheme, based on Zenodo standard scheme, will be defined if necessary

Partner can also request a reasonable embargo of up to six months for publishing the data, to give time to publish or seek protection of the intellectual property (e.g. patents). In such case, the data will be published on Zenodo with embargo date set³, to assure that the data is automatically made available once the embargo end.

2.2.3 Making data interoperable

KNOWING will, as a rule, follow the best practices of the relevant communities such as COPERNICUS, INSPIRE and IPCC and re-use the existing data and metadata vocabularies, standards, formats, or methodologies for making the project data interoperable and to allow data exchange and re-use within and across disciplines.

Access to KNOWING geospatial data repositories will be established using standardised protocols like WMS, WMTS, WFS, WCS and OGC. Open-source tools like GeoServer or QGIS Server will be used to implement and provide such services.

Access to Climate Interaction Knowledge Base is still in the design phase. Our intent is to provide a web based application frontend with graphical user interface, as well as to define a standardised data exchange format and protocol for the data stored in this and other Climate Change Adaptation and Mitigation Knowledge Bases, such as “Gaps”, “Solutions”, “Strategies” and “Best practice examples”.

Our initial assumption was that this can be done in a way that is compatible with fediverse⁴ services and the standard ActivityPub data exchange protocol⁵, thus making the summaries of all data published in our Knowledge Database immediately available to millions of fediverse users, while also enabling the exchange of the full data sets between different Climate Change Adaptation and Mitigation knowledge management services. For this, following work would need to be done:

1. Extend the JSON-LD data model used by fediverse, to allow publishing of e.g. “Gaps”, “Solutions”, “Strategies” and “Best practice examples” as structured data that can be automatically interpreted by third party services.
2. Develop a reference implementation of ActivityPub compatible data exchange service for Climate Change domain.
3. Persuade other EU projects and initiatives to use this new data encoding and data exchange standard in their own knowledge Management platforms.

The ambition of this work goes way beyond that of the KNOWING project alone and our initial plan was to pursue it in cooperation with the MAIA coordination and support action, ICARIA, and other interested EU research projects and initiatives, with MAIA playing a central role in defining and popularising the data and exchange protocol standardization and KNOWING providing a first reference implementation of the Knowledge Base.

This idea was abandoned due to lack of stakeholder’s interest for use of ActivityPub protocol and extending of the fediverse JSON_LD model. As a fallback assuring the long-term availability of the data, the data contained within KNOWING Knowledge Base will also be published in an easy-to-use format (e.g. XML or JSON_LD) through Zenodo.

³ „Embargo status: Users may deposit content under an embargo status and provide an end date for the embargo. The repository will restrict access to the data until the end of the embargo period; at which time, the content will become publically available automatically.“ (<https://about.zenodo.org/policies/>)

⁴ <https://fediverse.party/en/fediverse/>

⁵ <https://www.w3.org/TR/activitypub/>

In case the use of project specific ontologies or vocabularies become inevitable, such ontologies or vocabularies will be published as open data / linked open data to allow reusing, refining, or extending them.

2.3 Other research outputs

No physical outputs will be generated in this project.

Other research outputs, such as software, workflows, protocols, models, reports, presentations, and publications will be managed in the same way as data. That is, a Zenodo record will be published for each output with relevant research output either attached to Zenodo record or referenced in the record.

2.3.1 Allocation of resources

As explained in section 2.2, most of the KNOWING results will be made available as Open Data, either through Zenodo (and thus through OpenAIRE), or through some service or repository that exists independently from the project. By utilising the existing European Open Data infrastructure, the project will minimise the cost of data publication and assure long term preservation without additional costs for the project or project partners.

AIT is responsible for overseeing the overall data management in the project. However, this responsibility is partially delegated to task leaders/deliverable editors and reviewers by the process described in section 2.2. Since a data summary must be included in each deliverable and reviewed as a part of deliverable review, AIT will be mainly responsible to assess that requests for temporary data embargo or nonpublication of data for commercial, ethical, legal or security reasons are reasonable and duly addressed. Further, AIT is responsible for combining these deliverable-level data summaries and including the results in Data Management Plan.

Organisation and costs related to hosting the non-public project results will be carried by partners owning the non-public results. These partners commit to manage such results for a minimum of five years after the project end.

2.4 Data security

As indicated in previous sections, most of the project data will be published as Open Data on Zenodo/OpenAIRE or similar platforms or services that provide reasonable guarantee of long-term sustainability. The task of assuring the long-term availability of the project results will thus be delegated to these platforms.

During the project lifetime, AIT will provide a managed data space for the whole project. This data space consists of a MS Teams group with attached data repositories for each of the work packages. Access to KNOWING data space is restricted to the project team and regular backups are performed. If necessary, AIT can also provide other types of data services, such as AIT-hosted project-specific GitLab repositories for the project duration.

AIT commits to keeping all project data available on a live system or as a data archive for at least 5 years after the project end.

In addition, AIT will also host the Climate Impact Knowledge Base, at least for the duration of the project. (see also section 2.2.3). Further hosting of the Climate Impact Knowledge Base after the project ends is planned, but the respective details and strategies will be defined in the KNOWING Exploitation Plan (D5.5).

Currently, no “secure” data spaces are foreseen at AIT. That is, sensitive data should be managed by its respective owners and should never be uploaded to the shared project data space.

2.5 Ethics

In task 2.3, the AI algorithms will be used, care will be taken that such algorithms adhere to ethical principles.

As of December 2022, there are no other known ethic or legal issues impacting the data sharing in KNOWING. Ethics will be explicitly assessed for all data used or produced in the project and transparently communicated through Data Summary annex (See Annex A of this document).

2.6 Other issues

As of December 2022, it is not foreseen to make use of other national/funder/sectorial/departmental procedures for data management.

3 Data summary

3.1.1 Increase data re-use

Documentation needed to validate data analysis and facilitate data re-use (e.g. readme files with information on methodology, codebooks, data cleaning, analyses, variable definitions, units of measurement, etc.) will be provided in relevant Zendo records – either as attached documentation, or as a reference.

