RETOUCH NEXUS

REsilienT water gOvernance Under climate CHange within the WEFE NEXUS

Deliverable 6.3

Data Management Plan

Maria Vrachioli (TUM)

Date 30/06/2023

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

RETOUCH NEXUS

RETOUCH NEXUS Partners

Technical University of Munich - TUM (Germany) - Maria Vrachioli, Johannes Sauer, Markus Disse, Juan Pablo Henao, Roberto Villalba, Jingshui Huang & Nicole Tatjana Scherer

Valencia Polytechnic University - UPV (Spain) - Manuel Pulido-Velazquez, Hector Macián Sorribes, Adria Rubio-Martin & Eulalia Gomez Martin

Vrije Universiteit Amsterdam - VUA (The Netherlands) - Erik Ansink, Nicolien van der Grijp, Daniel Petrovics & Leon Bremer

adelphi research gemeinnutzige - adelphi (Germany) - Annika Krammer, Elsa Semmling, Karolina Heck & Binayak Das

Slovak University of Agriculture - SUA (Slovakia) - Jan Pokrivcak, Ema Lazorcakova & Miroslava Rajcaniova

Euroquality - EQY (France) - Barthélémy Maillard, Clémence Gracia & Solène Fovelle

Vlaamse Instelling voor Technologisch Onderzoek - vito (Belgium) - Katrien Van Hooydonk, Lilian Taverner, Steven Broekx & Wim Sciettecatte

De Watergroep - DWG (Belgium) - Pauline Ottoy, Charlotte Jacobs & Ian Montauban van Swijndregt

Energy and Water Agency - EWA (Malta) - Manuel Sapiano, Nicholas Ellul, Nadine Vella, Aaron Cutajar, Nadia Gatt Gafa & Marco Graziani

Hoogheemraadschap Hollands Noorderkwartier - HHNK (Netherlands) - Floor van Schie, Ronald Koolen & Marja Korting

Greening the Islands - GtI (Italy) - Gianni Chianetta, Emilio Gabrielli, Fransesco Luise, Mattia Monaco, Andrea Morabito, Sabrina Pentecoste, Jean Karl Micallef-Grimaud, Graziana Salvati

Regierung Oberfranken - RegOb (associated) (Germany) - Andrea Kuenzl

Ministry of Agriculture and Rural Development - MARD (associated) (Slovakia) - Martin Kovac

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

Project Acronym	RETOUCH NEXUS
Project Title	REsilienT water gOvernance Under climate CHange within the WEFE NEXUS
Project Coordinator	Maria Vrachioli
Project Duration	01.01.2023 – 31.12.2026

Nature of the deliverable		
R	Document, report (excluding the periodic and final reports)	X
DEM	Demonstrator, pilot, prototype, plan designs	
DEC	Websites, patents filing, press & media actions, videos, etc.	
OTHER	Software, technical diagram, etc.	

Dissemination Level		
PU	Public, fully open, e.g. web	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
SEN	Sensitive	

Deliverable No.	D6.3
Dissemination level [1]	PU
Work Package	WP6: Project management and evaluation
Task	6.3
Lead beneficiary	1 (TUM)
Contributing beneficiary(ies)	UPV, adelphi
Due date of Deliverable	30 June 2023
Actual submission date	30 June 2023

Quality procedure			
Date	Version	Reviewers	Comments
21.06.2023	V1	Maria Vrachioli (TUM)	
29.06.2023	V1.1	Roberto Villalba and Juan Pablo Henao Henao (TUM)	
30.06.2023	final	Maria Vrachioli (TUM)	

Acknowledgements

This report is part of the deliverables from the project "RETOUCH NEXUS" which has received funding from the European Union's Horizon Europe research and innovation program under grant agreement N° 101086522. More information on the project can be found at www.retouch-nexus.eu

Executive summary

This document describes the RETOUCH NEXUS Data Management Plan (DMP) corresponding to Deliverable 6.3 of the project.

