ICARIA
Improving climate resilience of critical assets

www.icaria-project.eu

D7.2 OEI - Requirement No. 2

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D7.2: OEI - Requirement No. 2

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Executive summary

Deliverable 7.2 is focused on reporting potential ethical issues that have arisen during the first 18 months of project ICARIA. As identified in the Grant Agreement (GA), this project involves the processing of personal data and information related to critical infrastructure. Article 14 and Annex 5 of the GA highlight the basic guidelines to be considered to adequately manage this information.

The ethical and data management issues detected are related to the following topics:

- Sewer network information
- Critical infrastructure data
- Human vulnerability to heat waves
- Economic impact data
- Communities of practices

For each case, specific measures have been adopted to ensure the highest ethical and safety standards (e.g. signature of collaboration agreements, Non Disclosure Agreement, anonymization of data or sourcing information from open source data resources).

This document has been revised by Mrs. Maria Luisa Gonzalez, External Ethics Advisor of project ICARIA.

An updated version of this Deliverable will be submitted at the end of the project (December 2025).

1 Introduction to project ICARIA

The number of climate-related disasters has been progressively increasing in the last two decades and this trend could be drastically exacerbated in the medium- and long-term horizons according to climate change projections. It is estimated that, between 2000 and 2019, 7,348 natural hazard-related disasters have occurred worldwide, causing 2.97 trillion US$ losses and affecting 4 billion people (UNDRR, 2020). These numbers represent a sharp increase of the number of recorded disaster events in comparison with the previous twenty years. Much of this increase is due to a significant rise in the number of climate-related disasters (heatwaves, droughts, flooding, etc.), including compound events, whose frequency is dramatically increasing because of the effects of climate change and the related global warming. In the future, by mid-century, the world stands to lose around 10% of total economic value from climate change if temperature increase stays on the current trajectory, and both the Paris Agreement and 2050 net-zero emissions targets are not met.

In this framework, **Project ICARIA** has the overall objective to promote the definition and the use of a comprehensive asset level modeling framework to achieve a better understanding about climate related impacts produced by complex, compound and cascading disasters and the possible risk reduction provided by suitable, sustainable and cost-effective adaptation solutions.

This project will be especially devoted to critical assets and infrastructures that are susceptible to climate change, in a sense that its local effects can result in significant increases in cost of potential losses for unplanned outages and failures, as well as maintenance – unless an effort is undertaken in making these assets more resilient. ICARIA aims to understand how future climate might affect life-cycle costs of these assets in the coming decades and to ensure that, where possible, investments in terms of adaptation measures are made up front to face these changes.

To achieve this aim, ICARIA has identified 7 Strategic Subobjectives (SSO), each one related to one or several work packages. They have been classified according to different categories: scientific, corresponding to research activities for advances beyond the state of the art (SSO1, SSO2, SSO3, SSO4, SO5); technological, suggesting and/or developing novel solutions, integrating state-of-the art and digital advances (SSO6); societal, contributing to improved dialogue, awareness, cooperation and community engagement as highlighted by the European Climate Pact (SSO7); and related to dissemination and exploitation, aimed at sharing ICARIA results to a broader audience and number of regions and communities to maximize project impact (SSO7).

- SSO1.- Achievement of a comprehensive methodology to assess climate related risk produced by complex, cascading and compound disasters
- SSO2.- Obtaining tailored scenarios for the case studies regions
- SSO3.- Quantify uncertainty and manage data gaps through model input requirements and innovative methods

- SSO4.- Increase the knowledge on climate related disasters (including interactions between compound events and cascading effects) by developing and implementing advanced modeling for multi-hazard assessment
- SSO5.- Better assessment of holistic resilience and climate-related impacts for current and future scenarios
- SSO6.- Better decision taking for cost-efficient adaptation solutions by developing a Decision Support System (DSS) to compare adaptation solutions
- SSO7.- Ensure the use and impact of the ICARIA outputs

2 Objectives of the deliverable

This report is written as a part of Work Package 7 “Ethics requirements” (WP7) focused on ensuring the highest ethics standards throughout the whole activity developed in relation to project ICARIA.