As a rule, data generated in the project will be made available as Open Data to permit the widest re-use possible. Project partners can request exceptions from this rule for commercial, ethical, legal or security reasons. In addition, project partners can also request data publishing embargo, e.g., to maximise the scientific impacts of the project or prepare exploitation measures.

Relevant data quality assurance processes will be documented in “Data Summary” annex of each deliverable.

3.2 Deliverables published until M18

Following tables summarises the KNOWING deliverables that were scheduled for publication until M18 (Table 1) and their relevance for the Data Management plan:

Table 1: KNOWING deliverables scheduled for publication until M18 and their relevance for the data Management Plan. Deliverables underlined light red are either sensitive or do not produce any data of relevance for DMP.

| Deliverable | Deliverable Name | Due date | Input data? | Output data? | Ethics? |
|-------------|--------------------------------|-------------|--|---|---|
| D1.1 | Literature Review Summary | 30 Jun 2023 | Published evidence on risks, adaptation and mitigation measures, response risks and opportunities. | Literature review and contribution to climate interactions table | Both the input and the output documents contain only ethically sound recommendations. |
| D1.2 | CIC-related Measures Inventory | 31 Jul 2023 | Published evidence on risks, adaptation and mitigation measures, response risks and opportunities (with CIC focus) | Measures inventory (written document and table) | Ethical screening has been performed for proposed adaptation and mitigation measures. |
| D2.1 | Qualitative Interactive Model | 31 Aug 2023 | Climate interactions table (from D1.1) and Measures inventory table (D1.2) | Vensim model (mdl) files, containing qualitative causal relationships | - |

| Deliverable | Deliverable Name | Due date | Input data? | Output data? | Ethics? |
|-------------|--------------------------------|-------------|---|---|---|
| D3.1 | CIC Modelling Draft | 30 Sep 2023 | Climate interactions table (from D1.1) and Measures inventory table (D1.2) | - | - |
| D4.1 | Stakeholder Involvement Plan | 30 Nov 2022 | - | - | - |
| D4.2 | Strategic Outreach Plan | 30 Jun 2023 | - | - | - |
| D4.3 | Outreach Documentation | 30 Nov 2023 | - | - | - |
| D5.1 | DEC plan | 31 Aug 2022 | - | - | - |
| D5.2 | KNOWING Partner Toolbox | 30 Nov 2022 | - | - | - |
| D5.3 | Dissemination Archive | 31 May 2023 | Manual entry from KNOWING partners for preparing dissemination, promotional materials | Published information on dissemination, communication activities including links to published materials | Published recordings of activities may show persons participating in dissemination activities; persons give informed consent prior to recording |
| D5.4 | Knowledge Calendar and Archive | 30 Nov 2023 | Manual entry from KNOWING partners for preparing dissemination, promotional materials | Published information on dissemination, communication activities including links to published materials | - |
| D5.5 | KNOWING Exploitation Plan | 30 Nov 2023 | Published reports, studies on market conditions, policy making framework of several geographical and sectoral relevance | - | - |
| D6.1 | Project Manual | 30 Sep 2022 | - | - | - |

| Deliverable | Deliverable Name | Due date | Input data? | Output data? | Ethics? |
|-------------|---------------------------------|-------------|----------------------|--------------------|--|
| D6.2 | EEAB & SRG Terms of Reference | 31 Dec 2022 | - | - | - |
| D6.3 | EEAB & SRG Recommendations | 30 Nov 2023 | - | - | - |
| D6.4 | Summary of WP Activity Plans | 30 Nov 2023 | - | - | - |
| D6.5 | Deliverables Review Plan | 30 Sep 2022 | - | - | - |
| D6.6 | Risk Management Plan | 30 Sep 2022 | - | - | - |
| D6.7 | Financial Management Guidelines | 30 Sep 2022 | - | - | - |
| D6.8 | KNOWING Innovation Catalogue | 31 May 2023 | - | - | - |
| D6.9 | Draft Data Management Plan | 30 Nov 2022 | project plan | reporting template | Request to include ethics self-assessment in deliverable reports |
| D6.10 | Data Management Plan | 30 Nov 2023 | outputs of all tasks | overview of data | Ethics self-assessments for public deliverables. |

As indicated in section 2, relevant information needs to be collected for all KNOWING deliverables published in 2023 or later by deliverable editor and/or contributors and an annex document filled in. Project-level Data summary published hereafter is based on these deliverable-level summaries.

3.2.1 D1.1 Literature Review

This document is not public all the DMP-relevant data produced in this work is made public through D1.2

3.2.2 D1.2 CIC-related Measures Inventory

This deliverable (along with D1.1) represents the most comprehensive review of the existing evidence for inter and intra-sectoral response risks, opportunities and interactions emanating from climate risks, adaptation, and mitigation measures, and as such can serve as the foundation for modelling inside and outside of the KNOWING project. Since D1.1 is not a public document, all the DMP-relevant outputs of its work are also provided through D1.2.

Data accessibility: DMP-relevant data will be made available on Zenodo.

Data interoperability: data is provided in PDF (the ‘CIC-related Measures Inventory document) and XLS (the climate interactions table) formats.

Data reuse: Data produced in preparation of D1.2 is designed for reuse in D2.1 in development of the causal loop diagrams and for the basic D1.4 and final D1.5 Climate Interactions Knowledge Database. The document is available in pdf format.