This first version of the DMP:

- Provides a description of how the data collected, processed, and generated by the project will be handled during and after the duration of the project.
- Describes which standards and methodology for data collection and generation will be followed, how data will be shared and will be curated, and preserved.

This DMP also provides guidance to the consortium partners on how to disseminate data and knowledge gathered in the project beyond the formal project deliverables. This knowledge includes databases and inventories of information collected to support the deliverables of the project and the supporting data used for scientific manuscripts. To this end, the document describes the responsibilities for data management among the RETOUCH NEXUS partners at different levels:

- the internal data management, which regulates the circulation of data between partners and will be accommodated through the project's SharePoint; and
- the external data management, which controls the processes through which data will be shared with target groups (e.g. end-users and stakeholders) and their Intellectual Property Rights.

The DMP is a living document, which will evolve during the project's lifespan, particularly whenever significant changes arise, such as dataset updates or changes in the consortium policies. This document is the first version of the DMP, delivered in Month 6 of the project. Although this report already covers a broad range of aspects related to the RETOUCH NEXUS data management, the upcoming versions will get into more detail on particular issues, such as data accessibility and practical data management procedures implemented by the project consortium.

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

Table of contents

Contents

List of Tables

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

1. Data Summary

1.1. Purpose of data collection and generation

RETOUCH NEXUS is a transdisciplinary research project with broad scientific and geographical scope. RETOUCH NEXUS aims at introducing and promoting the Water-Energy-Food-Ecosystems (WEFE) Nexus as a multi-level and cross-sectoral approach that supports the EU water economy and relies on ecological and social considerations. The project seeks to investigate, advocate and enhance the implementation of the WEFE Nexus solutions in Europe to promote innovative planning approaches across water-using sectors. The project methods to be developed by RETOUCH NEXUS will be applied to six case study areas around Europe: Jucar River Basin (Spain), North Holland (the Netherlands), Business park in Tielt (Belgium), Upper Main region (Germany), Southwestern region (Slovakia) and Maltese River Basin (Malta). The project is producing a vast array of specialised data, from spatial data to social information. Potential users of the data and information produced by the project cover a wide variety of individuals, including (but not limited) high-level decision-makers, local stakeholders and water managers, and technical and scientific experts. Each of these user groups has very different data and information needs.

The RETOUCH NEXUS modelling and monitoring approaches will allow the project to achieve its tightly connected objectives:

i. **Monitor** water governance by providing a set of Nexus-smart indicators that reflect multi-actor and cross-sectoral interactions
ii. **Demystify and advocate more integrated, Nexus-based and climate-resilient** water governance schemes
iii. **Design economically and financially** sustainable cross-sectoral, multi-level Nexus-based water systems
iv. **Promote and implement more transparent and inclusive** water governance through innovative engagement mechanisms
v. **Endorse upscalable and desirable** Nexus-based water governance practices and institutional settings

The achievement of these objectives is highly dependent on data collection related to:

- Existing knowledge of the Nexus and water governance schemes and indicators;
- Socio-economic, technological and ecological features that promote sustainable cross-sectoral, multi-level water governance systems; and
- Governance factors, stakeholders' perceptions and institutional settings for the implementation and promotion of Nexus-smart water governance practices.

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

In this context, the term research data (hereafter 'data') refers to facts and statistics collected and generated in the project to describe and assess water governance practices, as well as to promote innovative approaches using the Nexus methodology. Data in RETOUCH NEXUS may be primary data, calculated/derived from existing datasets, or generated by simulation models. Data will be presented together with metadata, as well as information on tools and scripts, and where possible, the tools and scripts themselves.

