



Climate-Resilient Development Pathways in Metropolitan Regions of Europe

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Disclaimer

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Abbreviations

Abbreviations	Full wording
A&M	Adaptation and Mitigation
CA	Consortium Agreement
CC	Climate Change
CINEA	European Climate, Infrastructure and Environment Executive Agency
CSA	Case Study Area
DEC	Dissemination, Exploitation and Communication Strategy
DMP	Data Management Plan
DT	Digital Twin
EC	European Commission
ESAB	External Scientific Advisory Board
EU	European Union
GA	Grant Agreement
IAU	Internal Advisory Unit
IDSS	Impact-Based Decision Support
IPR	Intellectual Property Right
LL	Living Lab
MACC	Mission on Adaptation to Climate Change
MRE	Metropolitan Regions of Europe
NBS	Nature-based Solutions
PC	Coordinator
R&I	Research and Innovation
SC-Hub	Stakeholder Community Hub
STC	Steering Committee
WP	Work Packages

Executive Summary

This Project Handbook serves as a practical guide to assist all CARMINE participants in implementing the project and securing the achievements of the results. It outlines and explains the contractual rules and management procedures, providing useful advice and management tools to help project participants fulfil their requirements accurately and on time.

Key words

Climate change, Metropolitan Regions of Europe, Digital Twin, Risk Management, Quality Assurance, Ethical and Security Assessment, Data Protection

Introduction

This handbook outlines the fundamental policies and procedures for the CARMINE project, emphasizing key areas for its successful implementation. It details processes for identifying, assessing, and mitigating risks that could impact project execution.

This handbook provides comprehensive information on the following critical aspects of the project management:

- **Consortium Organization:** This section defines the roles and responsibilities of all consortium partners involved in the CARMINE project.
- **Communication:** It emphasizes the guidelines established in the Dissemination, Exploitation, and Communication Strategy for effective communication within the consortium and with external stakeholders, ensuring timely information exchange and facilitating collaboration throughout the project lifecycle.
- **Reporting Processes:** The handbook outlines standardized procedures for submitting regular progress reports, financial statements, and other required deliverables to the coordinator and funding agency.
- **Record-Keeping:** A robust system for record-keeping is defined, ensuring proper documentation and archiving of all project-related activities, decisions, and data.
- **Quality Plan:** This section details the quality assurance and quality control procedures implemented to guarantee the accuracy, completeness, and reliability of project outputs.
- **Data Management:** Clear guidelines and protocols are provided for the collection, storage, access, and sharing of project data, ensuring effective data management.
- **Intellectual Property Rights (IPR):** The intellectual property rights and responsibilities generated by the project are defined in this section.
- **Ethical and Security Assessments:** Guidance on conducting ethical and security assessments throughout the project lifecycle is provided, ensuring compliance with relevant standards.
- **Gender Mainstreaming:** This section promotes gender mainstreaming in project publications and research activities, reflecting a commitment to gender equality.
- **Data Protection:** Clear procedures are established for data collection, storage, and access, ensuring compliance with relevant regulations and safeguarding data protection.
- **Risk Management:** A comprehensive framework for identifying, assessing, mitigating, and monitoring risks is defined, ensuring sound risk management throughout the project.

As a living document, this handbook will be maintained and updated throughout the lifecycle of the CARMINE project, with changes and revisions made as necessary to reflect the evolving needs of the project and address any emerging issues.

1 General information

1.1 Contact persons

Up to date contact information for specific experts participating in the project implementation, including e-mail addresses can be found on the CARMINE Teams & SharePoint area. As this document is a public deliverable, the e-mail addresses are not included in the following table.

Table 1. Contact information

No	Participant Name	Short Name	Contact Persons
1	ADMINISTRATIA NATIONALA DE METEOROLOGIE R.A.	MeteoRo	Sorin Cheval, Laurentiu Ciuhu
2	MITIGA SOLUTIONS SL	MITIGA	Elefteria Exarchou
3	UNIVERSITATEA DIN BUCURESTI	UB	Cristian Ioja, Mihai Răzvan Niță
4	CONSIGLIO NAZIONALE DELLE RICERCHE	CNR	Marianna Nardino
5	USTAV INFORMATIKY AV CR	ICS	Jan Geletič
6	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE IN SILVICULTURA MARIN DRACEA	INCDS	Constantin Nicu Tudose, Cezar Ungurean
7	RUHR-UNIVERSITAET BOCHUM	RUB	Benjamin Bechtel
8	FUNDACIO PAU COSTA	PCF	Jordi Vendrell Flotats, Guillem Canaleta
9	ALBERT-LUDWIGS-UNIVERSITAET FREIBURG	UFR	Dirk Neumann
10	CENTRUL NATIONAL DE CARTOGRAFIE	CNC	Iuliana Adriana Cuibac, Iuliana Parvu
11	DANMARKS TEKNISKE UNIVERSITET	DTU	Kirsten Halsnæs, Per Skougaard Kaspersen, Shreya Some
12	ATHINA-EREVNITIKO KENTRO KAINOTOMIAS STIS TECHNOLOGIES TIS PLIROFORIAS, TON EPIKOINONION KAI TIS GNOSIS	ATH-RC	Phoebe Koundouri, Eleni Toli, Alice Guittard
13	ETHNIKO ASTEROSKOPEIO ATHINON	NOA	Iphigenia Keramitsoglou
14	JUSTUS-LIEBIG-UNIVERSITAET GIESSEN	JLU	Elena Xoplaki, Christian Veldman
15	WORLD METEOROLOGICAL ORGANIZATION	WMO	Jon Cox
16	ACADEMY OF ATHENS	AoA	Christos Zerefos
17	SDSN ASSOCIATION PARIS	SDSN	Zofia Kunysz, Gaëlle Desclotres
18	LNH WATER APS	LNH	Nanna Ravn Hoegh
19	FONDAZIONE CENTRO EURO-MEDITERRANEOSUI CAMBIAMENTI CLIMATICI	CMCC	Paola Mercogliano, Marianna Adinolfi

20	B-KODE	B-Kode	Matthias Demuzere
21	ICLEI EUROPEAN SECRETARIAT GMBH (ICLEI EUROPASEKRETARIAT GMBH)	ICLEI	Vasileios Latinos, Selene Angelone, Monika Heyder, Florian Freutel
22	MUNICIPIUL BRASOV	MBV	Bianca Lorinz-Kraila
23	NEA MITROPOLITIKI ATTIKI A E ANAPTYXIAKOS ORGANISMOS TOPIKIS AUTODIOIKISIS	NMA	Konstantinos Zervas, Evi Tzimpoula
24	MINISTRY OF DIGITAL GOVERNANCE	MoDG	Athanasios Paliatsos
25	STADTWERKE LEIPZIG GMBH	LSW	Simon Albrecht
26	CENTRO AGRO-ALIMENTARE DI BOLOGNA SPA	CAAB	Duccio Caccioni, Sheliza Thobani
27	GOTTFRIED WILHELM LEIBNIZ UNIVERSITAET HANNOVER	LUH	Christian Albert
28	EUROPEAN CENTRAL BANK	ECB	Andrej Ceglar
29	MET OFFICE	MOHC	Deborah Hemming
30	THE UNIVERSITY OF BIRMINGHAM	UoBIR	Emma Ferranti, Deanne Brettle, Sarah Greenham
31	BIRMINGHAM CITY COUNCIL	BCC	Simon Needle
32	METEOMATICS AG	MM	Matthias Piot

1.2 Project info

The increasing frequency and intensity of climate and weather extremes due to anthropogenic climate change (CC) present significant challenges to local and regional adaptation efforts. Climate resilient development aims to integrate adaptation and mitigation (A&M) measures to ensure equitable, just, and sustainable development. The EU Strategy on Adaptation to CC (SACC) identifies several key issues: insufficient decision-making knowledge, weaknesses in implementing and monitoring adaptation actions, slow adaptation uptake, and unaddressed climate impacts from outside the EU.

With 75% of its population in urban areas, the EU strives to achieve climate resilience by 2030, focusing on 150 regions and communities. Metropolitan Regions of Europe (MRE), defined as NUTS 3 regions with at least 250,000 inhabitants, exhibit complex socio-ecological dynamics and require data-driven A&M plans. There is an urgent need for high-resolution climate data and tools to enhance disaster management systems and support societal responses.

The CARMINE project aims to facilitate climate resilient development by investigating CC impacts, studying societal responses, and developing A&M solutions for climate neutrality and socio-ecological changes. The project's vision is to provide knowledge-based pathways for climate resilience in MREs, bridging local and regional scales through impact-based decision support services and multi-level climate governance.