Contribution to project objectives and impact: This deliverable (CIC-related Measure Inventory) is the result of Task 1.2 (Adaptation/mitigation measures and interactions) and comprises the collated and categorised adaptation and mitigation measures applicable in the KNOWING Climate Impact Contexts (CICs): Heat Waves and Health, Soil Fertility and Agriculture, River and Coastal Flooding and Infrastructure. The deliverable is intended to serve as the main inventory of measures which will be utilized in the causal loop diagrams developed in Task 2.1 (Construct qualitative interactive model), which are presented in Deliverable 2.1 (Qualitative Interactive Model). The collated adaptation and mitigation measures will also be used in the system dynamics modelling in Task 2.2 (Sector model coupling to quantitative system dynamics model) and presented in Deliverable D2.2 (Quantitative system dynamics Model). Moreover, the measures will be taken into consideration (along with stakeholder input) for inclusion in the simulations of the Demonstrator and Follower regions (representative of the different CICs) in Work Package 3 (Model CIC-specific Demonstrator Pathways). The measures presented in the report will be incorporated into the work of Task 1.4 (Create Climate Interaction Knowledge Base) and disseminated through the related Deliverable 1.4 (Basic Climate Interaction Knowledge Base) and Deliverable 1.5 (Final Climate Interaction Knowledge Base).

Security and Ethics: The data produced in this deliverable underwent multiple rounds of internal review during the course of the project, thus assuring the quality and ethical soundness of the recommendations.

Table 2: Data used in preparation of KNOWING deliverable D1.2

| Data set name | Format | Size | Owner & re-use conditions (+++) | Potential Utility within and outside KNOWING | Unique ID |
|------------------------------|--------|--------|------------------------------------|---|-----------|
| Academic and grey literature | PDF | 1.05MB | Mostly open data | Literature used in preparing this deliverable may be of use for other projects and initiatives, but we do not manage or host it. List of references is provided in references section of the deliverable. | N/A(*) |

Table 3: Data produced in preparation of KNOWING deliverable D1.2

| Data set name | Format | Size | Owner & re-use conditions | Potential utility outside KNOWING | Unique ID |
|------------------------------------|--------|------|---------------------------|--|-----------|
| KNOWING climate interactions table | xls | 88kB | KNOWING, open data | Use as supplement to literature review | N/A(+) |

(*) D1.2 is a public project deliverable and will be available on CORDIS at <https://cordis.europa.eu/project/id/101056841/results>. Also available on <https://knowing-climate.eu/resources/>

(+) Not publicly published in this form. Integrated in the KNOWING knowledge base.

3.2.3 D2.1 Qualitative Interactive Model

The qualitative system structure and the CLDs elaborated in this report provide an important input for the next step in the modelling process – the development of a quantitative SD Model, besides they will also be incorporated in the KNOWING Knowledge DB.

Data accessibility: D2.1 is based on the data produced and documented in WP1: Climate interactions table (from D1.1) and Measures inventory table (D1.2). The output data of D2.1 are related to a qualitative SD Model, i.e. a collection of system variables (categorized by subsystems) and causal links between them. Output data has been published on Zenodo.

Data interoperability: D2.1 DATA CONSISTS OF Vensim model (mdl) files. These are text files that contain all the relevant model data, including sketch (CLD) descriptions.

Mdl files are primarily intended for use within the Vensim platform. Other SD simulation platforms (e.g. PySD) can also read these files as input files, but the compatibility is only partial. Moreover, Vensim allows to export models in XMILE format. The XMILE (XML Modelling Interchange Language) standard describes a standard format for sharing and distributing System Dynamics models. Unfortunately, recent progress in extending the XMILE functionality has been very slow.

Data reuse: Data produced in preparation of D2.1 are designed for reuse in subsequent tasks of WP2, in particular for D2.2, since the full SD model will be based on the qualitative model developed for D2.1. As stated before, the Vensim platform (all license versions) is the preferred software to load and reuse the mdl files.

Contribution to project objectives and impact: D2.1 (accompanying report) is part of WP2 (Develop Modelling Framework) and reports on the results of task T2.1, the first step towards KER2, defining the approach and developing a qualitative model as a set of causal loop diagrams. The actual Deliverable D2.1 (Type: Other) consists of a graphical representation of the qualitative interactive System Dynamics Model on the project website, communicating the complexity of mitigation-adaptation relationships to a broad audience and thereby contributing to the project's impact.

Security and Ethics: The work performed in this deliverable and the data used or produced aren't considered sensitive in terms of ethics or security. The models developed could, in principle, be used to construct some unethical development pathway, but this will not be done within this project.

Table 4: Data used in preparation of KNOWING deliverable D2.1

| Data set name | For- mat | Size | Owner & re-use conditions | Potential Utility within and outside KNOWING | Unique ID |
|---------------------------------------|-------------|------|------------------------------|--|--------------|
| Data outputs of KNOWING D1.1 and D1.2 | Excel | NA | KNOWING, Open Data | See explanation in D1.1 and D1.2 reports | NA |

Table 5: Data produced in preparation of KNOWING deliverable D2.1

| Data set name | For- mat | Size | Owner & re- use condi- tions | Potential utility out- side KNOWING | Unique ID |
|--|-------------|--------------|------------------------------------|--|------------------------------|
| KNOWING_Qalitative- Model_v0.5_merged | mdl | 70.8 kB | KNOWING, open data | Could serve as framework model. | 10.5281/ze- nodo.10210764 |
| KNOWING_Measures_Ex- amples | mdl | 116.91 KB | KNOWING, open data | Could serve as framework model. | 10.5281/ze- nodo.10160178 |

3.2.4 D3.1 CIC Modelling Draft

This document is not public and not relevant for Data Management Plan

3.2.5 D4.1 Stakeholder Involvement Plan

This document is not public and not relevant for Data Management Plan

3.2.6 D4.2 Strategic Outreach Plan

This document is not public and not relevant for Data Management Plan

3.2.7 D4.3 Outreach Documentation

This document is not public and not relevant for Data Management Plan

3.2.8 D5.1 DEC plan

This document is not public and not relevant for Data Management Plan

3.2.9 D5.2 KNOWING Partner Toolbox

This document is not public and not relevant for Data Management Plan

3.2.10 D5.3 Dissemination Archive

This document is public and lists all the publications made in the project. These publications are or will be advertised through Zenodo but listing them here would be overkill.