The Data Management Plan (DMP) is an evolving "living" document that will be continually edited and updated throughout the duration of the project. As at this stage of the project development, the data identification and collection activities are still at the very first level of discussions, this first version of the DMP can only provide a partial overview of the data needs in the different case study sites and stages of the RETOUCH NEXUS project. This initial version of the DMP defines the general policy and the way to approach the matter of data management in RETOUCH NEXUS, including the administrative and technical issues regarding data handling. In this sense, it contains some first information on data and meta-data collection, publication and deposition of open data, on the data repository infrastructure and on compliance with the Open Access Infrastructure for Research in Europe (OpenAIRE). Finally, as the project evolves, the next versions of the DMP will provide more refined and detailed information regarding the datasets collected and produced by RETOUCH NEXUS.

1.2. Relation to the actions of the project

The objective of this section is to provide a first overview of the different datasets that will be managed by the RETOUCH NEXUS project. RETOUCH NEXUS will utilize any type of information generated by the project on water governance practices and institutional settings, their associated socio-economic and environmental aspects and their potential to incorporate WEFE Nexus smart features. Overall, we can classify the data to be used in RETOUCH NEXUS according to the following main categories:

- compiled from publicly and privately available sources (e.g., inventories from other institutions, literature reviews)
- data from surveys (e.g., field sampling; interviews; focus groups)
- simulation (i.e., modelling data)
- derived from OECD and EU Water Governance datasets and/or from other available sources

Data collection and generation for the RETOUCH NEXUS project are the core of several work packages. This data will provide the foundation for activities such as case studies and modelling, and the content for stakeholder engagement activities. The following table illustrates the importance of data collection and generation for each work package.

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

Table 1 – RETOUCH NEXUS information and data requirements

Work Packages	Objective	Required / collected data and metadata information
WP1	Assess and monitor sustainable water governance	• Data on environmental and socio-economic indicators for monitoring water governance • Data on nexus Nexus and water governance strategies and institutional settings • Data and metadata on economic, financial and business instruments for water governance • End users' data to evaluate the Nexus-smart indicator-based monitoring framework
WP2	Multi-actor engagement mechanisms for water governance	• Stakeholders', citizen's and end users' personal information (i.e., for stakeholder mapping purposes, analysis etc.) • Stakeholder/End-users qualitative and quantitative data (e.g., end-users consumption data, socio-economic information, environmental perceptions and opinion on data management) • Stakeholder/Expert-level data on nexus governance
WP3	Economic and financial schemes of water systems	• Data and metadata on water, climatic and economic/financial information • Data and metadata on suitable hydro-economic models for WEFE Nexus • Data on business models and incentives for water governance
WP4	Multi-level, multi-sector water governance settings	• Data on water governance policies and institutional settings • Data from interviews/surveys with local practitioners/stakeholders on water governance synergies and trade-offs • Data on innovative water governance schemes and their impact on the local economy, social well-being and the environment
WP5	Communication, dissemination and exploitation	• Social media data for the dissemination and exploitation of the results

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

1.3. Data types and formats

Due to the interdisciplinary nature of the project, RETOUCH NEXUS will collect and generate a wide range of data to inform or support research. The project will manage both primary and secondary data for the case studies from the following sources:

Secondary data sources

- Reviews of new and existing initiatives, indicators and metrics for Nexus and water governance assessment;
- Reviews of policies, strategies and institutional settings at the regional and national levels;
- Reviews of EU-wide commitments (e.g., mesures under the Water Framework Directive) related to water governance
- Reviews of economic and financial schemes of water systems
- Reviews of peer-reviewed scientific publications;
- Reviews of existing data sources, data collection methods, modelling approaches;
- Satellite images;

Primary data sources

- Stakeholders' and end users' data collection (e.g., through surveys to water management organizations and end users of natural resources, focus groups, interviews, Delphi Study)
- Surveys
- Experiments
- Remote sensing data
- Simulations
- Statistical analyses (e.g., econometric analyses) to determine causal relations, elasticities, conversion factors, ratios.

