PIISA

Piloting Innovative Insurance Solutions for Adaptation

D3.1: Guidance on setting up Pilots, living documents and coordinated approach for surveying

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Summary

This report accounts for Deliverable 3.1, which provides Guidance on setting up Pilots, living documents and coordinated approach for surveying. This deliverable is the result of the work performed in Work Package 3 (WP3) during Task 3.1: Set-up, coordination, and validation of Piloting, in the period between M4 and M6. The task will then continue until M34 to coordinate the activities of the Pilots.
D3.1 is mainly centred on providing comprehensive guidance for partners who are leading and contributing to the implementation of Pilots. It describes the steps required to set up a PIISA Pilot, including the definition of objectives, responsibilities, timetable, and Key Performance Indicators (KPIs).
Additionally, this document provides a description of the procedures for using living documents, establishing a tight link with Deliverable 2.2: Pilot process and technical requirements guideline for Piloting, Pilots' analysis and Loops performance, including iteration steps. The living document is designed to follow the WP3 Pilot planning, ensuring a streamlined process for collecting information throughout the duration of the project. At the same time, the guidance provided in D3.1 will support the implementation of the Pilot activities and the filling in of the living document. For this reason, the description of the living document is an integral aspect of this deliverable. In general, we will adopt a collaborative approach to ensure that both WP3 and WP2 complement each other effectively and will seek to advance them hand in hand.
While the first part of this deliverable focuses on introducing some key concepts, such as loops and phases, to establish a foundational understanding, the actual guidance will be presented in the second part of the document, where we will detail the steps and procedures for implementing the Pilots. An important part of this deliverable will be the one concerning the survey strategy and procedures for stakeholder engagement, an essential component of the project. The completeness of this deliverable lies in providing both theoretical explanatory concepts and practical insights, including examples and templates.
The ultimate objective of this guidance is to provide support to partners involved in the Pilots, enabling them to have a comprehensive resource to effectively plan, execute, and manage their work within the PIISA framework.

Keywords

Guidance, Insurance, climate change, climate adaptation, Pilots, surveys

Abbreviations and acronyms

Acronym	Description
WP	Work Package
GA	Grant Agreement
EB	Executive Board
TRL	Technology Readiness Level

KPI	Key Performance Indicator
EU	European Union
CMCC	Fondazione Centro Euromediterraneo sui Cambiamenti Climatici
BSC	Barcelona Supercomputing Center
FMI	Finnish Meteorological Institute (Ilmatieteen Laitos)
PoliMi	Politecnico di Milano
Tyrsky	Tyrsky-Konsultointi oy
AXA	AXA Climate

Introduction

PIISA, which stands for *Piloting Innovative Insurance Solutions for Adaptation*, is an innovative project which seeks to develop cutting-edge insurance products promoting a virtuous interaction between risk sharing and reduction.

PIISA consists of five Work Packages (WPs), linked to each other according to the scheme represented in Figure 1.