3.2.11 D5.4 Knowledge Calendar and Archive

Not available yet. To be included in next release of the DMP

3.2.12 D5.5 KNOWING Exploitation Plan

This document is not relevant for Data Management Plan

3.2.13 D6.1 Project Manual

This document is not public and not relevant for Data Management Plan

3.2.14 D6.2 EEAB & SRG Terms of Reference

This document is not public and not relevant for Data Management Plan

3.2.15 D6.3 EEAB & SRG Recommendations

This document not relevant for Data Management Plan

3.2.16 D6.4 Summary of WP Activity Plans

This document is not public and not relevant for Data Management Plan

3.2.17 D6.5 Deliverables Review Plan

This document is not public and not relevant for Data Management Plan

3.2.18 D6.6 Risk Management Plan

This document is not public and not relevant for Data Management Plan

3.2.19 D6.7 Financial Management Guidelines

This document is not public and not relevant for Data Management Plan

3.2.20 D6.8 KNOWING Innovation Catalogue

This document is not relevant for Data Management Plan

3.2.21 D6.9 Draft Data Management Plan

This document has no input or output data relevant for Data Management Plan

Contribution to project objectives and impact: provides clear rules for data management in KNOWING

Security and Ethics: provides clear rules for secure and ethical handling of data as well as for communicating the security and ethics relevance of project deliverables.

3.2.22 D6.10 Data Management Plan (version 1)

Per definition, Data Management Plan provides an overview of all input and output data that was used and generated in the project. It does not produce any data relevant for the data Management. Its relevance for security and ethics is limited to summarising the relevant information for all project deliverables.

3.3 Deliverables published from M19 until M36

The following table summarises the KNOWING deliverables that were scheduled for publication since the publication of the first version of this deliverable, that is from M19 to M36 (Table 6) and their relevance for the Data Management plan:

Table 6: KNOWING deliverables scheduled for publication from M19 until M18 and their relevance for the data Management Plan. Deliverables underlined light red are either sensitive or do not produce any data of relevance for DMP.

| Deliverable | Deliverable Name | Due date | Input data? | Output data? | Ethics? |
|-------------|--|-------------|---|---|---|
| D1.3 | Climate Impact Coping Typology | 31 Mar 2024 | Online survey on coping typology, conducted by a market research institute in from the countries of the Demonstrator and Follower Regions | - Statistical analysis of the survey - Coping topologies - correlation of coping topologies with "meta milieus" | The survey has involved human participants, including potentially vulnerable individuals or groups. |
| D1.4 | Basic Climate Interaction Knowledge Base | 30 Jun 2024 | Outputs of D1.2 and D2.1 | KNOWING Knowledge Base v1 | - |
| D2.2 | Quantitative SD Model | 30 Jun 2024 | Qualitative SD model from D2.1 | - | - |

| Deliverable | Deliverable Name | Due date | Input data? | Output data? | Ethics? |
|-------------|--|-------------|---|---|--|
| D2.3 | Impact Interaction Model Framework | 28 Feb 2025 | - | - | - |
| D2.5 | Backcasting/Transferability Concept | 28 Feb 2025 | Key “variables” and input data sets of interest to transferability. | GeoTiff maps and supporting information in .csv, .xlsx, or .png. | - |
| D3.2 | CIC Modelling Plan | 31 Mar 2024 | Indicates the types of models and their data inputs and outputs | Preferences for interventions expressed by stakeholders. | Implicit to choice of interventions |
| D4.4 | KNOWING App | 30 Jun 2024 | Qualitative SD model | - | - |
| D4.6 | KNOWING Decision Support Service (DSS) Concept | 30 Jun 2024 | - | - | - |
| D5.4 | D5.4 Knowledge Calendar and Archive v2 | 30 Mai 2025 | Manual entry from KNOWING partners for preparing dissemination, promotional materials | Published information on dissemination, communication activities including links to published materials | - |
| D6.10 v2 | Data Management Plan v2 | 30 Mai 2025 | outputs of all tasks | overview of data | Ethics self-assessments for public deliverables. |

As indicated in section 2, relevant information needs to be collected for all KNOWING deliverables published in 2023 or later by deliverable editor and/or contributors and an annex document filled in. Project-level Data summary published hereafter is based on these deliverable-level summaries.

3.3.1 D1.3 Climate Impact Coping Typology

The development of effective Climate Mitigation Pathways (KNOWING Key Exploitable Result KER3) must consider the citizens’ perspective on climate impact and policies to identify potential response risks and develop measures to mitigate rebound effects. To this end, KNOWING aims to establish a widely applicable Climate Impact Coping Typology (Figure 1) and a related Coping Behaviour Model for the international research community and expert audience.

This Deliverable reports on underlying theoretical concepts, the methodology for the segmentation of types and the main results of the analysis. More profound information and technical details will be published in an established academic journal.

Data accessibility: The anonymised results of the survey (per country) are available on Zenodo. In addition, the cluster centres are provided together with R-code to extract the types from survey data.

Results of analysis are available in deliverable.

Data interoperability: survey data is provided in csv (comma separated values) format.

Data reuse: Survey data can be reused but a request for usage together with the intended purpose of use needs to be submitted to the responsible person at AIT.

The Coping Typology together with the statements are free to be applied in other surveys and studies. A guideline on how to use the Typology is supplied with the data together with an R-script to extract the types of respondents from survey data

Contribution to project objectives and impact: Climate Impact coping typology and a related Coping Behaviour Model provide the citizens perspective for development of effective Climate Mitigation Pathways (KNOWING Key Exploitable Result KER3) and for related research beyond KNOWING.

The model will be integrated in the KNOWING Impact Interaction Modelling Framework (KER2) and will inform target-group oriented communication within the Climate Activation and Empowerment Services (KER4). The typology will also be made available for identifying type representations in future surveys and for developing accompanying measures such as communication strategies to mitigate response risks and rebound effects of policies and will be made available as part of the Impact Interaction Knowledge Base (KER1).