Considering both privacy and security concerns, the confidentiality of surveyed material will be prioritized. Data will be generated and documented as text files, MS Excel (.xls), IBM-SPSS (.sav) or text (.csv). Stakeholder and end-user-level information will be captured using ad hoc software, and the different analyses will be performed using specific data analytics tools. The software and tools to be used for each data collection process will be defined in a later stage during RETOUCH NEXUS. Associated metadata and instructions on validating the output produced by the partners will be documented as text files, MS Word (.doc) or text (.txt).

More specifically, the data register will deliver the following information:

1. *Data set reference and name*: Identifier for the data set to be produced.
2. *Data set description*: Descriptions of data that will be generated or collected, its origin (in case it is collected), nature and scale and to whom it could be useful, and whether

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

it underpins a scientific publication. Information on the existence (or not) of similar data and the possibilities for integration and reuse.

3. *Standards and metadata*: Reference to existing suitable standards, in case they do not exist, an outline on how and what metadata will be created.
4. *Data sharing*: Description of how data will be shared, including access procedures, embargo periods (if any), outlines of technical mechanisms for dissemination and necessary software and other tools for enabling reuse, and definition of whether access will be widely open or restricted to specific groups. Identification of the repository where data will be stored, if already existing and identified, indicating the type of repository (institutional, standard repository for the discipline, etc.). In case the dataset cannot be shared, the reasons for this should be mentioned (e.g., ethical, rules of personal data, intellectual property, commercial, privacy-related, and security-related).
5. *Archiving and preservation* (including storage and backup): Description of the procedures that will be put in place for long-term preservation of the data. Indication of how long the data should be preserved, its approximated end volume, the associated costs, and how these are planned to be covered.

FAIR data stands as an acronym for Findable, Accessible, Interoperable, and Reused data. The following table presents the template to report datasets related to each WP.

Table 2 – WPXX dataset

WPxx – Dataset YY	**Description**
Data set reference and name	
Data set description	
Standards and metadata	
Data sharing	
Archiving and Preservation (including storage and backup)	
Reported by	

The assigned people for reporting and updating the above template are shown in Table 2.

Table 3 – Work Package Data Managers

WP	**Description**
WP1	Maria Vrachioli (WP leader)
WP2	Binayak Das (WP leader)
WP3	Adria Rubio Martin (WP leader)
WP4	Nicolien van der Grijp (WP leader)
WP5	Solene Fovelle (WP leader)/ Clemence Gracia (WP co-leader)
Project Data Manager	Maria Vrachioli (coordinator)

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

1.4. Re-use of any existing data

RETOUCH NEXUS is an interdisciplinary project across several WPs. The vast majority of the data collected and generated will be fed directly back into the project to ensure an effective use among Work Packages. Regarding access to background data, the beneficiaries must give each other access — on a royalty-free basis — to background needed to implement their tasks under the action, unless the beneficiary that holds the background has:

- Informed the other beneficiaries that access to its background is subject to legal restrictions or limits, including those imposed by the rights of third parties (including personnel), or
- Agreed with the other beneficiaries that access would not be on a royalty-free basis.

'Background' means any data, know-how, or information — whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights — that:

- is held by the beneficiaries before they acceded to the SIGMA Nexus Grant Agreement,
- is needed to implement the action or exploit the results.

2. FAIR data

The DMP for RETOUCH NEXUS follows the Horizon Europe Program Guidelines on FAIR Data Management to ensure that research data will be findable, accessible, interoperable, and reusable (FAIR).

2.1. Findable

Information and knowledge considered relevant for the scientific community will be made accessible under Open Access. In this regard, data will be shared in relation to: i) publications (deliverables and papers), ii) curated data, and iii) metadata. Scientific partners creating data need to publish their results in scientific papers, prior to open-access data release.

Metadata will describe the instruments used, methodologies employed, and goals and target groups of the research and the case study analysis. Metadata will be collected and appropriately stored by the researchers. All the data produced by surveys and other observational methods in the RETOUCH NEXUS will be treated as confidential and, if necessary, anonymized. Also, metadata will include elements such as a clear description of the data, the institution and person of contact responsible for the data creation, its format and the creation date. In the case of modeling output, the metadata will also include tools used and scripts (see Section 2.1.3).