The primary objective of Deliverable 7.2 is to identify the main ethical issues encountered during the first reporting period of the project (January 2023 to June 2024) and to describe the measures taken to avoid any ethical conflict.

3 Research ethics in project ICARIA

The issue of ethics is already addressed in the project GA document where Article 14 determines the basic guidelines to be considered in the following way:

> ***ARTICLE 14 — ETHICS AND VALUES***
>
> ***14.1 Ethics***
>
> *The action must be carried out in line with the highest ethical standards and the applicable EU, international and national law on ethical principles. Specific ethics rules (if any) are set out in Annex 5.*
>
> ***14.2 Values***
>
> *The beneficiaries must commit to and ensure the respect of basic EU values (such as respect for human dignity, freedom, democracy, equality, the rule of law and human rights, including the rights of minorities).*
>
> *Specific rules on values (if any) are set out in Annex 5.*
>
> ***14.3 Consequences of non-compliance***
>
> *If a beneficiary breaches any of its obligations under this Article, the grant may be reduced (see Article 28).*
>
> *Such breaches may also lead to other measures described in Chapter* 5.

Annex 5 of the project GA describes in greater detail key aspects to be taken into account when assessing the ethical compliance of the project.

> ***ANNEX 5: SPECIFIC RULES***
>
> ***Ethics and research integrity***
>
> *The beneficiaries must carry out the action in compliance with:*
>
> *- ethical principles (including the highest standards of research integrity)*
>
> *and*
>
> *- applicable EU, international and national law, including the EU Charter of Fundamental Rights and the European Convention for the Protection of Human Rights and Fundamental Freedoms and its Supplementary Protocols.*
>
> ***(...)***
>
> *In addition, the beneficiaries must respect the fundamental principle of research integrity —as set out in the European Code of Conduct for Research Integrity[2].*
>
> *This implies compliance with the following principles:*
>
> *- reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources*
>
> *- honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way*

- respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment

- accountability for the research from idea to publication, for its management and organization, for training, supervision and mentoring, and for its wider impacts

and means that beneficiaries must ensure that persons carrying out research tasks follow the good research practices including ensuring, where possible, openness, reproducibility and traceability and refrain from the research integrity violations described in the Code.

Activities raising ethical issues must comply with the additional requirements formulated by the ethics panels (including after checks, reviews or audits; see Article 25).

Before starting an action task raising ethical issues, the beneficiaries must have obtained all approvals or other mandatory documents needed for implementing the task, notably from any (national or local) ethics committee or other bodies such as data protection authorities.

The documents must be kept on file and be submitted upon request by the coordinator to the granting authority. If they are not in English, they must be submitted together with an English summary, which shows that the documents cover the action tasks in question and includes the conclusions of the committee or authority concerned (if any).

[2] *European Code of Conduct for Research Integrity of ALLEA (All European Academies).*

The **Ethics Self-assessment of ICARIA** (which can be found in Section 4 of the GA Annex A Part B) highlights a significant activity involving the processing of personal data. In order to ensure an adequate management of such data a specific work package (WP7) is devoted to supervising its management. WP7 involves the submission of two deliverables (D7.2 and D7.3) to report periodically to the European Commission any ethical issue in the project and the measures adopted. Furthermore, as reflected in Deliverable 7.1, an External Independent Ethics Advisor was appointed at the beginning of the project to provide expert advice and to validate the ethics issues management in ICARIA.

4 Ethical issues detected

The following subsections assess one by one the ethical issues detected in the first reporting period of project ICARIA in relation to data management and privacy. Also, the measures/procedures considered in each case are presented. Section 4.1 focuses on the cases focused on management of information regarding infrastructures, economic impact data and other non-personal groups of data treated. Section 4.2 is centered on the personnel data treatment.