CARMINE will deliver roadmaps of research and innovation (R&I) priorities on A&M, economic modelling, risk assessment, and management tools, focusing on eight MREs as representative

Case Study Areas (CSA). These CSAs will adopt Digital Twin (DT) use cases to support transferability and scaling-up. The project will leverage existing data and services from platforms like Climate-ADAPT, Copernicus CC Service, and previous EU projects, combining them with locally sourced data through active stakeholder engagement.

CARMINE's overarching goal is to enhance climate resilience in metropolitan communities by co-producing knowledge-based tools, strategies, and plans for A&M actions. The project focuses on the 2030-2035 timeframe with longer-term perspectives up to 2050, aiming to co-create decision-support services, collaborate with local communities and policymakers, and deliver science-based R&I roadmaps for multi-level climate governance.

The project includes eight metropolitan regions as CSAs, which are prepared to join the EU Mission on Adaptation to Climate Change (MACC) Charter by the end of the project. CARMINE aims to connect over 40 communities within these CSAs by 2027, with potential transferability to additional MREs facing similar challenges. The project's success will be measured through specific objectives, means of verification, and key performance indicators, addressing identified EU-level challenges and needs.

In conclusion, CARMINE strives to build climate resilient metropolitan communities by integrating advanced data, tools, and stakeholder engagement, ensuring a sustainable future in the face of climate uncertainties.

1.3 Project website

The CARMINE website was launched in late April 2024 and can be accessed via <http://carmine-project.eu>.

2 Consortium Organisation

2.1 Project Management Strategy

Project management encompasses all essential tasks to ensure the project's successful completion according to the technical and financial specifications outlined in the Grant Agreement. Work package (WP) 8, led by MeteoRo, focuses on managing and coordinating the project to maintain alignment with scope, costs, resources, and quality. Any necessary modifications or optimizations are discussed with partners, and decisions are made with their consent.

Effective communication management is vital for ensuring accurate information transmission and prompt decision-making. Quality management enhances collaboration and results delivery among consortium partners through relevant quality control and assurance activities. Risk management involves processes and techniques for assessing and controlling potential project risks, emphasizing early detection and handling.

2.2 Project Management Structure

The Consortium Agreement (CA) outlines a multi-layered governance structure for this project (Figure 1). This structure ensures proper oversight, execution, control, and monitoring.

Here is a breakdown of the different bodies involved:

- **General Assembly (GA):** Holds the ultimate decision-making power for the consortium.
- **External Scientific Advisory Board (ESAB):** Shall assist and facilitate the decisions made by the General Assembly.
- **Steering Committee (STC):** Provides advice on the Project implementation, ensure delivery of the Project outputs and the achievement of Project outcomes.
- **Internal Advisory Unit (IAU):** Focuses on quality control, gender balance, risk management, and ethical considerations.
- **Coordinator (PC):** Acts as the legal representative, facilitating communication between consortium members and the funding agency. They fulfil responsibilities outlined in both the Grant Agreement and the Consortium Agreement.

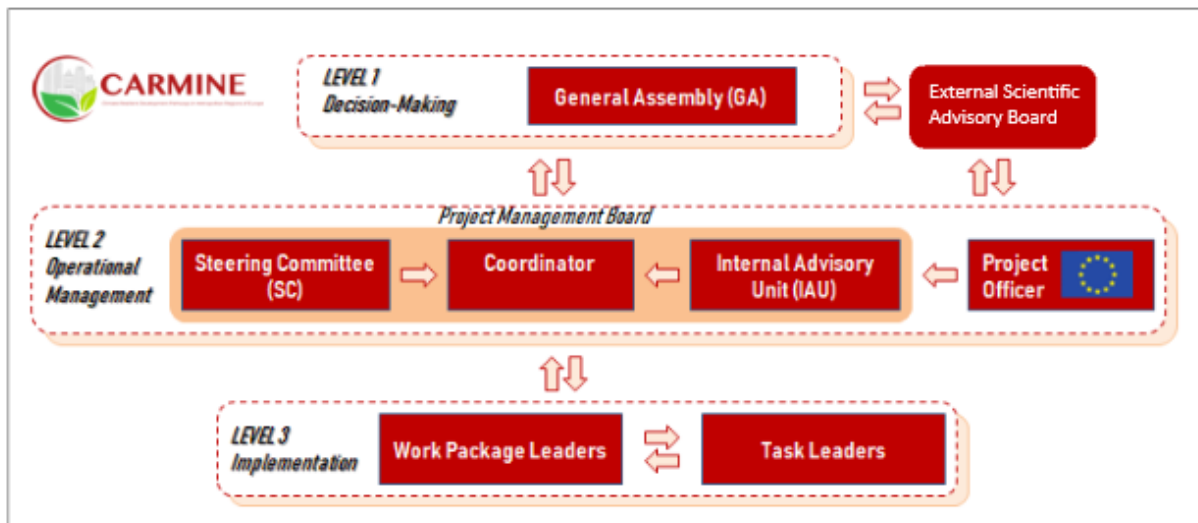


Figure 1. Project Management Structure in CARMINE Project

The **GA** shall consist of one representative of each Party (hereinafter referred to as “Member”).

Each Member shall be deemed to be duly authorised to deliberate, negotiate and decide on all matters listed in Section 6.3.7 of the CA.

The Coordinator shall chair all meetings of the GA unless decided otherwise by the GA.

The Parties agree to abide by all decisions of the GA.

The following decisions shall be taken by the GA:

- **Content, finances and intellectual property rights**
 - Proposals for changes to Annexes 1 and 2 of the Grant Agreement to be agreed by the Granting Authority
 - Changes to the Consortium Plan
 - Modifications or withdrawal of Background in Attachment 1 of the CA
 - Additions to Attachment 3 (List of Third Parties for simplified transfer according to Section 8.3.2) of the CA
 - Additions to Attachment 4 (Identified entities under the same control) of the CA
- **Evolution of the consortium**
 - Entry of a new Party to the Project and approval of the settlement on the conditions of the accession of such a new Party
 - Withdrawal of a Party from the Project and the approval of the settlement on the conditions of the withdrawal
 - Proposal to the Granting Authority for a change of the PC
 - Proposal to the Granting Authority for suspension of all or part of the Project

- Proposal to the Granting Authority for termination of the Project and the CA
- **Breach, defaulting party status and litigation**
 - Identification of a breach by a Party of its obligations under the CA or the GA
 - Declaration of a Party to be a Defaulting Party
 - Remedies to be performed by a Defaulting Party
 - Termination of a Defaulting Party's participation in the consortium, including the steps to be taken for litigation purposes and the coverage of litigation costs in case of joint claims of the parties of the consortium against a Party (Section 4.2, Section 7.1.4 of the CA).

- **Appointments**

Based on the Grant Agreement, the appointment, if necessary, of:

- External Expert Advisory Board Members.

The **STC** is the Project internal advisory body. The STC's role is to provide advice on the Project implementation, ensure delivery of the Project outputs and the achievement of Project outcomes. The STC is formed by all work package leaders and work package co-leaders and is chaired by the PC. The STC meets bi-monthly (mainly online meetings).

The **PC** shall be the intermediary between the Parties and the Granting Authority and shall perform all tasks assigned to it as described in the Grant Agreement and in this Consortium Agreement.

In particular, the PC shall be responsible for:

- monitoring compliance by the Parties with their obligations under the CA and the GA
- keeping the address list of Members and other contact persons updated and available
- collecting, reviewing to verify consistency and submitting reports, other deliverables (including financial statements and related certification) and specific requested documents to the Granting Authority
- preparing the meetings, proposing decisions and preparing the agenda of General Assembly meetings, chairing the meetings, preparing the minutes of the meetings and monitoring the implementation of decisions taken at meetings
- transmitting promptly documents and information connected with the Project to any other Party concerned
- administering the financial contribution of the Granting Authority and fulfilling the financial tasks described in [Section 6](#)
- providing, upon request, the Parties with official copies or originals of documents that are in the sole possession of the Coordinator when such copies or originals are necessary for the Parties to present claims
- providing a copy of the Grant Agreement and its Annexes to the Associated Partners.

An **ESAB** – named “External Scientific Advisory Board” in CARMINE - will be appointed and steered by the General Assembly. The EEAB shall assist and facilitate the decisions made by the General Assembly.

By way of exception to Section 6.4.4 in CA, the Parties hereby mandate the Coordinator to execute, in their name and on their behalf, a non-disclosure agreement (hereafter “NDA”) with each member of the ESAB, in order to protect Confidential Information disclosed by any of the Parties to any member of the ESAB. The NDA for the ESAB members is enclosed in Attachment 5 of the CA. The mandate of the Coordinator comprises solely the execution of the NDA in Attachment 5 of the CA.