RETOUCH NEXUS data will be available online through open-access data repositories, such as Zenodo. Zenodo (http://www.zenodo.org) will be used as a default Open Access repository of RETOUCH NEXUS publications and research data underlying those. Zenodo is an EC-co-funded, multidisciplinary repository for publications and data which allows archiving any research outputs in any size, format and discipline. Specifically, data is stored in the CERN

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

cloud infrastructure. Zenodo complies with Horizon Europe's open data requirements, the EU Research and Innovation funding programme and OpenAIRE. OpenAIRE assists in monitoring Horizon Europe (HE) research outputs and is a key infrastructure for reporting HE's scientific publications, as it is loosely connected to the EC's IT backend systems. RETOUCH NEXUS research data and publications will be available through OpenAIRE, since it is connected to Zenodo, so all the data and information uploaded to Zenodo is shown in OpenAIRE.

2.1.1. Identifiers

Identifiers will be used when citing and managing data and information to provide a permanent link to them. Zenodo allows researchers to deposit both publications and research data, while providing means to link them. In this sense, the RETOUCH NEXUS publications and data, including associated metadata (see section 2.1.3) needed to validate the results presented in scientific publications will be deposited in the open access repository Zenodo, where they will be automatically assigned Digital Objective Identifiers (DOIs), benefitting from Zenodo's DOI versioning support (see section 2.1.2.). DOI is assigned to all Zenodo files, which can be uploaded in any file format.

In addition, a DOI will also be assigned for RETOUCH NEXUS research results that are deposited in institutional repositories, repositories of scientific publishers or other data and research repositories if the institution has an agreement with a DOI registration agency and it is, therefore, a DOI registrant. Apart from DOI, other unique identifiers could be assigned to the RETOUCH NEXUS scientific publications depending on the scientific Publisher and the open access strategy (green or gold) chosen by the editors, such as Publisher Item Identifier (PII), International Standard Serial Number (ISSN), etc.

2.1.2. File naming and keywords

In RETOUCH NEXUS, a brief system with unique file names will be adopted. The general naming procedure for uploading data and documents to Zenodo will be the following:

- Refer the case study/WP and the date of the data version uploaded:

  CaseStudyXX_Partner_Date or WPX_Partner_Date

  (e.g., CaseStudyDE_TUM_2023_11_30 or WP1_TUM_2023_11_30).

In case data is generated by more than one partner, the reference would be as follows:

CaseStudyXX _RETOUCH NEXUS_Date or WPX_RETOUCH NEXUS_Date

In addition, when the RETOUCH NEXUS data and research results are deposited in the default repository Zenodo, they will be provided with a set of relevant search keywords together with other required metadata (see section 2.1.3).

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

Zenodo has a feature that enables users to update the record's files after they have been made public. Similarly, it allows researchers to cite either specific versions of a record easily or cite, via a top-level DOI, all the versions of a record (https://help.zenodo.org/#versioning). Moreover, DOI versioning allows updating a dataset after it has been published and citing either a specific version of a data set or all versions (see https://blogs.OpenAIRE.eu/?p=2010). All RETOUCH NEXUS research results deposited in the Zenodo repository will use this DOI versioning.

2.1.3. Metadata details

Metadata (i.e., "data about data") contains information that documents the basic characteristics of a specific dataset allowing users to find the data that they need and, thereafter, evaluate whether this resource satisfies the user's requirements. Metadata is also key to organizing all the digital information generated (through data processing and analysis of pre-existing data or data collected in the framework of the project), allowing archiving and preserving the information resources. A proper metadata scheme allows for accurate and consistent identification of the RETOUCH NEXUS data and research results for citation and retrieval purposes.