4.1 Non-personal data treatment

4.1.1 Sewer network information

The development of a state-of-the-art urban drainage model of the Barcelona metropolitan area has been one of the main endeavors of this case study. The development of this kind of model requires data regarding the location and physical characteristics of the elements that constitute the urban drainage networks. This includes manholes, pipes, pumping stations, system overflows, anti-flooding tanks, singular elements and records of water level measurements within the network during major rain events. As a whole, sewer networks are not classified as critical infrastructure.

Furthermore, this data is not open access information. As for the municipal sewer networks, the ownership of the information corresponds to the municipalities, while the Metropolitan Area of Barcelona (AMB) is the owner of the supra municipal network that conveys the water generated in each municipality to the downstream wastewater treatment plants.

In order to collect this information, AQUATEC has signed collaboration agreements with the municipalities within the model domain as well as with the AMB. These agreements have served to document the following:

- The willingness of the local authorities to participate in project ICARIA.
- The agreement to give access to the requested information regarding the local sewer network to AQUATEC for its use exclusively within the scope of project ICARIA.

As a result of this process, a total of 24 collaboration agreements have been signed between AQUATEC and the municipalities of the metropolitan area of Barcelona, corresponding to 67% of the 36 municipalities in this region. An additional agreement had been signed with the AMB regarding the use of data of the supra municipal network. In these few cases, terrain data has been used to take into account at least how runoff behaves, even if not knowing how these flows are conveyed into the sewers.

4.1.2 Critical infrastructure data

According to the the Directive 2008/114/EC, a critical infrastructure is defined as "*an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or*

destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions". Therefore, data in relation to these infrastructures is often sensitive.

The scope of project ICARIA is the risk assessment of extreme weather events (including compound multi-hazard events and cascading effects) on critical assets, which has been defined through a co-creation process with relevant stakeholders. In more detail, "critical assets" are understood as risk receptors of special interest (being infrastructures or not) when assessing the climate resilience of a region. Hence, some of them might be considered as critical infractures.

The figure below summarizes the risk receptor groups that are considered in the different risk assessments carried out in the case studies of project ICARIA. Several of these groups involve the assessment of assets legally considered critical infrastrucures whose information (location, characteristics, operation) is confidential.

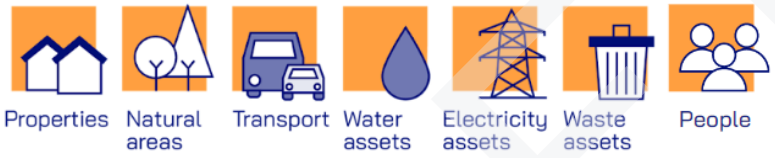

Figure 1. Risk receptor groups considered in project ICARIA risk analyses.

The following table summarizes the critical infrastructure considered in the different groups of risk receptors considered in the scope of the project. Furthermore, it indicates the measures that have been taken into account by the consortium to ensure a safe and confidential treatment of such data.

Table 1. Summary of the critical assets considered in the ICARIA that have required means of data protection.

Risk receptor group	Critical assets considered	Data owner	Means of data protection
Water assets	Spanish wastewater treatment plants	National Insurance for Extraordinary Catastrophes (CCS)	The data provided is already anonymized by its owner. So specific infrastructures cannot be identified or correlated to any event.
Water assets	Infrastructures related to management of storm and drinking water	Hydrological Service of the Salzburg region	Under evaluation
Electricity assets	Electricity distribution network and its elements (power substations,	ENDESA	Signature of a Non-Disclosure Agreement *

Risk receptor group	Critical assets considered	Data owner	Means of data protection
	distribution substations, aerial lines, electrical line supports, power plants)		
Electricity Assets	Electricity distribution network and its elements (power substations, distribution substations, aerial lines, electrical line supports, power plants)	Open data (OpenStreetMap)	not necessary
Properties	Airborne Laser Scanning data (Digital Elevation Model, Digital Terrain Model)	Open Government data	not necessary
Properties	Buildings, Airports,Ports, DEM	Open data (OpenStreetMap)	not necessary
Water distribution network	Pipelines, Desalination plants, Wastewater treatments plants	DEYA Syros	Signature of a Non-Disclosure Agreement *
Electricity Assets	Electricity distribution network and its elements (power substations, distribution substations, aerial lines, electrical line supports, power plants)	HEDNO S.A. (Hellenic Electricity Distribution Network Operator S.A.)	Upon request from the owner for research purposes**

* Still pending of final validation by the stakeholder

** Data is available upon request only for research purposes.

Annexes A, B and C present the measures taken by the consortium to ensure an adequate management of errors in anonymization of the data received by the consortium.