Security and Ethics:

Several relevant ethical areas for KNOWING were touched in preparation of this deliverable.

Human Participation:

This research involves human participants, including potentially vulnerable individuals or groups. Contacting of the survey respondents was subcontracted to a well-established Austrian market re-search institute and their cooperation partners in the other countries, based on their contact database. To obtain the needs and constraints experienced by vulnerable groups, the survey sample was composed of different social milieu groups. However, the collected data is used only in anonymised form and results are only provided in aggregated form.

- The authors hereby conform that: The project does not involve children under the age of 14, and minors over the age of 14 only participate with parental consent. The participation of the surveys is fully voluntary and involves people aged between 15-65 years.
- No persons in dependent positions are involved in the project, so there is no relationship of dependency between participants and the research partners.
- Data is only processed in anonymised or pseudonymised form.

Personal Data:

Within this research personal data of respondents was collected through surveys in WP1, subcontracted to a market research institute using their contact database. Surveys were conducted in Austria, Germany, Croatia, Italy, Spain, Estonia and Vietnam. Exchange of information and data with the stakeholders in Vietnam does not include any personal data.

The market research institute is responsible for maintaining respondents' contact details and ensuring that they are not used for secondary purposes.

Collection of sensitive personal data such as health, sexual lifestyle or religious conviction, is not part of the surveys. No sensitive personal data such as genetic, biometric, or health data are processed as part of the project. Further, our data protection officer continuously checks the correct use of the data.

Fair Benefit Sharing:

Research activities involve participants from Vietnam, for testing and adjusting project outcomes. The exchange of information and data focusses primarily on socio-economic and environmental impacts

without including sensitive personal data, except contact data maintained by the market research institute as previously described. The exchange of information and data with Vietnam as a follower case aims to test and adapt the resulting pathways to the local context.

A detailed strategy for fair benefit sharing with local citizens and stakeholders in Demonstrator and Follower Regions from lower-middle income countries such as Vietnam is specified in the Stakeholder Involvement Plan (D4.1) and the DEC Plan (D5.1).

Table 7: Data used in preparation of KNOWING deliverable D1.3

| Data set name | Format | Size | Owner & re-use conditions (+++) | Potential Utility within and outside KNOWING | Unique ID |
|---------------------------|--------|--------|--|--|-------------------------|
| Transnational survey data | Csv | 3.18MB | Data will be supplied on request with clear outline of research question planned to be answered with data. | Large scale information on climate behaviour and believes. | 10.5281/zenodo.11368615 |

Table 8: Data produced in preparation of KNOWING deliverable D1.3

| Data set name | Format | Size | Owner & re-use conditions | Potential utility outside KNOWING | Unique ID |
|-------------------------|--------|--------|---------------------------|---|---------------------|
| Climate coping typology | pdf | 4.76MB | KNOWING, open data | Application in future surveys and studies | TODO ⁽⁺⁾ |

(*) D1.3 is a public project deliverable and will be available on CORDIS after the second review.

(+) Not published on Zenodo yet – to be updated in next DMP version

3.3.2 D1.4 Basic Climate Interaction Knowledge Base

Deliverable D1.4 presents the initial version of the Climate Interaction Knowledge Base (KB), which is now publicly accessible at <https://knowing-climate.eu/knowledge-base>. This open-access KB was developed under Task T1.4 and supports data use across the KNOWING project and by external users.

Key features include:

- A graph database structure, offering flexibility to update and expand data models easily.
- Access via a web GUI (Section 5.3) and an API (Section 5.2) for developers.
- Integration of data from Work Packages WP1, WP2, and WP3, including content from deliverables D1.1, D1.2, and D2.1.
- Contains interconnected data on hazards, sectors, risks, adaptation and mitigation responses, and second-order impacts.
- Designed to support the KNOWING Decision Support System and other tools in WP4.

The KB's graph database enables the dynamic addition of new entities and relationships without redesigning the system—making it suitable for evolving project needs and future data integration.

Data accessibility: This deliverable mainly consolidates the data outputs of D1.2 and D2.1 deliverables and republishes the results in the form of a graph database. Data is available on <https://climate-knowledge.ait.ac.at/> and API access will be granted on request.

Data interoperability: Input data used in preparing this deliverable is available in the form of excel sheets. The KB knowledge graph, which is a main data output of this deliverable is available as Neo4j database dump on request. Final DB dump will be also available on Zenodo.

Data reuse: All the input data, as well as the Knowledge Base database graph are considered Open Data and available free of charge for non-commercial use.

Contribution to project objectives and impact:

Impact Interaction Knowledge Base is one of the key results of the KNOWING project (KER1). Compared to input data from D2.1 and D2.2 deliverables, the main value added by D1.4 consists of additional quality checks to insure the internal consistency of the data (nodes) and cross-references between data objects (edges).

Security and Ethics: The work performed for this Deliverable and the data used and produced is not considered sensitive in terms of ethics or security.

Table 9: Data used in preparation of KNOWING deliverable D1.4

| Data set name | Format | Size | Owner & re-use conditions (+++) | Potential Utility within and outside KNOWING | Unique ID |
|---------------|--------|------|------------------------------------|--|---------------------|
| KNOWING D1.2 | PDF | ~1MB | Open Data | D1.2 CIC-related measures Inventory is a main source of data for the first version of the Knowledge base | CORDIS |
| KNOWING D2.1 | PDF | ~4MB | Open Data | D2.1 builds upon the D1.2 and expands upon the relations between hazards, sectors, risks, and positive and negative effects of various types of responses. | CORDIS ⁶ |

Table 10: Data produced in preparation of KNOWING deliverable D1.4

| Data set name | Format | Size | Owner & re-use conditions | Potential utility outside KNOWING | Unique ID |
|----------------|--------|------|---------------------------|--|-----------|
| Knowledge Base | tbd. | N/A | Tbd(*) | This data is mainly useful as a starting point for extending the KB, or as a way to implement a local version of the Knowledge Base. | N/A(*) |

(*) We intend to make the final data set produced in KNOWING available on ZENODO, under the same license as the input data. Presumably <https://creativecommons.org/licenses/by-nc/4.0/>. Please contact us for access to the knowledge base through the API.