The Coordinator shall write the minutes of the ESAB meetings and submit them to the General Assembly. The EEAB members shall be allowed to participate in General Assembly meetings upon invitation but have not any voting rights.

To ensure project success and integrity, an **Internal Advisory Unit (IAU)** comprising experts in quality control, gender, risk, and ethics will be established and overseen by the project manager. The IAU will convene bi-annually to review progress, identify challenges, and propose corrective measures, with detailed meeting minutes submitted to the PC for transparency and accountability. This strategic move aims to uphold best practices, regulatory standards, and ethical integrity throughout the project.

3 Legal Documents

3.1 GRANT AGREEMENT (GA)

The GA is signed between the coordinator and the EC and is the official and legal base of the project.

The Grant Agreement is composed of different Annexes:

- Annex 1: Description of the Action (DoA):
 - Overall description of the project for the full duration of the contract.
 - The objectives and expected impacts.
 - An outline of the work plan, including the list of deliverables and milestones; a description of the role of the participants; ethical provisions.
 - A description of the organisational, management and governance structure of the project; the plan for using and disseminating knowledge.
- Annex 2: Estimated budget for the action; Annex 2a: Additional information on the estimated budget.
- Annex 3: Accession Forms.
- Annex 4: Model for the financial statements.
- Annex 5: Model for the certificate on the financial statements (CFS).
- Annex 6: Model for the certificate on the methodology.

3.2 CONSORTIUM AGREEMENT (CA)

The Consortium Agreement establishes internal rules and specifies and/or supplements the provision of the Contract. Currently, the version 4 of the Consortium Agreement (CA) was signed by all Project Partners on 8 February 2024.

4 Communication

4.1 Internal communication

CARMINE will employ a communication framework, comprising processes and tools, to streamline information exchange throughout the project. This framework is adaptable to evolving project needs. The PC will take the lead in fostering effective communication among partners, ensuring the project progresses smoothly.

Microsoft Teams serves as the primary collaboration platform for the project. It offers instant messaging, video conferencing, and file sharing capabilities. Dedicated project channels facilitate focused discussions and information exchange. All project meetings will be scheduled and conducted through Microsoft Teams.

Email is the primary channel for formal project communications, including announcements, document sharing, and meeting documentation.

4.1.1 4.1.1 Project Team Directory/Repository

A dedicated CARMINE Microsoft SharePoint workspace serves as the central platform for project-related information sharing among project personnel. This platform hosts documents, written materials, and meeting minutes. To ensure seamless integration, it is linked to Microsoft365 and other compatible digital tools. The specific structure of this workspace is outlined in Figure 2.

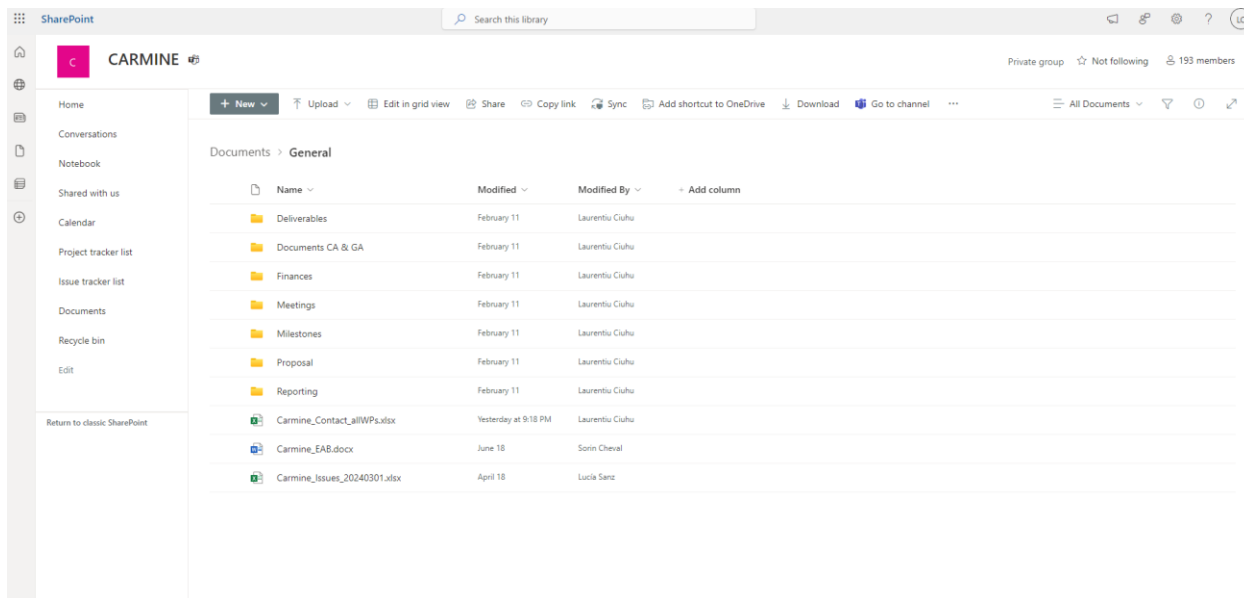


Figure 2. CARMINE repository (screenshot)

4.1.2 4.1.2 Project Meetings

To schedule online meetings efficiently, the project utilizes Doodle (<https://doodle.com/en/>) to find mutually agreeable times.

The project will hold several meetings throughout its duration. A detailed overview of these meetings, including their purpose, schedule, attendees, and relevant documentation, is outlined in Table 2.1 of Deliverable D7.1 - Dissemination, Exploitation and Communication Strategy – Version 1.

4.2 External communication

The consortium established a dedicated project website and uses email, and social media platforms (X, Facebook, LinkedIn, Instagram) to engage with external stakeholders. To amplify project impact, partners will create high-quality materials such as presentations, scientific papers, and press releases. All communication materials must adhere to the project's branding guidelines, including the CARMINE acronym and grant number. The primary goal is to enhance the project's visibility and reach a broad audience.

A comprehensive communication and dissemination strategy, detailed in Deliverable D7.1, guides these efforts. To monitor communication activities, the consortium will employ a dedicated tracking tool. Each partner will designate a communication manager to oversee the implementation of the communication plan (Table 2).

Table 2. Communication representatives of CARMINE partners

Partner	Name and Surname
MeteoRo	Laurentiu Ciuhu
MITIGA	Lucia Sanz
UB	Mihai Răzvan Niță
CNR	Teodoro Georgiadis
ICS	Jan Geletič
INCDS	Constantin Nicu Tudose, Cezar Ungurean
RUB	Benjamin Bechtel
PCF	Guillem Canaleta
UFR	Christian Jaeger
CNC	Adrian Parvu
DTU	Michaela Horn Simonsen, Per Skougaard Kaspersen
ATH-RC	Eleni Toli
NOA	Iphigenia Keramitsoglou
JLU	Elena Xoplaki
WMO	Jon Cox
AoA	George Marinos
SDSN	Zofia Kunysz, Gaëlle Descloîtres

LNH	Nanna Ravn Hoegh
CMCC	Arianna Acierno
B-Kode	Matthias Demuzere
ICLEI	Monika Heyder
MBV	Bianc Lorincz-Kraila
NMA	Konstantinos Zervas
MoDG	Evangelos Malamas
LSW	Simon Albrecht
CAAB	Reihaneh Eshraghi
LUH	Carl Anderson
ECB	Andrej Ceglar
MOHC	Deborah Hemming
UoBIR	Deanne Brettle
BCC	Simon Needle
MM	Julia Carelli

4.3 Communication with CINEA

The Coordinator (PC) is the sole point of contact between the project consortium and the European Commission (EC). The PC is responsible for maintaining an up-to-date project portal, which includes information on communication activities, project milestones, deliverables, and progress reports. All communication with the EC must be channelled through the PC, except in extraordinary circumstances that have been previously agreed upon. The PC will disseminate relevant EC communications to project partners.

5 Scientific/Technical Reporting

5.1 Internal Technical Reporting

WP leaders are required to submit technical progress reports for their respective WPs to the PC every 9 months, with an increased frequency of reporting during the last period, occurring at the end of each semester (i.e., months 9, 18, 27, 36, 42, and 48). These reports should be completed using the "Internal Technical Report Template" available in the CARMINE document repository and must include the following information:

1. Work performed and main results achieved during the reporting period
2. Status of each WP task and details on work carried out by each beneficiary
3. Upcoming activities and updated planning for the next reporting period
4. Status of ongoing deliverables and delivery dates for the next reporting period
5. Progress towards milestones planned for the next reporting period
6. Status of risks and updated risk analysis for the WP
7. Critical assessment of technical progress, including deviations from the original plan and proposed measures

Additionally, the report should contain information about the organizational aspects of the WP, as reflected in the performance indicators ([Section 5.3 WP internal progress monitoring](#)). The Technical Internal Report for periods M9-M18, M27-M36, and M42-M48 will cover only the performance indicators section, while other sections will be included in the Progress Report ([Section 5.5 Progress Reports to EC](#)).