4.1.3 Human vulnerability to heatwaves

Within the three ICARIA case studies, the risk associated with heatwaves on critical assets and the exposed population is being assessed. Such assessment has been done with modeling tools capable of transforming radiation and air temperature information into heat stress indexed for different risk receptors.

For the case where the risk receptor considered has been the population, several parameters to assess the vulnerability of human health against heat have been taken into account. The following bullet points indicate the main ethical concerns that may arise around this matter and the measures taken by the project.

1. **Use of public health data:** the assessment of people's vulnerability to the impacts of heatwaves in their health has exclusively been based on free publicly available non-personal data such as.

    - Population age distribution (e.g. National Statistics Agencies or similar)
    - Population density (e.g. National Statistics Agencies or similar)
    - Net annual income per household (e.g. National Statistics Agencies or similar)
    - Year households construction (e.g. National Statistics Agencies or similar)
    - Classification of households energetic efficiency (e.g. National Statistics Agencies or similar)
    - Accessibility to public green spaces (own assessment)

    Furthermore, this data has been obtained and treated with a spatial resolution of postal code without any reference to individuals or specific cases. Hence, by no means personal data has been handled in this aspect of the project.

2. **Privacy and Confidentiality:** as mentioned above, the vulnerability data used is discretized at postal code scale without involving any sort of personal information.

3. **Equity and Fairness:** project ICARIA does foresee the suggestion of potential adaptation strategies to mitigate the impacts of heatwaves on citizens. Such a proposal will be developed taking into account an equitable distribution of resources considering the conclusions of the previous risk assessment. Nevertheless, it is important to consider that none of these suggestions has any legal binding effect in terms of policy and decision making on the studied regions.

4.1.4 Economic impact data

The monetization of the impacts received by critical assets during extreme weather events is an essential aspect of the ICARIA risk assessment framework. This procedure allows experts to compare the effects of separate events on the same risk receptors and determine their severity. Furthermore, it allows policymakers and other stakeholders to develop cost benefit analysis of different adaptation strategies that could potentially be implemented to increase the climatic resilience of an asset of interest. This comparison is an essential step in decision making processes to improve adaptation to climate change.

In order to monetize impacts, the insurance sector is a key stakeholder that can provide records of economic damage on insured assets for certain events. In the case of project ICARIA, this data has been obtained from insurance sector stakeholders under specific non-disclosure agreements or consent forms arising from the Communities of Practice activities (see further details in Section

4.5). It is worth remarking that the information facilitated does not correspond to specific damage reports, specific insurance policies or personal information of insurance customers.

The information provided is aggregated in postal code units, providing information about the repercussions of events of interest and avoiding a detailed insight of individual customers or insurance policies. Such aggregation is done by the data provider prior to its sharing. Therefore, it is not possible by any person who accesses this information to neither re-identify any individual or specific case nor access any sort of personal data. This is the usual procedure insurers and reinsurers use when disclosing damage data for studies.

4.2 Personal data treatment

The Communities of Practice (CoP) are the only aspect of project ICARIA where a relevant amount of personal data management has been identified so far.

4.2.1 Communities of Practice activity

A Community of Practice is a group of individuals who share a common interest or concern for a specific activity, practice, etc. and engage in regular interactions to share and enhance their skills and knowledge in that domain.