The data generated during the project will be appropriately documented following relevant metadata standards to describe, validate, and exchange metadata information exchange with third parties. The metadata files will be generated using a graphical user interface, a template of which is presented below:

- Title (name of the dataset)
- Date of uploading (i.e., date of publication)
- Contributor (i.e., creators, authors)
- Language
- Abstract (or description)
- License (access right, if any)
- Keywords
- Lineage (Description of the approach followed to create the data)
- Responsible party (organisation, contact person-contact details)
- Geolocation (projection, spatial extent)
- Legal/ethical statements (data protection, ethical approval, commercial constraints, sensitive information).

The above metadata template is compatible with the Zenodo deposition metadata domain model (http://developers.Zenodo.org/#representation), and provides the minimum and recommended terms. This metadata template serves as a first draft and can be extended according to data-type-specific repositories (for example, in relation to spatial or linked data), if necessary.

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

In the case of scientific publications deposited in Zenodo, the bibliographic metadata will be in a standard format as follows:

- the terms “European Union (EU)” and “Horizon Europe”;
- the name of the action, acronym and grant number (“RETOUCH NEXUS has received funding from the European Union’s Horizon Europe research and innovation programme under grant agreement N° 101086522. 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 REA. Neither the European Union nor the granting authority can be held responsible for them.”);
- the publication date, and length of embargo period if applicable (see section 2.2), and
- an identifier.

2.2. Accessibility

Data are disseminated differently for internal and external purposes to ease day-to-day operations within the project.

For external dissemination, in view of the precautions for personal data protection, data collected will be publicly available only after care is taken concerning the rules of confidentiality, anonymity, and protection. Anonymized final data sets will be open access, and procedures will be set for how data will be preserved and archived in the repository. Most of the RETOUCH NEXUS datasets will not require any special software except for Microsoft-related programmes (Excel, Access, Word) and, eventually, IBM-SPSS, R and GIS software. The partners will update the present DPM if any other specific programme is required to access the datasets.

All data produced and collected, and all the associated metadata, documentation and script (if possible) will be stored on Zenodo. For internal project use, a specific folder organization will be created, supporting easy dataset identification and revisions in the RETOUCH NEXUS channel in Microsoft Teams. RETOUCH NEXUS will not have a data access committee and all researchers involved in data gathering will become familiar with the guidelines of open data platforms and with the internal repository.

2.2.1. How will the data be made accessible?

For project partner use, data are exploited by accessing the data in their raw form in Microsoft Teams.

For external users, all data can be easily accessible through Zenodo and the RETOUCH NEXUS website. The website will host the project deliverables and other specific outputs of the project. The project will also create infographics, and other types of presentable data (quantitative and qualitative), on the water governance aspects, which allows visualizing

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

relevant information. In case of secondary sources, the published information will always make explicit reference to the data sources and will never include any confidential information. Data and metadata will be shared in relation to (i) publications (deliverables and papers) and (ii) curated and/or raw data. For the data linked to scientific publications, the publication will serve as the main piece of documentation for the shared data.

2.2.2. Restrictions on data access

Access to data collected or produced by RETOUCH NEXUS project will be provided to all project partners. Any data from surveyed individuals or stakeholder engagement activity will not be published as primary data due to privacy and security concerns. For scientific publications, the data can be published repsecting the anonymity of the respondents and given that the sample size does not allow drawing conclusions on the location and/or demographic characterisitcs of the respondents.

2.3. Interoperable

2.3.1. Inter-disciplinary interoperability

To allow data exchange between researchers, institutions, organisations, stakeholders, countries, etc., the RETOUCH NEXUS project will ensure that commonly used, interoperable formats, like those supported by Excel and Word, will be used. Moreover, standard vocabularies for all data types will be used to allow inter-disciplinary data operability. If less common research and technical terminology need to be used, RETOUCH NEXUS will provide the necessary documentation.

2.3.2. Data quality assessment

Secondary data used for RETOUCH NEXUS can be derived from already available databases such as OECD, EUROSTAT, World Bank Open Data, AQUASTAT, FAOSTAT, COMTRADE, EKB, CAPMAS, etc. All these online databases provide information with identified quality and provenance.