5.2 Use of resources reporting

The PC requests that each Beneficiary provide the following information every 9 months, except during the final reporting period when this should be done at the end of each semester (i.e., Months 9, 18, 27, 36, 42, and 48). This information should be submitted using the template available in the CARMINE document repository and personnel timesheets ([Section 6.1 Preparation of financial statements](#)):

Personnel efforts (staff and consultants) worked in each WP and Task, along with corresponding costs.

Costs and brief notes on WP task activities carried out by the Beneficiary (such as travel, consumables, equipment, etc.), including personnel and subcontracting costs.

5.3 WP internal progress monitoring

The PC will evaluate the progress of each WP and the effectiveness of the WP Team using several performance indicators that encompass technical, economic, and organizational aspects. At a minimum, the following indicators will be considered:

- **Technical:**
 - Delivery date of due Deliverables
 - Achievement of foreseen Milestones
 - Interactions with other WPs
 - Time planning for individual Tasks
 - Identification of risks, countermeasure proposals, and contingency management
- **Economic:**
 - Dedicated efforts by each partner
 - Progress of costs compared to the forecasted budget for the WP in the entire project
- **Organizational:**
 - Number of physical meetings in the period
 - Number of remote meetings (Teams, Zoom, Google Meet, etc.) in the period
 - Meeting participants
 - Availability of meeting notes
 - WP publications

5.4 Deliverable Preparation

According to the GA, CARMINE has 67 deliverables, each one assigned to the responsible partner. The partner in charge of the deliverable is responsible for its timely and of high-quality submission to the PC. After the quality review, the final version of the deliverable is uploaded by the PC to the EC portal. The deliverable preparation process is depicted in Table 3.

Table 3. Deliverable preparation time plan

Action	Due Date
Table of Content sent for feedback	45 days before deadline
Final Table of Content in place	40 days before deadline
First draft for internal review ready	20 days before deadline
Final draft with internal reviews ready	15 days before deadline
Review by the Quality Manager and provision of feedback to the deliverable leader	10 days before deadline
Approval of the draft by the PC and preparation of finalized version	5 days before deadline

Any deviations from the time plan should be communicated by the deliverable leader to the PC as soon as possible. The time plan can be adjusted if previously agreed between the author, the reviewers, and the PC. The deliverables marked as “public” will be uploaded to the CARMINE website while the deliverables marked as “sensitive”, will be only made available to the EC and the consortium partners via the project’s repository ([CARMINE repository – section 4.1.1](#)).

Document formats and naming conventions

A lot of material will be prepared and shared during the implementation of the project. Table 4 shows the recommended formats and tools that shall be used.

Table 4. Tools and formats recommended to be used in CARMINE

Type	Format	Production Tool	Version
Documents	.docx	Microsoft Word	“Word 2010 or later”, Google Docs
Data in tabular form and graphics	.xlsx	Microsoft Excel	“Excel 2010 or later”, Google Docs
Scientific papers	various	various	Any desktop or online release
Images	.jpeg, .png etc	Any software tools that can produce images	various
Portable Document Format	.pdf	Any software tools that can produce .pdf files	various

Presentations	.pptx	Microsoft PowerPoint	"PowerPoint 2010 or later", Google Docs
Compressed files	.rar & .zip	WinRAR	WinRAR 5.60 or later

In order to ease the communication process and the identification of documents and versions all partners are advised to use some naming conventions based on the principle of self-explanatory titles and versions. The general file name conventions are as follows:

CARMINE_deliverable_milestone_Dx.x_MSy_name_Vxy_date_[partner acronym/person name]

The name of the document shall be as concise as possible but also self-explanatory i.e., Kick_Off_Project_Meeting_Minutes.

The date should be presented in the form ddmmyyyy i.e., 15022024.

The partner acronym or person name should be used as defined in the GA i.e., MeteoRo for the "Administratia Nationala de Meteorologie", Bucurest, Romania.

5.5 Progress Reports to EC

Periodic progress reports must be submitted to the European Commission (EC) according to the CARMINE Grant Agreement (GA, Art. 20) at months 18 (+ max 60 days), 36 (+ max 60 days), and 48 (+ max 60 days). These reports include both technical and financial components and must be prepared using the forms and templates provided in the electronic exchange system (GA Art. 52).

The technical report is created in collaboration with the WP leaders, drawing on internal technical periodic reports ([section 5.1 – Internal technical reporting](#)) and activities conducted during months 9-18, 27-36, or 42-48. The PC is responsible for submitting this report via the Participant Portal.

WP leaders are not required to prepare and submit internal technical reports at months 18, 36, and 48. However, they will need to provide information for evaluating organizational performance indicators during this period as part of the internal reporting ([section 5.1 – Internal technical reporting](#)). The WP leaders' contributions will encompass all activities conducted in the preceding 18 months.

Timeline for the preparation of the progress reports to the EC (relative to the periodic report deadlines at Month 18, Month 36, and Month 48) is presented in Table 5.

Table 5. EC Report Timeline

Timing	Action
1 month prior to deadline	PC sends requests to WPL
Deadline	WPL gather input from Task leaders
15 days after deadline	WP leaders send draft report to PC and receive feedback
1 month after deadline	Final reports submitted to PC

The technical report will be reviewed by the General Assembly / Executive Board in a dedicated virtual meeting. Each Beneficiary must submit information for the financial report directly through the Portal, detailing declared costs, requested reimbursement, and use of resources. The PC will compile the report digitally using this information. Partners are required to provide their financial data in the Participant Portal within 45 days following the periodic report deadline. The rules of cost eligibility and the procedures for calculating them are thoroughly outlined in the GA (Art. 6).

6 Financial Reporting

6.1 Preparation of financial statements

The PC is responsible for gathering, verifying, and organizing the financial statements for the project. They will keep the Project Officer informed about any hindrances or complications encountered during the preparation and arrangement of the financial statements, such as delays in obtaining information from a partner or significant discrepancies. If necessary, the PC will suggest a backup plan.

Financial statements should be submitted, along with other reporting documents ([Section 5](#)), to the PC within 45 days after each 9-month internal reporting period.

To ensure a timely response, the following procedure will be applied for the preparation of the Financial Statements:

- 30 calendar days after the end of the Internal Reporting Period, partners should have completed their Financial Statements (use of resources and personnel).
- 30 calendar days after the end of periods 1, 2 and 3 of the CARMINE project (M18, M36, M48), partners should have completed their Financial Report in the SyGMA portal.
- The PC will compile all financial reports and check them for compliance.
- In the case of a partner not submitting their Financial Statements on time, the PC can decide whether or not to include that partner's financial statement in the submission to the EC. Excluding a partner's financial statement will result in them having to wait until the next reporting period for further funds, but would allow the payments to all other partners to be delivered on schedule, avoiding payment delays for the majority of the consortium.

6.2 Payment handling

6.2.1 Payments from the EC

The European Commission (EC) will disburse all funds for the Horizon Europe project to the PC, which is the National Meteorological Administration (MeteoRo). The PC is then responsible for distributing these funds to the other project partners.

The maximum total EC financial contribution for CARMINE is set at €10,174,699.00.

Prefinancing

This was done at the start of the project, except Ministry of Digital Governance (MoDG). Amount to distribute to MoDG is €48,330.00. This amount it will be distributed to MoDG or affiliated partner after the situation will be clarified through an amendment to the GA.

The pre-financing payment to the PC is 53.33% of the Maximum EC Financial Contribution (as CARMINE has three reporting periods: months 1-18, 19-36, and 37-48), including the 5%

contribution to the Guarantee Fund. This translates into pre-financing of €5,426,166.98. Of this amount, €4,917,432.03 is transferred to the consortium, while €508,734.94 is retained by the Commission for the Guarantee Fund.

Interim payments

These payments are made after the financial reports for each period are submitted and accepted by the EC. Payment is contingent upon the approval of the periodic report. Approval does not imply recognition of the report's compliance, authenticity, completeness, or correctness. The interim payment amount is calculated by the Agency through the following steps:

- Step 1 – Application of the reimbursement rates.
- Step 2 – Limitation to 90% of the maximum grant amount.

Final payment

This is made at the end of the project once EC has accepted all deliverables and reports and will include any final payment due to the project. This will include the Guarantee Fund payment.

Guarantee fund

The Guarantee Fund represents a percentage of the budget. For CARMINE, the EC withholds 5% of each partner's budget at the project's onset. If the project proceeds without issues, this 5% is released by the EC with the final payment. The EC utilizes the funds in this account to reimburse the project if a partner declares bankruptcy and retains funds exceeding the reported costs.