Project ICARIA is devoting important effort at bridging the research community, which is focused on risk assessment, with institutions and entities involved in implementing climate resilience plans, programmes, and strategies. With this objective, one CoP for each case study of the project (Metropolitan Area of Barcelona, Archipelago of South Aegean Region, and Salzburg Region) has been established and engaged through regular meetings. Furthermore, the CoPs represent a valuable key-instrument to ensure that the outcomes of the project are meaningful, relevant, and useful for their potential end-users. The table below summarizes the planned CoP workshops.

Table 2. Roadmap of CoPs workshops in the ICARIA project.

Workshop	Theme	Schedule
Workshop 1	Presentation of ICARIA and identification of challenges and opportunities	June 2023
Workshop 2	Discussion and validation of the Risk Assessment approach	January 2024
Workshop 3	Evaluation of preliminary results	September 2024
Workshop 4	Trial execution	February 2025
Workshop 5	Mini-Trials and socio-economic impacts	July 2025
Final workshop	Outreach beyond CoPs	November 2025

4.2.2 Participants selection

The people and institutions invited to participate in the ICARIA CoPs have been chosen using an expert sampling criteria, prioritizing individuals with specialized knowledge and experience in the fields of interest for the project. This selection has also aimed at establishing a diverse and multi-discipline group involving representatives of the public sector, private companies and research institutions. Furthermore, the consortium has considered a fair gender balance to ensure that women and men are equal in decision-making positions.

4.2.3 Data protection considerations

The celebration of CoP workshops involves the generation of a certain volume of information that is handled following the guidelines set in Article 5 of the GDPR[1].

- **Lawfulness, fairness, and transparency:** personal data of participants in the ICARIA CoPs is treated following these three main principles. Lawfulness entails identifying an appropriate legal basis for data processing. In ICARIA, consent serves as the legal basis, with all participants engaging voluntarily. Fairness guarantees data processing remains within reasonable bounds, avoiding misleading participants or adverse effects. Transparency is maintained through an open and clear approach, allowing participants to comprehend how their data is handled.

- **Purpose limitation:** the purpose of any data collection process during a CoP workshop, or a subsequent activity, is shared with the involved stakeholders beforehand. Specifying purposes guides processing activities, preventing collection of data beyond its scope. This also validates participants' consent, as they understand the precise scope of data processing.

- **Data minimisation:** in relation to purpose limitation, data minimisation ensures only necessary data for identified purposes is processed. The ICARIA consortium regularly reviews processed data to ensure it aligns with identified purposes. Any data identified as beyond scope will be promptly deleted.

- **Accuracy:** ensuring the accuracy of the shared data involves actions beyond processing correct information, such as preventing misleading data or adverse effects. Project partners regularly review data and take necessary steps to correct or delete inaccuracies.

- **Storage limitation:** this principle dictates that collected data shouldn't be stored longer than necessary, and individuals have the right to erasure (Article 17 GDPR).

- **Integrity and confidentiality (security):** measures to protect collected data from unauthorized processing/access, interference, and loss are implemented by the ICARIA consortium, involving technical (e.g., password-protected tools) and organizational (security policies ensuring limited, secure data access) measures with this purpose.

[1]available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0679

- **Accountability:** the consortium takes responsibility for secure data processing in compliance with all applicable laws and regulations.

Considering these principles, ICARIA has established a specific data collection process to comply with GDPR and security regulations for all the information generated in CoP activities. This involves a consent form signed by all participants prior to their participation in the project (see Annex D).

4.2.4 Other ethical considerations

The fact that the project does not envisage any physical interventions on human participants eliminates significant risks in regard to their involvement in the activities. In addition, the nature of the project does not include medical studies, which also mitigates the probability of any harm on the participants' physical health.

Furthermore, ICARIA does not envisage the involvement of people that are not able to provide informed consent. Additionally, the participation of potentially vulnerable individuals is not foreseen in any stage of the project.