The project will also provide an indication for data quality and availability. All available datasets will be rated based on their quality, utility, and availability making use of several criteria associated with accuracy, level of detail, reliability and standard of measurement (to be developed). These criteria can also provide a general framework for comparing different datasets with the same information. Each working package will perform the quality management of the data and statistics of the project as part of the data gap analysis.

2.4. Reuse

All data produced in the RETOUCH NEXUS project will be licensed under a creative commons license (please refer to Zenodo and Section 2.1). In case of publication, all data will be made available after the final publication if needed. The data produced in the project will be useable

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

by third parties during and after the project. The time limit of the re-usable data will be interlinked with the open access data platform standards and is foreseen to go beyond the project's lifespan. During the implementation of RETOUCH NEXUS, the effective management of the website and the tools therein will be the responsibility of Euroquality as part of their tasks under WP5. All partners will decide specific responsibilities for the website's management after the project's end and include the DMP in a later stage.

2.4.1. Timeline for reuse of data

The data will be preserved for 5 years on the respective servers of the contributing research institutions. After the finalization of the RETOUCH NEXUS project and the publication of results by the scientists, all data generated during the project will be copied for permanent storage at TUM, where any data is subject to an automated central data storage in the Federal Archive according to German federal laws. The files will be stored in open archival formats PDF, .tiff, .csv, etc., as well as simple text files.

The long-term archiving and preservation of RETOUCH NEXUS data will be based on the research data management practices from OpenAIRE (https://www.openaire.eu) and Zenodo. The research results from RETOUCH NEXUS, which will be deposited in Zenodo repository will be available to third parties after the end of the project, since the preservation of the datasets is guaranteed by the Zenodo archive server.

2.4.2. Data useable by third parties

Data underpinning any publication will be made available at the time of publication. All unpublished data will be deposited in a data repository no later than 24 months after the end of the project but with the possibility of an embargo for one additional year. Any data will come along with the corresponding meta information. "Embargo" periods are imposed by PhD thesis and by the publication policy of some journals. In the case of green open access, the scientific publisher's modalities for open access (e.g., embargo periods) must allow the researcher to fulfil the EC's open access obligations.

Furthermore, the repository used by the scientific publisher should be OpenAIRE-compliant and issue a DOI (see section 2.1.1), if the researcher is not allowed to deposit a copy of the publication in a repository of their choice. For finding suitable open-access publishers, RETOUCH NEXUS researchers will be encouraged to consult the Directory of Open Access Journals (https://doaj.org/). This service indexes high-quality, peer-reviewed open-access academic journals that use an appropriate quality control system.

2.4.3. Intellectual property rights

Intellectual Property Rights (IPR) will receive special attention from the beginning. Management of knowledge and IPR between the partners will be governed by the Consortium Agreement (CA) that has been signed by all partners. The RETOUCH NEXUS beneficiaries will comply with the rules laid down in the Grant Agreement. The CA addresses Background and Results, ownership, protection, use and dissemination of results, and access rights.

Within the project consortium, the following principles will be implemented:

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

- **Confidentiality**: During the project duration and beyond, the partners will treat information, which is designated as confidential by disclosing partners as such. They also shall, as far as is legally possible, impose the same obligations to their employees and third parties.
- **Pre-existing know-how** (Background): Each partner is and remains the sole owner of all IPR to its Background. The partners will identify and list the Background to which they grant access rights for the project. The partners agree that the access rights to the Background needed by other partners for carrying out their work under the project shall be granted on a royalty-free basis.
- **Ownership and access to results**: Ownership of results will be vested in the party that generates them. Access to results may be given through a license, as applicable.
- **Open data**. Data produced during the project and presented in scientific publications will be made public.
- **Dissemination**: If dissemination of Results does not adversely affect its legitimate interests, each beneficiary shall ensure such dissemination.