6.2.2 Distribution of funds to partners

The PC is responsible for receiving the European Commission (EC) financial contribution on behalf of the consortium. These funds are disbursed to the project partners in accordance with the terms outlined in the Consortium Agreement and Grant Agreement.

The initial pre-financing payment is distributed equally among the partners, with each receiving 48.33% of their allocated EC funding. Subsequent payments are contingent upon the successful delivery of project deliverables, as verified by the EC. Any budget modifications must be approved by both the Project Management Board and the CARMINE Project Officer before being implemented.

7 Keeping records

Project partners must maintain detailed records and supporting documentation for a period of five years following the final project payment. These records are essential for demonstrating the proper execution of the project and the eligibility of declared costs, as stipulated in Article 18 of the Grant Agreement.

All documentation, including original and digital formats (where legally permissible), must be readily available for inspection upon request by the European Commission (EC) for audits, reviews, or investigations.

Record-keeping practices should align with the partner's standard accounting procedures and internal controls. All project-related costs must be supported by corresponding accounting entries.

Specific record-keeping requirements include:

- **Actual costs:** Detailed documentation (contracts, invoices, etc.) to substantiate declared expenses.
- **Unit costs:** Records to verify the number of units claimed, without the need for detailed cost breakdowns.
- **Flat-rate costs:** Evidence supporting the eligibility of costs to which the flat rate is applied.

Non-compliance with record-keeping obligations may result in severe penalties, including cost recovery, project termination, or exclusion from future funding opportunities. While the EC generally expects rigorous documentation, there may be instances where additional costs can be justified and approved.

To ensure the accurate and compliant reporting of project expenses, detailed records must be maintained for the following cost categories:

Direct Personnel Costs

- **Proof of employment:** Employment contracts or appointment letters for all project personnel.
- **Time records:** Detailed time sheets, signed and verified by appropriate personnel, indicating hours worked on project activities.
- **Payroll documentation:** Evidence of salary payments, including tax and social security contributions.
- **Absence records:** Documentation to verify absences, such as sick leave or vacation time.

Direct Subcontracting Costs

- **Procurement process:** Documentation of the procurement process, including purchase orders, tenders, and comparative offers.
- **Subcontracts:** Signed subcontracts with relevant details (acronym, Grant Agreement number).

- **Payment evidence:** Invoices and bank statements to verify payments made to subcontractors.
- **Cost eligibility:** Documentation to support the tax-deductible nature of costs (e.g., non-deductible VAT).

Other Direct Costs

- **Goods and services:** Invoices, bank statements, and evidence of competitive procurement (e.g., three comparative offers).
- **Travel:** Travel itineraries, boarding passes, agendas, signed attendance lists, and receipts. For unexpected delays, additional supporting documentation may be required.
- **Conferences and workshops:** Evidence of active participation (e.g., program, presentation, poster).
- **Restaurant expenses:** Documentation of attendees and signed attendance lists.

Equipment Costs

- **Purchase documentation:** Invoices and bank statements for equipment purchases.
- **Depreciation records:** Documentation of depreciation rates and usage of equipment within the project.
- **Procurement process:** Evidence of competitive procurement (e.g., three comparative offers).

Note: All records must be retained for a period of five years following the final project payment and be made available for audit upon request.

8 Risk Management

The project management approach includes mechanisms to identify and address various potential project risks, whether internal or external, thereby ensuring efficient implementation of corrective actions as needed. While it's impossible to foresee all potential risks, it's prudent to identify and assess a range of potential risks related to the project so that the consortium can promptly respond and implement corrective actions if necessary.

The CARMINE project board will oversee the execution of a contingency plan based on ongoing project progress assessments. Regular reviews will occur during General Assembly meetings to ensure the consortium meets its intended objectives. Should unexpected project underperformance arise, a set of potential actions described in the Contingency Plan section (refer to Part A) will be activated by the CARMINE General Assembly and implemented accordingly by the consortium. They serve as examples of measures to be implemented and will be reassessed after the initial 9 months of the project's duration. Adjustments and additions to these actions will be made as necessary.

The project's risk management strategy encompasses the following components:

- Risk identification: Identification of potential risks that could impact the project and understanding their implications.
- Risk analysis: Compilation of identified risks into a matrix, assessing them, and prioritizing based on their potential impact.
- Risk mitigation: Development and implementation of solutions aimed at reducing the potential impact of identified risks and ensuring the project's objectives are achieved.

Table 6 presents the Critical risks as per Annex 1 of the CARMINE Grant Agreement, and Table 7 introduces an unforeseen risk.

Table 6. Foreseen risks (The version of the CARMINE Risk Register on 1st July 2024)

Risk No	Category	Description	WP No	Mitigation Activity	Probability	Impact	Score
1	Personnel risk	Large Consortium; Internal collaboration problems; Partner leaving; [Medium/Medium]	WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8	Many partners collaborated in prior projects which minimizes this risk. Multiple levels of risk identification and intervention (WP & coordination level); Multiple partners experts in each domain	3	3	9
2	Implementation risk	Data management, storage doesn't comply with GDPR or national regulation [Low/High]	WP1, WP2, WP3, WP4, WP5, WP6, WP7, WP8	The STL and case studies start based on more aggregated existing data, and are afterwards adjusted with better data	2	4	8
3	Implementation risk	Major changes in the political commitment of the participating sites [Low/High]	WP1, WP2, WP3, WP6	Most of selected regions are committed to climate resilience with dedicated plans. In case of changes, the consortium will negotiate with any new authority to keep principal objectives and ensure their fulfilment with necessary adjustments.	2	4	8
4	Implementation risk	The digital infrastructure and tools do not address stakeholder needs and limit replicability, i.e. too case-specific [Medium/Medium]	WP2, WP3, WP4	WP1 starts from mapping existing tools to benchmark good practices and challenges in prior implementations. A co-design process with stakeholders will permit embedding user needs stepwise (design, first verification, final validation); replicability of approaches will be enabled by comparative synthesis.	3	3	9
5	Benefit risk	Reluctance of stakeholders to strategies, lack of trust in local planning [Medium/Medium]	WP1, WP2, WP3, WP4, WP5, WP6, WP7	WPs leaders will draw an engagement strategy to identify target groups, avoid stakeholder fatigue and build trust with key stakeholders. Innovative tools for stakeholders' engagement will be explored and applied.	3	3	9
6	Benefit risk	Dissemination not reaching KPIs and has	WP7	WP7 will regularly measure the success of the D&C activities to check whether the project meets	3	3	9

		lower impact than expected. [Medium/Medium]		its expected KPIs. This allows us to take swift remedial action (if needed) and adjust the dissemination strategy and communication measures.			
7	Implementation risk	Digital twin deployments already require significant technology, much of which is relatively new. [Medium / Medium]	WP4	The consortium has partners with appropriate expertise in R&I who will contribute to the development of the DT and link it to scientific data.	3	3	9
8	Implementation risk	Not enough / not adequate local data available for the DT implementation [Low/Medium]	WP4	The consortium employs a combination of approaches, including data collection, data augmentation, simulation, collaboration, and prioritization.	2	3	6
9	Implementation risk	The associated partner MM does not receive funding from the Swiss Agency. [Medium / Medium]	WP2, WP5	The activities allocated to the partner MM (T2.1, T5.1, T5.2, T5.3, T5.4, WP8) will be covered by the project partners. The cost will be shared between all the project partners. The activities involving the use of the UAS will not be performed, and this will not affect significantly the project results.	0	0	0

Table 7. Unforeseen risks (1st July 2024)

Risk No	Category	Description	WP No	Mitigation Activity	Probability	Impact	Score
10	Implementation risk	Chosen technical solutions do not support operations: (i) Low; (ii) Medium	WP1, WP2, WP3, WP4	Consideration of different options will be performed at design phases, and the selected solution will be considered also from the maintenance point of view.	2	4	8

9 Quality Assurance and Acceptance Criteria

The acceptance criteria for each project deliverable and milestone are established by the WP Experts in close collaboration with their WP Lead before the work begins. This process includes defining specific metrics for evaluation, identifying the acceptance activities to be performed, and determining the processes, tools, and techniques for implementing the acceptance procedure.

The acceptance criteria are derived from the project objectives, approach, deliverables, quality requirements, expectations, and available resources. This enables the WP Lead to monitor progress according to predefined requirements and allows the Coordinator to approve the final results.

A template for documenting acceptance criteria is provided in [Annex 1](#) and is available in the MeteoRo CARMINE SharePoint folder titled "**Acceptance Criteria**". The completed template should be saved in the respective WP working folder in SharePoint within the first three months of starting the activity. These criteria may be refined during the development phase, with new criteria added as necessary.