5 Conclusions

Project ICARIA has devoted efforts to ensure that the highest ethical standards have been applied to all the activities developed. The main ethical issues that have been detected during the first 18 months are as follows:

- Sewer network information
- Critical infrastructure data
- Human vulnerability to heatwaves
- Economic impact data
- Communities of Practice

In all cases no major ethical conflicts have developed and ad-hoc measures have been implemented in each situation to ensure the fulfillment with the applicable ethical and legal requirements. These measures include procedures such as:

- Signature of collaboration and non disclosure agreements
- Use of publicly available data
- Signature of consent forms and non disclosure agreements
- Application of GDPR guidelines

This document will be updated at the end of the project to report any other ethical consideration that may arise in the second half of the project.

References

UNDRR. (2020). The Human Cost of Disasters: An Overview of the Last 20 Years (2000–2019). United Nations Office for Disaster Risk Reduction. Geneva, Switzerland.

Annex A: Anonymized Data Quality Control Policy

Introduction

The ICARIA project (Improving Climate Resilience of Critical Assets) focuses on promoting infrastructure-level modeling of extreme weather events to achieve better risk analysis capabilities associated with compound meteorological events and their cascading effects (hereinafter referred to as the "Project"). In the face of an increasing threat from these types of events, the Project analyzes and develops new methodologies and support tools for decision-making to improve the holistic climate resilience of urban environments and their critical infrastructures as well as their inhabitants.

In this context, the processing and exploitation of large volumes of information from various sources constitute a fundamental part of the research conducted. As a general rule, work is done with previously anonymized information.

According to Item 26 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (hereinafter referred to as the "**General Data Protection Regulation**" or "**GDPR**"), anonymous information is all information "that does not relate to an identified or identifiable natural person nor to data that have been rendered anonymous in such a way that the data subject is not or no longer identifiable."

In other words, anonymization is a process that removes or modifies personal identifying information from a data set. Anonymous information is not considered personal data for legal purposes and therefore falls outside the scope of the GDPR.

Sometimes anonymization is confused with pseudonymization. The latter, according to Article 4.5 of the GDPR, is the processing of personal data in such a way that the data can no longer be attributed to a specific data subject without the use of additional information, provided that such additional information is kept separately and is subject to technical and organizational measures to ensure that the personal data are not attributed to an identified or identifiable natural person. Pseudonymized data are personal data, and although it is complex, it is possible to attribute or relate them to a natural person.

The key feature of anonymization is irreversibility since it does not allow the original data to be recovered. This guarantees the "anonymity" of the data subjects and protects the data against threats such as cyber-attacks that involve information leaks. We find various examples where anonymization processes have been carried out incompletely or incorrectly. The document from the Spanish Data Protection Agency (AEPD) titled "10 Misunderstandings Related to Anonymization"[2] includes two examples that reflect the previous statement. In 2006, a streaming movie service published a dataset containing 10 million movie ratings made by 500,000 customers, considering

[2]available here

this dataset as anonymous. However, it was later shown that knowing a few details about the subscriber could lead to their identification within that dataset.

The second example included by the AEPD occurred in 2013 when the New York City Taxi and Limousine Commission published a dataset containing more than 173 million individual taxi trips with data such as pick-up and drop-off locations, times, and license numbers, all supposedly anonymized. The dataset was poorly anonymized, allowing the original license numbers and even the taxi drivers to be identified.

The above highlights the importance of establishing quality controls when working with anonymized information. Besides incomplete or incorrect processes, there is a risk that certain processes may be reversible in the future due to changing circumstances, technological advancements, or the availability of additional information. Given that current computational resources and new technologies were unthinkable years ago, we can assume that in the future, measures we now consider "acceptable" may become outdated. Additionally, the disclosure of additional data over time may mean that data that were previously anonymous can be attributed to identified individuals. Finally, there is also the possibility of human and/or technical errors in the anonymization processes conducted by third parties who provide the information, which are often detected during its use.

In light of the above, it has been deemed necessary to develop this Anonymized Data Quality Control Policy (hereinafter referred to as the "Policy") with the primary purpose that any user or researcher of the ICARIA Project who, during the course of their activities, detects a flaw in the anonymization processes can report it to the appropriate authorities and take appropriate measures to ensure compliance with data protection regulations and safeguard the rights of those affected.