TUM Legal Office will be the main contact point and central coordination office for Intellectual Property Rights (IPR) matters relevant to the project. This includes advising in contractual negotiations on IPR and assisting in preparing and filing reports for elaborating exploitation strategy.

2.4.4. Ethical aspects

The RETOUCH NEXUS beneficiaries will follow all appropriate ethical procedures to prevent possible ethical violations. The project will ensure a high-quality research and enterprise culture, with the highest possible standards of integrity and practice following the External Ethics Advisory Board guidelines.

We also confirm that RETOUCH Nexus will be engaged in:

- no research that involves human cloning for reproductive purposes;
- no research that intends to modify the genetic heritage of human beings which could make such changes heritable;
- no research that will create human embryos for the sole purpose of research or stem cell procurement;

Further, the beneficiaries will fully comply with all applicable rules concerning the processing of personal data and the protection of privacy. In particular, the project will:

- Collect explicit statements of informed consent from all participants, stipulating that the respective participant grants the project consortium the right to store the data and process it for scientific purposes. All participants will have the right to revoke their consent to the storage and processing of their personal data;
- The practical implications derived from the research findings will be shared with the participants, community members, and stakeholders in the dissemination phase, where workshops will be held to facilitate knowledge transfer, support decision-making, and cross-sectoral dialogue;

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

- Avoid the collection of all personal data that is unnecessary to the main objectives of the project;
- Store all data in such a way that the database entries cannot be linked to the personal identity of the study participants;
- Not grant any data access rights to individuals or legal entities that are not members of the consortium.

3. Roles for data management in RETOUCH NEXUS

Data management activities cover the whole project and need to be coordinated and monitored both at project and work package level. Data management is also linked to the publication of project results and, thus, dissemination activities. The following roles and responsibilities can be identified:

- **Project Data Manager** (i.e., leader of the Data Management in RETOUCH NEXUS is TUM) is responsible for:
  - developing the data management plan in cooperation with the project partners
  - coordinating the technical realization of RETOUCH NEXUS' DMP
  - providing support to WP data managers
  - coordinating the writing of the DMP deliverable documents
  - monitoring that open results (data, software and metadata) and publications are deposited in the Zenodo and sending reminders to partners
  - monitoring that metadata about publications is made available through OpenAIRE and on the RETOUCH NEXUS website
  - monitoring possible embargo periods and sending reminders to partners

- **Work Package Data Managers** (see Table 2) are responsible for:
  - the implementation of the data management policy in their respective WPs
  - monitoring data management activities and deadlines and sending reminders to partners
  - checking with partners for missing information or clarifications
  - providing input to the DMP deliverable documents by analysing and summarizing the WPspecific dataset
  - contacting the Project Data Manager in case of questions and ethical and privacy issues that may forbid the publication of the data
  - ensuring that the metadata of data used and produced at WP-level is made available according to the RETOUCH NEXUS data management policy and guidelines in a timely manner

- **Data Provider / Scientist** is responsible for:
  - informing the data and dissemination managers when new open data / publications ready for publishing are available
  - describing the data (by means of appropriate metadata) or scientific publication in accordance with the RETOUCH NEXUS data management policy
  - depositing (i.e., publishing) into Zenodo the research data and scientific publications in accordance with the RETOUCH NEXUS data management policy

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 REA. Neither the European Union nor the granting authority can be held responsible for them.

4. Conclusion

According to the guidelines on FAIR data management in Horizon Europe, data management is a "living" document that will define the framework and policies for data handling during and after the project. This document describes both the internal and external guidelines for storing, processing and accessing the RETOUCH NEXUS project's data. The information provided in this document provides an initial guideline for the consortium partners, and it will be updated at the end of the project's second year to reflect the data management progress. The Project Data Manager and the Work package Data Managers are responsible for constantly reviewing the Data Management Plan, and as such, it forms Deliverable 6.3 in WP6. The updates in the future will be delivered by modifying this Deliverable.

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 REA. Neither the European Union nor the granting authority can be held responsible for them.