The criteria are documented and tracked throughout development, with final statements reported through the completion of the Deliverable/Milestone Acceptance Checklist found in [Annex 2](#), also available in the MeteoRo CARMINE SharePoint folder "Acceptance Criteria." The final approval of a Deliverable/Milestone is documented on the front page provided in [Annex 3](#).

The deliverables and milestones are prepared by the WP Experts in close collaboration with their WP Lead and are handled as follows:

- WP Experts, in collaboration with the WP Lead, define the acceptance criteria before work begins.
- The responsible Project Partner develops the deliverable/milestone in collaboration with the WP Lead and other contributing Project Partners.
- The deliverable/milestone is prepared using the front-page and documentation tracking template provided in [Annex 3](#).
- The Coordinator conducts a review process for some deliverables/milestones.
- Based on recommendations from WP Experts and audit reports (where available), the Coordinator confirms the deliverable/milestone meets the acceptance criteria and submits it to the EU Portal.

Several best practices are followed to support the successful delivery of expected results on time and with high quality:

- Establishment and review of sub-milestones to ensure WPs remain under control and aligned with the plan and CARMINE objectives.
- Regular analysis and review of resources, activities, outputs, and emerging outcomes.
- Regular reviews of the integrated risk register and mitigating actions.

- Action and intervention, including escalating issues to the GA when necessary.
- Reviews of ongoing alignment with the strategic priorities of the EU and CARMINE partners, and their ability to realize the benefits.
- Independent audits linked to major decision points.
- A process for capturing and sharing lessons learned.

10 Intellectual Property Rights

10.1 Background and Access Rights

The CARMINE project fosters collaboration among beneficiaries. Beneficiaries are obligated to provide one another and other participants with access to relevant background information necessary for project implementation.

Background refers to any data, expertise, or information, tangible or intangible, encompassing intellectual property rights, that:

- Was possessed by beneficiaries before joining the Agreement.
- Is essential for project execution or exploiting the project's outcomes.

If the background information involves third-party rights, the beneficiary holding that information must ensure adherence to their obligations under the Agreement.

10.2 Ownership of Results

The granting authority does not claim ownership of the results generated by the CARMINE project.

Results encompass any tangible or intangible outcome of the project, including data, expertise, or information, regardless of its form or potential for protection, along with any associated rights, including intellectual property rights.

10.3 Rights of Use for the Granting Authority

The granting authority has the right to utilize non-sensitive information pertaining to the project and materials or documents received from the beneficiaries (such as publication summaries, deliverables, and any other electronic or paper-based materials like images or audiovisual content) for policy development, information sharing, communication, dissemination, and publicity purposes, both during and after the project's duration.

This right to utilize the beneficiaries' materials, documents, and information is granted as a royalty-free, non-exclusive, and irrevocable license, encompassing the following permissions:

- **Internal Use:** The right to use the materials for the granting authority's internal purposes (including making them accessible to personnel working for the granting authority or other EU entities (such as institutions, agencies, offices, etc. or EU member state institutions or bodies; copying or reproducing them entirely or partially, in unlimited quantities; and distribution via press information services).
- **Public Distribution:** The right to distribute the materials to the public (including publication in print and electronic or digital formats, publication on the internet, as

downloadable or non-downloadable files, broadcasting through any channel, public display or presentation, communication through press information services, or inclusion in publicly accessible databases or indexes).

- **Editing and Redrafting:** The right to edit or modify the materials (including shortening, summarizing, inserting additional elements [e.g., metadata, captions, other graphic, visual, audio, or text elements], extracting portions [e.g., audio or video files], dividing into parts, using them in a compilation).
- **Translation:** The right to translate the materials.
- **Storage:** The right to store the materials in paper, electronic, or other formats.
- **Archiving:** The right to archive the materials according to applicable document management regulations.
- **Sub-licensing:** The right to authorize third parties to act on the granting authority's behalf or sub-license the modes of use outlined in points (b), (c), (d), and (f) to third parties, if necessary for the granting authority's information, communication, and publicity activities.
- **Processing and Analysis:** The right to process, analyse, aggregate the received materials, documents, and information, and create derivative works.

11 Gender aspects in publications and research

11.1 Commitment to Gender Equality

The CARMINE project is firmly committed to upholding gender equality and eliminating discrimination in all facets of our research and publication endeavours. This translates to:

- **Gender Integration throughout the Research Lifecycle:** We advocate for the seamless integration of a gender perspective across all research stages, from crafting research questions to disseminating the final results.
- **Adherence to EU Gender Equality Legislation:** CARMINE adheres to all applicable European Union legislation on gender equality. This includes Directive 2006/54/EC, promoting equal opportunities and equal treatment in employment and occupation, and Regulation (EU) 2016/679, safeguarding individuals' data privacy (General Data Protection Regulation).

11.2 Gender-Inclusive Research Terms of Reference

Specific research terms of reference are established by CARMINE, mandating the incorporation of a gender perspective. These terms of reference will address crucial aspects such as:

- **Gender-Disaggregated Data:** The necessity of separating data by gender for analysis.
- **Gender Considerations in Research Design and Outcomes:** The significance of recognizing and addressing gender disparities throughout research design, implementation, and the resulting outcomes.
- **Gender-Neutral Language:** The utilization of gender-neutral language to ensure inclusivity.

11.3 Gender-Sensitive Communication

CARMINE is dedicated to employing gender-sensitive communication in all publications and dissemination activities. This entails:

- **Eliminating Gender Bias and Stereotypes:** Avoiding language that reinforces gender stereotypes or is sexist in nature.
- **Inclusive Language:** Employing inclusive language that encompasses all genders.
- **Balanced Presentation of Findings:** Presenting research results in a balanced manner, emphasizing the implications for various gender groups.

11.4 Checklist for Gender-Sensitive Language

A comprehensive checklist for gender-sensitive language are developed by CARMINE for researchers and editorial staff. This checklist will offer recommendations on:

- Gender-Neutral Pronouns: The appropriate use of gender-neutral pronouns.
- Avoiding Discriminatory Language: Identifying and eliminating discriminatory words and phrases.
- Fair Representation in Imagery: Ensuring fair and balanced representation of men and women in figures and illustrations.

11.5 Integrating Gender Considerations into Research

CARMINE encourages researchers to consider gender throughout all research stages. This includes:

- Gender-Inclusive Research Questions: Formulating research questions that explore gender-based variations or the impact on different genders.
- Gender-Responsive Methodologies: Developing research methodologies that consider gender perspectives.
- Gender-Disaggregated Data Analysis: Analysing data by gender to uncover any inequalities or variations.
- Gender Implications of Research Findings: Discussing the ramifications of research findings for achieving gender equality.

12 Ethical and security assessment

12.1 Issues and Background

The CARMINE project recognizes the importance of conducting research and publishing findings in a secure and ethical manner. This section outlines potential security and ethical concerns that may arise during the project lifecycle.

Security Concerns:

- **Data security breaches:** Unauthorized access to sensitive project data could compromise its confidentiality and integrity.
- **Cyberattacks:** Malware or hacking attempts could disrupt project operations and corrupt data.
- **Privacy violations:** Inadvertent disclosure of personal information collected during research activities.

Ethical Concerns:

- **Informed consent:** Ensuring participants in research activities are fully informed and provide their voluntary consent.
- **Data privacy:** Protecting the privacy of individuals whose data is collected during research.
- **Fairness and objectivity:** Mitigating bias in research design, data analysis, and interpretation of findings.
- **Responsible conduct:** Upholding ethical principles throughout the research process, from formulating questions to disseminating results.

12.2 Security Measures and Procedures

To safeguard against security threats, CARMINE will implement the following measures:

- **Data security protocols:** Robust protocols for data encryption, access control, and secure storage will be established.
- **Regular security audits:** Periodic security audits will be conducted to identify and address vulnerabilities in our systems.
- **Cybersecurity awareness training:** Researchers and staff will receive comprehensive training on cybersecurity best practices.
- **Incident response plan:** A well-defined plan will be in place to effectively respond to security incidents.

12.3 Security Procedures Accessing, Handling, Processing and Storing Classified and/or Sensitive Data/Information

For classified or sensitive data, CARMINE will enforce heightened security procedures:

- Access restrictions: Access to sensitive data will be granted on a strict need-to-know basis, with appropriate authorization levels.
- Data handling protocols: Specific protocols will dictate how sensitive data is handled, processed, and analysed to ensure its confidentiality and integrity.
- Secure storage solutions: Sensitive data will be stored using secure storage solutions that comply with relevant data protection regulations.