Definitions and Acronyms

"Anonymization" – Conversion of personal data into data that do not relate to an identified or identifiable natural person, or data rendered anonymous in such a way that the data subject is not or no longer identifiable.

"Personal Data" or **"Data"** – According to Article 4.1 of the GDPR, it is "any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier, or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person."

"De-identification" – Removal of identifiers such as names or addresses that directly identify an individual. It is the first step of anonymization since a de-identified dataset can be easily re-identified when combined with publicly or easily accessible data.

"Data Subjects" or **"Affected Individuals"** – Natural persons whose personal data are being processed.

"LOPDGDD" – Organic Law 3/2018 of December 5 on the Protection of Personal Data and the guarantee of digital rights.

"GDPR" – Regulation (EU) 2016/679 of the European Parliament and of the Council of April 27, 2016, on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

"Re-identification" – Identification of individuals from a dataset that has previously been de-identified or anonymized.

"Privacy Officer" – The person responsible for developing, coordinating, and promoting data protection regulations concerning the quality of anonymization processes within the ICARIA Project.

"Pseudonymization" – According to the GDPR: "The processing of personal data in such a way that they can no longer be attributed to a specific data subject without the use of additional information, provided that such additional information is kept separately and is subject to technical and organizational measures to ensure that the personal data are not attributed to an identified or identifiable natural person."

"Processing of Personal Data" – Any operation or set of operations performed on personal data or sets of personal data, whether or not by automated means, such as collection, recording, organization, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination, or otherwise making available, alignment or combination, restriction, erasure or destruction.

"User" / **"Researcher"** – Professionals participating in the ICARIA Project who use anonymized information in the performance of their functions.

Scope

This Policy applies to all Users and Researchers of the ICARIA Project who have access to anonymized information in the performance of their activities, regardless of the company or entity they provide services to or are employed by.

Assignment of Responsibilities

Through this Policy, Angel Villanueva Blasco (AQUATEC's Head of the Resilience and Climate Change Unit - angel.villanueva@veolia.com) is designated as the Privacy Officer responsible for ensuring the quality of anonymized data. Their functions will include:

1. Analyzing communications from users or researchers who detect an error in the anonymization processes.
2. Deciding whether or not to continue processing the information, possibly applying an additional anonymization mechanism or notifying the source entity.

3. Keeping a record of communications according to the model in Annex C.

The Privacy Officer will periodically review random information packages to verify the impossibility of identifying the treated information.

Management of Possible Anonymization Errors

Any User or Researcher who detects that part of the treated information is identifiable, meaning they may be accessing personal data, should send an email to the Project's Privacy Officer containing at least the following information:

- Description of the source from which the information comes.
- Description of the reasons that make it identifiable.

A notification template is included in Annex C.

In any case, they must refrain from continuing to work with such information and wait for instructions from the Privacy Officer. Users and Researchers must always maintain confidentiality about any poorly anonymized information they may have accessed.

Review and Improvement

This Policy will be regularly reviewed at planned intervals or if significant changes occur to ensure continued suitability, effectiveness, continuous improvement, and proper implementation.

Annex B: Register of communications of users/researchers regarding anonymization errors

Date	Sender	Process/ Department	Data supplier	Description	Corrective measures

Annex C: Notification form to the Privacy Officer

Name, entity and position of the informant	text
Source of information	text
Activity and Case Study where the information is used	text
Piece of information wrongly anonymized	text
Date of detection of the error	text

Annex D: CoPs Consent Form

Annex E: Data Management Statement

Table A.1. Data used in preparation of ICARIA Deliverable 7.2

Dataset name	Format	Size	Owner and re-use conditions	Potential utility within and outside ICARIA	Unique ID
na	na	na	na	na	na

Table A.2. Data produced in preparation of ICARIA Deliverable 7.2

Dataset name	Format	Size	Owner and re-use conditions	Potential utility within and outside ICARIA	Unique ID
na	na	na	na	na	na

ICARIA
Improving climate resilience of critical assets

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