3.3.3 D2.2 Quantitative SD Model

This document outlines how qualitative **Causal Loop Diagrams (CLDs)** are converted into quantitative **System Dynamics (SD) models** for three **Climate Impact Contexts (CICs)**:

- Heatwave & Health, Flooding & Infrastructure, and Soil Fertility & Agriculture.

Key steps:

- **Quantify causal relationships** from CLDs using mathematical and process-based methods.
- Define **stocks, flows, and feedback loops**; select suitable spatial and temporal scales.
- Build models with equations, calibrate using literature and **Domain Model (DM)** results.
- Use **expert elicitation** to fill data gaps.
- Evaluate **adaptation and mitigation pathways** co-developed with stakeholders.

⁶ Input data that was used in preparing this deliverable is integral part of deliverables D1.2 and D2.1 and will be made available on CORDIS, under <https://cordis.europa.eu/project/id/101056841/results> after the mid-term project review. Qualitative SD models resulting from D2.1 are also available on Zenodo, under DOI 10.5281/zenodo.10210763 and 10.5281/zenodo.10160177.

- Link CIC models into a **modular framework**, enabling cross-sector analysis and backcasting.

The SD framework supports robust, integrated assessment of climate interventions across sectors and regions in the KNOWING project.

No (new) data sets relevant to the KNOWING Data Management Plan were produced in preparation of this deliverable.

Security and Ethics:

The work performed for this Deliverable and the data used and produced are not considered sensitive in terms of ethics or security.

Table 11: Data used in preparation of KNOWING deliverable D2.2

| Data set name | Format | Size | Owner & re-use conditions (+++) | Potential Utility within and outside KNOWING | Unique ID |
|--|-----------------|---------|---------------------------------|--|-------------------------|
| KNOWING Qualitative SD Model (Framework) | Text / mdl file | 70.8 kB | Zach, M.; public | Structure of qualitative system dynamics model containing relevant relationships | 10.5281/zenodo.10210763 |
| KNOWING Qualitative SD Model including examples of measures for each CIC | Text / mdl file | 116.9kB | Zach, M.; public | Illustration of cross-sectoral impacts of adaptation & mitigation measures | 10.5281/zenodo.10160177 |

3.3.4 D2.3 Impact Interaction Model Framework

This Deliverable describes the initial version of the KNOWING Impact Interaction Model Framework, which integrates System Dynamics (SD) models with domain models (DMs) to assess adaptation and mitigation strategies. It introduces a calibration concept to be applied to each Demonstrator region, analyses key input and output variables to determine the calibration parameters, and provides conceptual diagrams for describing the interactions between the SD sub-models in each Climate Impact Context (CIC). The approach will be refined and expanded in D2.4 - “Expandable Impact Interaction Model Framework”.

No (new) data sets relevant to the KNOWING Data Management Plan were produced in preparation of this deliverable.

Security and Ethics:

The work performed for this Deliverable and the data used and produced are not considered sensitive in terms of ethics or security.

Table 12: Data used in preparation of KNOWING deliverable D2.3

| Data set name | Format | Size | Owner & re-use conditions (+++) | Potential Utility within and outside KNOWING | Unique ID |
|-----------------------------|-------------|---------|---------------------------------|---|-----------|
| DataOverview_DM | Table .xlsx | 139 kB | Bernadó, L.; consortium only | List of input-output variables for each Domain Model | N/A(*) |
| Modeling_schedule_per_model | Table .xlsx | 27.8 kB | Scussolini, P.; consortium only | Live document with the current forecasted available simulations per DM and scenario | N/A(*) |
| Figures_D2.3 | .pptx | 0.99 MB | Bernadó, L.; consortium only | Document containing the figures used in this deliverable | N/A(*) |

(*) No publicly available data, just internal documents that were used in deliverable preparation.

3.3.5 D2.5 Backcasting/Transferability Concept

*This report focuses on methods for developing and applying climate mitigation and adaptation strategies across Europe. It presents a **system dynamics-based backcasting methodology** which defines desired future climate goals and works backward to identify necessary steps and interventions. The report also introduces a **transferability framework** utilizing spatial similarity analysis to pinpoint regions in Europe where climate action pathways developed in specific "Demonstrator" areas would be relevant.*

*Through this approach, the project identified **16 archetypes of European regions** and areas similar to a specific demonstrator region (South Westphalia), suggesting where tailored climate strategies could be most effective, while also acknowledging **current limitations in data** regarding policies and detailed context.*

Data accessibility and reuse:

All data used and produced are available on Zenodo for open access, either as links to data sources for preparation data or as output GeoTiffs for produced data.

Data interoperability:

The output files for this deliverable consist of GeoTiff maps and supporting information in .csv, .xlsx, or .png.

Data reuse:

Data may be reused or extended within the project to assess transferability of demonstrator findings to follower regions and beyond. GeoTiff data can be opened for visualization in GIS software (QGIS open source) or through code such as Python or R.

Contribution to project objectives and impact:

This deliverable presents a system dynamics-based backcasting approach and a transferability framework, identifying archetypal regions in Europe to support the broader application of climate mitigation and adaptation pathways. This facilitates KNOWING to scale its impact beyond the demonstrator regions.

Security and Ethics:

The work performed in this deliverable and the data used or produced (if any) aren't considered sensitive in terms of ethics or security.