12.4 Ethical Assessment

An ethical assessment will be conducted for all CARMINE research projects to proactively address potential ethical concerns. This assessment will consider factors such as:

- Informed consent process: Obtaining informed consent from participants in a transparent and comprehensive manner.
- Data anonymization: Anonymising data whenever possible to protect participant privacy.
- Benefits and risks: Evaluating the potential benefits of the research against any potential risks to participants.
- Data minimization: Collecting only the minimum amount of data necessary for the research objectives.
- Independent ethics review: Complex research projects may undergo an independent ethics review for unbiased evaluation.

12.5 Data derived from communication and dissemination activities

During participation in public events (webinars, final event), registration data (name, email, organization) will be collected through a GDPR-compliant online registration form and stored in dedicated archives within the project's SharePoint, accessible only to project consortium members. The data collected will not be used for any purpose other than those explicitly outlined in the disclaimer or terms and conditions of the form, and without prior explicit consent from the user. This data will be collected for tracking and reporting purposes and, with explicit consent from users, for further communication and dissemination activities.

The information shared publicly will be limited to the number of participants in the event and the stakeholder and target groups categories they belong to. For external events in which CARMINE consortium partners participate to engage stakeholders and disseminate project's results, data collected will be limited to general information about the events attended on behalf of project partners, along with their outreach, whenever possible.

13 Deliverables and Milestones

13.1 Project Deliverables

The work of the project will be documented in 67 deliverables, presented in Table 8.

Table 8. CARMINE list of deliverables

WP	DELIVERABLE NUMBER AND SHORT NAME	LEAD PARTNER	TYPE	DL	DD(M)
WP1	D1.1 Target groups (stakeholders) engagement strategy	ATH-RC	R	PU	6
WP1	D1.2 Report on climate change challenges	UoBIR	R	PU	15
WP1	D1.3 Stakeholder Community Hub (SC-Hub)	ATH-RC	OTHER	PU	46
WP1	D1.4 Geo-designed A&M pathways - Version 1	LUH	R	PU	12
WP1	D1.5 Geo-designed A&M pathways - Version 2	LUH	R	PU	42
WP1	D1.6 Living Labs (LL) Handbook	ATH-RC	R	PU	45
WP1	D1.7 Living Labs (LL) creation in case studies	ATH-RC	R	PU	6
WP1	D1.8 Functionalities of a Stakeholder Community Hub (SC-Hub)	UoBIR	R	PU	18
WP1	D1.9 Report on the engagement of 5 target groups for each case study area	ATH-RC	R	PU	12
WP2	D2.1 Report on the modelling framework	JLU	R	PU	12
WP2	D2.2 Report on climate modelling	CMCC	R	PU	42
WP2	D2.3 Report on local modelling	ICS	R	PU	42
WP2	D2.4 Report on hazard indicators	CMCC	R	PU	18
WP2	D2.5 Open-access and local scale datasets	CMCC	DATA	PU	18
WP2	D2.6 Dataset based on fine scale modelling and NBS applications	ICS	DATA	PU	24
WP3	D3.1 Report on the SE vulnerability profiles	ATH-RC	R	PU	24
WP3	D3.2 Report on the climate risks and models in the CSA - Version 1	DTU	R	PU	24
WP3	D3.3 Report on the climate risks and models in the CSA - Version 2	DTU	R	PU	42
WP3	D3.4 Report on risk transfer solutions	MITIGA	R	PU	42
WP3	D3.5 Atlas of Climate Resilience	CMCC	R	PU	48

WP4	D4.1 Data Model and Data Management	UFR	R	PU	42
WP4	D4.2 Digital Twin Architecture	ATH-RC	OTHER	PU	18
WP4	D4.3 Digital Twins Specifications	ATH-RC	DEM	PU	24
WP4	D4.4 Digital Twins Delivery	ATH-RC	DEM	PU	40
WP4	D4.5 Digital Twins Transferability Guidelines	ATH-RC	R	PU	42
WP4	D4.6 Specification of linkages to the DestinE infrastructure	NOA	R	PU	48
WP5	D5.1 IDSS operational framework and data flow	MM	R	PU	24
WP5	D5.2 IDSS validation	MeteoRo	R	PU	42
WP5	D5.3 Operational links with EU MACC and C-A platform - Version 1	MeteoRo	R	PU	18
WP5	D5.4 Operational links with EU MACC and C-A platform - Version 2	MeteoRo	R	PU	36
WP5	D5.5 Operational links with EU MACC and C-A platform - Final	MeteoRo	R	PU	48
WP5	D5.6 IDSS architecture	MM	R	PU	18
WP6	D6.1 Multi-level climate change governance framework	CNR	R	PU	24
WP6	D6.2 R&I roadmaps for climate change adaptation and mitigation in the 8 CSAs - Interim	CNR	R	PU	30
WP6	D6.3 R&I roadmaps for climate change adaptation and mitigation in the 8 CSAs - Final	CNR	R	PU	48
WP6	D6.4 Climate policy recommendations	UoBIR	R	PU	48
WP6	D6.5 Policy review and state of the art of implementation options	CNR	R	PU	18
WP7	D7.1 DEC strategy - Version 1	SDSN	R	PU	3
WP7	D7.2 DEC strategy - Version 2	SDSN	R	PU	18
WP7	D7.3 DEC strategy - Version 3	SDSN	R	PU	36
WP7	D7.4 DEC strategy - Final	SDSN	R	PU	48
WP7	D7.5 Communication framework - Version 1	SDSN	R	PU	18
WP7	D7.6 Communication framework - Version 2	SDSN	R	PU	36
WP7	D7.7 Communication framework - Final	SDSN	R	PU	48

WP7	D7.8 Joint activities with other R&I projects - Version 1	WMO	R	PU	12
WP7	D7.9 Joint activities with other R&I projects - Version 2	WMO	R	PU	24
WP7	D7.10 Joint activities with other R&I projects - Version 3	WMO	R	PU	36
WP7	D7.11 Joint activities with other R&I projects - Final	WMO	R	PU	48
WP7	D7.12 Exploitation and Sustainability Plan (ESP) - Interim	ICLEI	R	PU	36
WP7	D7.13 Exploitation and Sustainability Plan (ESP) - Final	ICLEI	R	PU	40
WP7	D7.14 Training and educational activities - Interim	UoBIR	R	PU	30
WP7	D7.15 Training and educational activities - Final	UoBIR	R	PU	48
WP7	D7.16 Project website	MeteoRo	DEC	PU	3
WP8	D8.1 Project Management and Coordination - Version 1	MeteoRo	R	PU	12
WP8	D8.2 Project Management and Coordination - Version 2	MeteoRo	R	PU	24
WP8	D8.3 Project Management and Coordination - Version 3	MeteoRo	R	PU	36
WP8	D8.4 Project Management and Coordination - Final	MeteoRo	R	PU	48
WP8	D8.5 Data Management Plan (DMP) - Interim 1	MeteoRo	DMP	PU	6
WP8	D8.6 Data Management Plan (DMP) - Interim 2	MeteoRo	DMP	PU	18
WP8	D8.7 Data Management Plan (DMP) - Interim 3	MeteoRo	DMP	PU	36
WP8	D8.8 Data Management Plan (DMP) - Final	MeteoRo	DMP	PU	48
WP8	D8.9 IMS reporting	MeteoRo	R	PU	48
WP8	D8.10 Project handbook - Version 1	MeteoRo	R	PU	6
WP8	D8.11 Project handbook - Version 2	MeteoRo	R	PU	18
WP8	D8.12 Project handbook - Version 3	MeteoRo	R	PU	36
WP8	D8.13 Project handbook - Final	MeteoRo	OTHER	PU	48
WP8	D8.14 Project final conference	MeteoRo	R	PU	48

The information in this table is provisional and may be updated in the event of GA amendment.

13.2 Project Milestones

CARMINE has 18 milestones throughout its lifetime, which are summarised in Table 9.

Table 9. Project Milestones

MILESTONE NUMBER AND NAME	WP	DD(M)	MEANS OF VERIFICATION
1. Engagement of 5 communities (TG1-TG5) per each CSA	WP1	12	Participation in workshops, focus groups, etc. Track and measure social media campaigns, events, surveys. (WP1/T1.1)
2. Stakeholder community Hub interactive with >25,000 citizens	WP1	20	The platform is user-friendly, easy to use by anyone, its interactivity is an incentive to attract more people. (WP1/T1.3)
3. Modelling framework for risk assessment functional	WP2	24	Review the documentation of the modelling framework to ensure that it is complete and clearly defines the methodology, inputs, outputs, and assumptions. Test the modelling framework by running it through a series of scenarios and use cases to ensure that it produces accurate and reliable results. Get feedback from stakeholders (WP2/T2.2)
4. Post-processing tools developed	WP2	24	Check the documentation for the post-processing tools and determine if they meet the required standards and include all the necessary information. Test the post-processing tools to ensure they meet the functional and nonfunctional requirements. Run the tools with different types of data to ensure they can handle different inputs and produce accurate outputs. Get feedback. (WP2/T2.4)
5. Socioeconomic vulnerability risk assessment for each CSA	WP3	20	The data collected as part of the assessment is accurate and relevant to the assessment. Review the findings and conclusions of the assessment to ensure they are supported by the data and methodology. The recommendations and actions proposed as a result of the assessment are reasonable and practical. (WP3/T3.1)
6. Cost-effective adaptation measures and solutions for enhancing CC resilience	WP3	36	Comprehensive assessment of the objectives, progress, impact, and results achieved, by engaging stakeholders, reviewing data and evidence, and verify the effectiveness of the solutions. (WP3/T3.3)
7. Data for Digital Twins available, accurate, reliable	WP4	20	Data for Digital Twins is available, accurate, reliable (WP4/T4.1)
8. Digital Twins (DT) transferability guides for 8 MRE developed	WP5	24	The DT transferability is relevant to other MREs (WP4/T4.4)

9. Coordination with DestinE Data Lake	WP4	36	Established communication to DestinE partners and collaborators, so that CARMINE solutions are compatible and built with the potential to be added as an advanced service in the DestinE platform (WP4/T4.5)
10. IDSS Architecture and operational flow established	WP5	12	Design and technical architecture, testing of early prototypes by stakeholders. Calibration and validation of IDSS with stakeholders (all TGs). (WP5/T5.1, T5.2)
11. Operational links with EUMACC and C-A platform established	WP5	24	Operational links established with the EU Mission Adaptation to CC Implementation Platform and Climate-ADAPT Platform. (WP5/T5.4)
12. Multi-level climate governance framework functional	WP6	18	Harmonised framework for CC multi-level governance for 8 CSAs established. (WP6/T6.1)
13. R&I roadmaps developed	WP7	30	R&I roadmaps for climate adaptation and resilience in 8 CSAs developed (WP6/T6.2)
14. DEC strategy established	WP8	6	DEC strategy in place (WP7/T7.1)
15. Project handbook elaborated	WP8	6	Project handbook in place (management, risk management, IPR, gender, ethics) and shared with consortium and EC (WP8/T8.1)
16. Creation of an External Scientific Advisory Board	WP8	3	The External Scientific Advisory Board is established and functional. The Board includes the coordinators of the projects funded under the calls HORIZONMISS-2021-CLIMA-02-03 (ICARIA, MIRACA, RISKADAPT), and HORIZON-MISS-2021-CLIMA-02-01 (CLIMAAAX). The Board has 7 members, experts in the field of CARMINE. (WP8/T8.1)
17. Kick-off meeting	WP8	3	Meeting held and approval of project organization (WP8/T8.1)
18. Yearly general assemblies	WP8	12	The meetings (at M12, M24, M36 and M48-correct the dates accordingly) inform the Project Partners on practical matters related to the project management and discuss project budget and resourcing, reporting practices, status of deliverables and milestones, progress monitoring, risk register, project working methods and communications. The first meeting decided on an amendment to the Consortium Agreement and the membership of the External Advisory Board (WP8/T8.1).

The information in this table is provisional and may be updated in the event of GA amendment.

13.3 Management Plan and Breakdown

The project workplan is structured into eight Work Packages. Table 10 outlines each Work Package, specifying the responsible beneficiary and the allocated person-month effort.

Table 10. Summary of staff effort

WP	WP TITLE	LEAD BENEFICIARY	EFFORT (PERSON MONTHS)	START MONTH	END MONTH
WP1	Co-designing Adaptation and Mitigation Actions for Climate Resilient Development	ATH-RC	234.50	1	48
WP2	Integrating Climate Physical Risk Assessment Models and Earth System Processes	CMCC	334.25	1	48
WP3	Community-Based Socioeconomic Vulnerability and Risk Assessment for Transformative Adaptation	DTU	191.50	1	48
WP4	Co-developing Digital Twin Simulations to Enhance Cross-Sectoral Climate Resilience Frameworks	ATH-RC	251.00	1	48
WP5	Enabling Impact-Based Decision Support Service for Informed Local Adaptation Plans and Science-Based Decision-Making	MeteoRo	142.00	1	48
WP6	Multi-level Climate Change Governance: Policy Pathways to Support R&I Roadmap	UoBIR	106.00	7	48
WP7	Societal Sharing and Impact Maximisation - Dissemination, Communication, and Exploitation	SDSN	166.00	1	48
WP8	Project Management	MeteoRo	58.00	1	48

The information in this table is provisional and may be updated in the event of GA amendment.

Annex 1. Acceptance Criteria template

Collaborative efforts between the Project Coordinator, Project Manager, and Work Package Leads will define the deliverables subject to formal acceptance. The subsequent table provides a comprehensive list of these deliverables and their respective evaluation standards.

The acceptance criteria for deliverables are as following:

WP No & Name				
#	Deliverable Name	Criterion	Metric and Tolerances	Accepted by
	<i><Identify the specific deliverable. Can be an interim deliverable on a way to develop the final deliverable></i>	<i>< Outline the evaluation criteria that will be employed to assess the extent to which project deliverables meet expectations></i>	<i>< Describe the metrics and benchmarks that will be used to verify successful criterion fulfilment. Determine the allowable range of variation from expected results.></i>	<i><Name or role of the person/group responsible for the final acceptance of the deliverable, basically WP Lead. Define the agreed date for sign-off.></i>

Annex 2. Deliverable/Milestone Acceptance Checklist

The Deliverables/Milestones Acceptance Checklist is primarily a verification tool for the Project Coordinator to confirm successful project phase completion. While it assists the project team in defining acceptance criteria, its core purpose is to support the Project Coordinator's validation of completed acceptance activities.

The checklist is completed for Deliverables/Milestones to which this is seen feasible.

Name of Deliverable/Milestone				
#	Deliverables/Milestones Acceptance Checks	Compliant (Yes/No/ N/A)	Percentage of full compliance (%)	Comments
Planning				
1	Have specific standards or benchmarks been defined to determine the successful completion of project deliverables and milestones? Has this information been shared with all relevant stakeholders?	No	0	<Please mention here the justification for the answer given.>
2	Did the WP Lead formally endorse the acceptance criteria, procedures, and performance metrics for project deliverables?	No	0	
3	Have the WP Lead and experts approved the planned dates for the deliverable acceptance process?	No	0	
Executing				
4	Were the planned quality assurance and control checkpoints, including acceptance testing, successfully executed?	No	0	
5	Is the assessment of the test results documented in a report?	No	0	
6	Are issues documented and their resolution scheduled?	No	0	
7	Was the initial assessment of deliverables largely positive, with only minor shortcomings noted	No	0	

8	Have the corrected deliverables undergone re-verification by the requesting party	No	0	
9	Are all deliverables (including supporting deliverables such as documentation) ready to be finally approved by the Project Coordinator and/or Project Manager?	No	0	
Coordination				
10	Have the acceptance activities been coordinated within the WP and with relevant other WPs?	No	0	
Quality of deliverables				
11	Do deliverables meet the requirements?	No	0	
12	Have the deliverables passed the initial evaluation stage and received a positive recommendation from the WP for full acceptance?	No	0	
13	Did the Project Coordinator and/or Project Manager formally approve deliverables?	No	0	
Documentation and Communication				
14	Have all deliverables and related artefacts been placed in the project repository? (e.g. test results, sign-offs,...)	No	0	
15	Have all relevant stakeholders been notified of the final approval of the deliverables??	No	0	

Annex 3. Front page template for the Deliverables and Milestones

For the official EU Deliverables and Milestones, this front-page cover shall be used for harmonizing the layout of the Deliverables/Milestones and keeping the record of document acceptance criteria, and review and approval processes.

The document shall be named:

“CARMINE_deliverable_milestone_Dx.x_MSy_name_Vxy_date_[partner acronym/person name]”
and saved to the MeteoRo CARMINE SharePoint folder Final Deliverables and Milestones.



Climate-Resilient Development Pathways in Metropolitan Regions of Europe - Deliverable

After the cover page, it shall include the following information:

Grant Agreement Number 101137851

Deliverable No:	
Deliverable nature:	
Work Package and Task:	
Dissemination level:	
Authors:	
Contributors:	
Contractual submission date:	
Actual submission date:	

Technical References

Project title	Climate-Resilient Development Pathways in Metropolitan Regions of Europe
Project acronym	CARMINE
Grant agreement number	101137851
Funding Programme	HORIZON EUROPE
Call	HORIZON-CL5-2023-D1-01
Starting date of the project	1 st February 2024
Project duration	48 Months

Document history

Version	Date	Description

Disclaimer

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