Table 13: Data used in preparation of KNOWING deliverable D2.5

| Data set name | For- mat | Size | Owner & re- use condi- tions | Potential Utility within and outside KNOWING | Unique ID |
|--|-------------|------|------------------------------------|--|------------------------------|
| Datasets from literature and other of- ficial sources detailed in D2.5_data_summary.xlsx | .xlsx | 13kb | Mostly open data | Useful for other Eu- ropean modelling projects | 10.5281/ze- nodo.15488263 |

Table 14: Data produced in preparation of KNOWING deliverable D2.5

| Data set name | For- mat | Size | Owner & re- use condi- tions | Potential utility outside KNO- WING | Unique ID |
|----------------------------------|--------------|--------|------------------------------------|---|-------------------------|
| arche- type_map | Geo- Tiff | 3131kb | KNOWING, open-access | Foundational work to help find possibilities to transfer finding in one location to another | 10.5281/zenodo.15488263 |
| biophysical | Geo- Tiff | 3133kb | KNOWING, open-access | + | 10.5281/zenodo.15488263 |
| Socio-eco- nomic | Geo- Tiff | 3133kb | KNOWING, open-access | + | 10.5281/zenodo.15488263 |
| LU_structure | Geo- Tiff | 3133kb | KNOWING, open-access | + | 10.5281/zenodo.15488263 |
| Miti_adapt | Geo- Tiff | 3133kb | KNOWING, open-access | + | 10.5281/zenodo.15488263 |
| Composite _mean_ab- solute | Geo- Tiff | 3133kb | KNOWING, open-access | Foundational work to help find possibilities to transfer finding in one location to another | 10.5281/zenodo.15488263 |

3.3.6 D3.2 CIC Modelling Plan

This document outlines the modelling plan for Project KNOWING, a Horizon Europe initiative aimed at developing climate mitigation and adaptation pathways. It details the regions (agricultural, coastal, river, and urban) facing specific Climate Impact Contexts (CICs) like heat and health, soil fertility, and flooding. The core of the report describes various domain models used to quantify the impact of proposed interventions, highlighting their purpose, methodology, and required data, before presenting a schedule of simulations for these models across the demonstrator regions.

No (new) data sets relevant to the KNOWING Data Management Plan were produced in preparation of this deliverable.

Security and Ethics:

Several relevant ethical areas for KNOWING were touched in preparation of this deliverable.

Equity and Fairness:

KNOWING Behaviour Model considers "Perceived Fairness" as a variable when evaluating behavioural responses to climate measures, assessing how fair a measure is perceived to be by individuals.

Social Vulnerability and Inequality:

The framework for transferability analysis explicitly lists "Socioeconomic Characteristics" as a factor, including "Social Vulnerability," which involves assessing "demographic factors, social inequalities, access to resources, health indicators, and community resilience". Understanding these aspects is crucial for ensuring that climate actions do not disproportionately harm vulnerable populations.

Impact on Human Well-being:

Models like D-MERF aim to quantify health impacts such as attributable mortality and relative risk associated with temperature and air pollution variations. HWLEM also considers impacts such as hospitalisation costs and fatalities increase due to heatwaves. The KNOWING behaviour model even includes "Individual emotional Benefits" as a factor in understanding behavioural responses.

Addressing Trade-offs and Risks:

The project explicitly aims to understand and quantify the interactions, complementarity, and trade-offs between adaptation and mitigation measures. This includes identifying "Response risk," defined as the "Potential for trade-offs or negative side-effects from responses". These risks can occur within the same sector or in other sectors, or impact "other societal objectives, such as the Sustainable Development Goals (SDGs)". Evaluating and balancing these potential negative consequences against the intended benefits is an inherently ethical process.

Stakeholder and Community Engagement:

The project places a strong emphasis on involving local authorities, stakeholders, and citizens in developing enhanced activation and empowerment services. Input from stakeholder workshops is used to define relevant measures and interventions. Meaningful community engagement is seen as fostering "ownership, resilience, and sustainability of climate initiatives" and increasing their relevance and transferability by making communities feel part of the process. This participatory approach reflects ethical principles regarding inclusion and self-determination in decision-making processes that affect people's lives.

Cultural and Behavioural Context:

The transferability framework recognises "Cultural and Behavioural Factors" as essential considerations. This includes acknowledging "cultural norms, values, beliefs, traditional knowledge systems, and local practices that conform community perceptions, attitudes, and behaviours towards climate change and climate-related natural hazards". This highlights the ethical importance of respecting diverse cultural contexts when implementing climate solutions.

Input data

Deliverable details the different models and indicates the types of their data inputs and outputs, but does not provide a comprehensive list of such data

Output data

While the deliverable doesn't officially provide any data sets, it does indicate what interventions can be modelled by which models. Moreover, the Annex 14 indicates the preferences expressed for each of the selected interventions in South Westphalia, Naples, Granollers, and Tallin.

3.3.7 D4.4 KNOWING App

The deliverable D4.4 KNOWING app presents the first concept of the KNOWING app and relates to task T4.3 Develop Climate Activation & Empowerment Services.

Data accessibility:

Assets and scenarios in the KNOWING app are produced in the app and published under a CC BY NC-license meaning that it enables re-users to distribute, remix, adapt, and build upon the material in any medium or format for non-commercial purposes only, and only so long as attribution is given to the creator.

Data interoperability:

The stories and content in the KNOWING app can also be provided via a https-weblink to be embedded in other websites.

Data reuse:

The answers given to the surveys might be used as data for further research within the frame of the KNOWING project.

Security and Ethics:

The work performed for this deliverable and the data used or produced are not considered sensitive in terms of ethics or security.

Table 15: Data used in preparation of KNOWING deliverable D4.4

| Data set name | Format | Size | Owner & re-use conditions (+++) | Potential Utility within and outside KNOWING | Unique ID |
|--|-----------------|---------|---------------------------------|--|-------------------------|
| KNOWING Qualitative SD Model (Framework) | Text / mdl file | 70.8 kB | Zach, M.; public | Structure of qualitative system dynamics model containing relevant relationships | 10.5281/zenodo.10210763 |
| KNOWING Qualitative SD Model including examples of measures for each CIC | Text / mdl file | 116.9kB | Zach, M.; public | Illustration of cross-sectoral impacts of adaptation & mitigation measures | 10.5281/zenodo.10160177 |

3.3.8 D4.6 KNOWING Decision Support Service (DSS) Concept

This document is not public and not relevant for Data Management Plan

The KNOWING Decision Support Service (DSS) is a web-based tool designed to help policymakers identify climate adaptation and mitigation pathways tailored to local conditions. Drawing on data from the KNOWING Knowledge Base and climate models, the DSS offers an interactive interface to explore region-specific strategies based on Climate Impact Contexts (CICs). Developed under the KNOWING project, the DSS will guide users through selecting regions, matching CICs, filtering relevant pathways, and visualizing options—supporting informed, data-driven climate decisions. A beta version will be tested in Demonstrator Regions before the final release.

No (new) data sets relevant to the KNOWING Data Management Plan were produced in preparation of this deliverable.

Security and Ethics:

The work performed for this Deliverable and the data used and produced are not considered sensitive in terms of ethics or security. That is, the outreach aspects that are relevant to security and ethics were handled prior to disclosing any information outside the consortium.

The report is classified as "sensitive" primarily to reflect its internal focus and technical nature, rather than due to the presence of confidential or security-critical information. Its contents are mainly relevant to project partners and may not hold broader interest or applicability for external audiences.

3.3.9 D5.4 Knowledge Calendar and Archive v2

The overall goal of this deliverable is to support the preparation, organization, documentation, and accessibility of KNOWING workshops and training sessions. It contributes directly to the long-term usability and exploitation of KNOWING's Key Exploitable Results (KERs), particularly in the Demonstrator and Follower regions.

No new data sets relevant for KNOWING Data Management Plan were used or produced in preparation of this update of the deliverable. The final dataset representing D5.4 will be prepared from M38 to M48 and will be included in the next update of this deliverable.

No relevant ethical areas for KNOWING were touched in preparation of this deliverable.

3.3.10 D6.10 Data Management Plan v2 (this document)

Per definition, Data Management Plan provides an overview of all input and output data that was used and generated in the project. It does not produce any data relevant for the data Management. Its relevance for security and ethics is limited to summarising the relevant information for all project deliverables.

4 Conclusion

This deliverable describes the data used and/or produced in the KNOWING project until Mai 2025.

Report is organised per deliverable, since this is how the information is reported in the project. For each deliverable, information is also provided about data accessibility, data interoperability, data reuse, contributions to project objectives and impact and security and ethics.

For clarity and ease of reference, deliverables assessed in the first version of this report are grouped in Section 3.1, while newly added deliverables are presented in Section 3.2. This structure helps distinguish between previously covered content and recent updates.

5 References

European Commission, COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change, 24.2.2021, COM(2021) 82 final. <https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=COM:2021:82:FIN>

Appendix A: Data Summary (template)

Following template shall be included as “Annex A Data Summary” in all KNOWING deliverables and filled in as appropriate. Deliverables that do not use or produce any relevant data will include the following sentence in this annex:

No (new) data sets relevant for KNOWING Data Management Plan were used or produced in preparation of this deliverable.

Deliverables that DO use or produce data need to provide following information:

Data accessibility and reuse:

Describe under which conditions are relevant data available (Open Data, commercial, special limitations based on ethics, security, etc.) and where and how to find the data used in this deliverable (Zenodo should provide all information as a rule, other platforms and services can be mentioned if necessary. Include contact information for not-open data).

Also indicate if some of the (open) data will only be made available at a later date and why (e.g. “data X will be made available as Open Data on DATE, because we are applying for a patent”). For such data, please use the Zenodo embargo mechanism so that we do not have to manually add the data in Zenodo at a later time (and risk to forget it).

Data interoperability:

Describe which data types and standards (for data and meta-information) are relevant for this deliverable.

Data reuse:

Describe which data is likely to have high reuse value and why.

Describe the data quality assurance procedures used in data preparation / validation.

Indicate if any special software exists that could/should be used for this data.

Furthermore, ALL deliverables must provide the following information:

Contribution to project objectives and impact:

Explain how this deliverable contributes towards achieving the project objectives Explain how this deliverable contributes towards project impacts.

Security and Ethics:

Explain if there are any security or ethical concerns related to the work performed or findings of this deliverable.

- In case and data was collected from people, indicate that the data collection was made in accordance with relevant legislation. Include the “informed consent” as a separate annex document*
- In case any data has not been published due to security or ethical concerns, indicate why this is so and refer to information already provided in “Data accessibility and reuse”*

- *In case some other aspects of work or findings have ethical or security implications, please indicate what, how and why.*

Please also assess the algorithms if relevant (e.g. AI algorithms)

If none of the above applies, include one of the following sentences:

The work performed in this deliverable isn't considered sensitive in terms of ethics or security.

Or

The work performed in this deliverable and the data used or produced (if any) aren't considered sensitive in terms of ethics or security.



Table 16: Data used in preparation of KNOWING deliverable DX.Y

| Data set name | Format | Size | Owner & re-use conditions | Potential Utility within and outside KNOWING | Unique ID |
|---------------|--------|------|---------------------------|--|-----------|
| | | | | | |
| | | | | | |

Table 17: Data considered for use in preparation of KNOWING deliverable DX.Y

| Data set name | Format | Size | Owner & re-use conditions | Reason the data wasn't used and potential Utility outside KNOWING | Unique ID |
|---------------|--------|------|---------------------------|---|-----------|
| | | | | | |
| | | | | | |

Table 18: Data produced in preparation of KNOWING deliverable DX.Y

| Data set name | Format | Size | Owner & re-use conditions | Potential utility outside KNOWING | Unique ID |
|---------------|--------|------|---------------------------|-----------------------------------|-----------|
| | | | | | |
| | | | | | |

Unique ID in the tables is typically an URI or DOI, e.g. a Zenodo DOI for KNOWING output