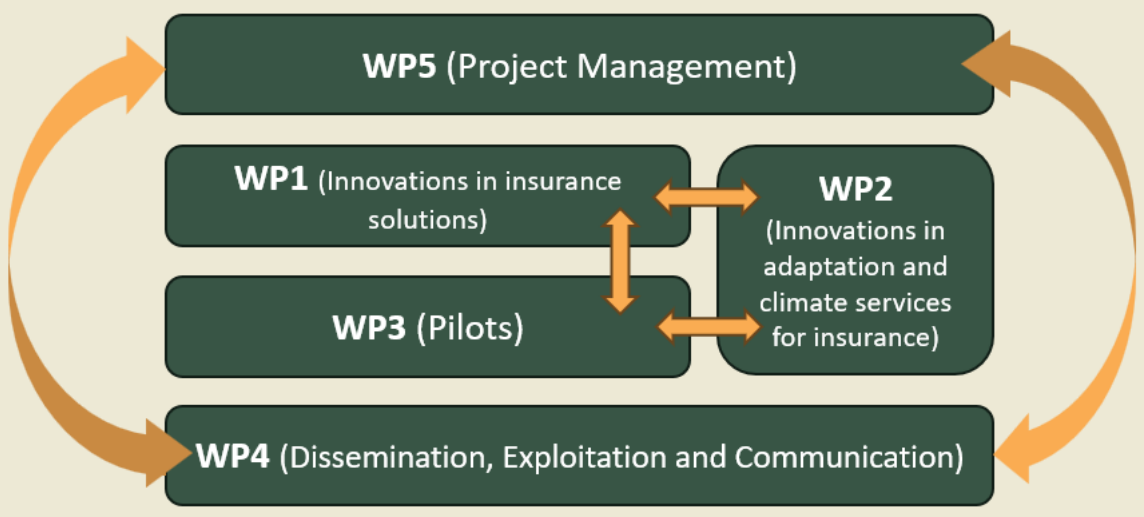

Figure 1: PIISA Work Packages

Within this framework, Work Package 3 (WP3) aims to use *Pilots* to find out how insurance solutions can contribute to adaptation in Europe. Pilots are advanced products and services, or new innovative concepts that evolve through iterative development work. In PIISA, five Pilots are organised to address climate change adaptation gaps with insurance solutions and climate services in the following sectors: Cities and Well-being, Agriculture, and Forests. A common key effort in each Pilot, which takes place throughout the entire co-creation process, is to collect feedback through surveys, interviews, and workshops in the geographical areas where the Pilot is developed as well as in other regions with potential for growth, replication and other amplification processes for wider uptake within the EU.

Collaboration with other WPs is a vital aspect of the PIISA project. In particular, WP1 provides insights into market conditions, trends, and stakeholder needs, which inform the development of innovative insurance solutions in WP3. Additionally, WP2, WP3, and WP5 collaborate on data management and specifically WP3 collaborates with WP2 to leverage climate risk data for designing insurance products that are tailored to specific climate risks and vulnerabilities. Moreover, WP3 close cooperation with WP4 enhances stakeholder engagement efforts and streamlines coordination between the two WPs. WP4 provides WP3 with dissemination, communication, exploitation, and engagement strategies.
Each Work Package is subdivided into multiple tasks, and typically, each task or group of tasks corresponds to a specific deliverable, ensuring a structured and organized approach to project management and execution.

This Deliverable 3.1, which is the result of Task 3.1, is a guidance document which establishes a shared base for coordinating the Piloting process. This document outlines shared content, formats, and platforms as well as clearly defined ownership and updating responsibilities of the living documents. More specifically, the actions included in this deliverable involve the development of five Pilots:

- T3.2.1: Green Roofs
- T3.2.2: Climate adaptation dashboard for financial assessments
- T3.3: Food and Agriculture
- T3.4.1: Development of forest insurance concepts based on existing schemes
- T3.4.2: New innovative forest insurance concepts to support wildfire prevention and management including adaptation measures in Portugal.

These Pilots will typically be co-created with insurance companies, sector organisations, public administrations and policy makers, end-users, and other relevant stakeholders drawing upon insights from WP1 and WP2. Pilots will mature in TRL (Technology Readiness Level) in three development cycles which are referred to as *Loops* within the PIISA framework.

During the Piloting process, WP3 uses *living documents*, which are "dynamic" documents shareable among partners and continuously updated. These documents include modifications to products/services, events organized, consultations, feedback collection, data for KPIs, datasets and software used and created.

The deliverable is organised as follows: after the introduction, Section 1 will delve into a detailed description of the PIISA Pilots, encompassing their structure, content, scope, and primary objectives. In Section 2, we will provide an in-depth exploration of a comprehensive guidance for setting up Pilots within the PIISA project. This section will also highlight the synergies between the Pilots and other Work Packages (WPs) and projects, emphasising the importance of collaboration. In Section 3, we will describe the functionality and structure of the living document. We will provide insights into how this dynamic document operates within the project, including a template for reference. Section 4 will outline the strategies employed for conducting surveys, interviews, and workshops in the context of the PIISA project. We will detail the methodologies and approaches used to collect feedback and insights from stakeholders. Finally, the conclusions section summarises information collected in the document.

1 Description of the PIISA Pilots

PIISA Pilots are organized in three topical themes: Cities and Well-being, Food and Agriculture and Forests and Forestry. Each theme has one or two Pilots co-created in different biogeographical climate risk zones in Europe (Figure 2), and their applicability is evaluated in other zones and socio-economic contexts. These Pilots progress through distinct development phases, such as concept design and testing, subsystem development, testing in relevant environment, and practical demonstration. A fundamental component of these development phases includes the collection of feedback, which is used to refine products, services and concepts. These development cycles are customised to best serve each Pilot and they are called *Loops* in PIISA.

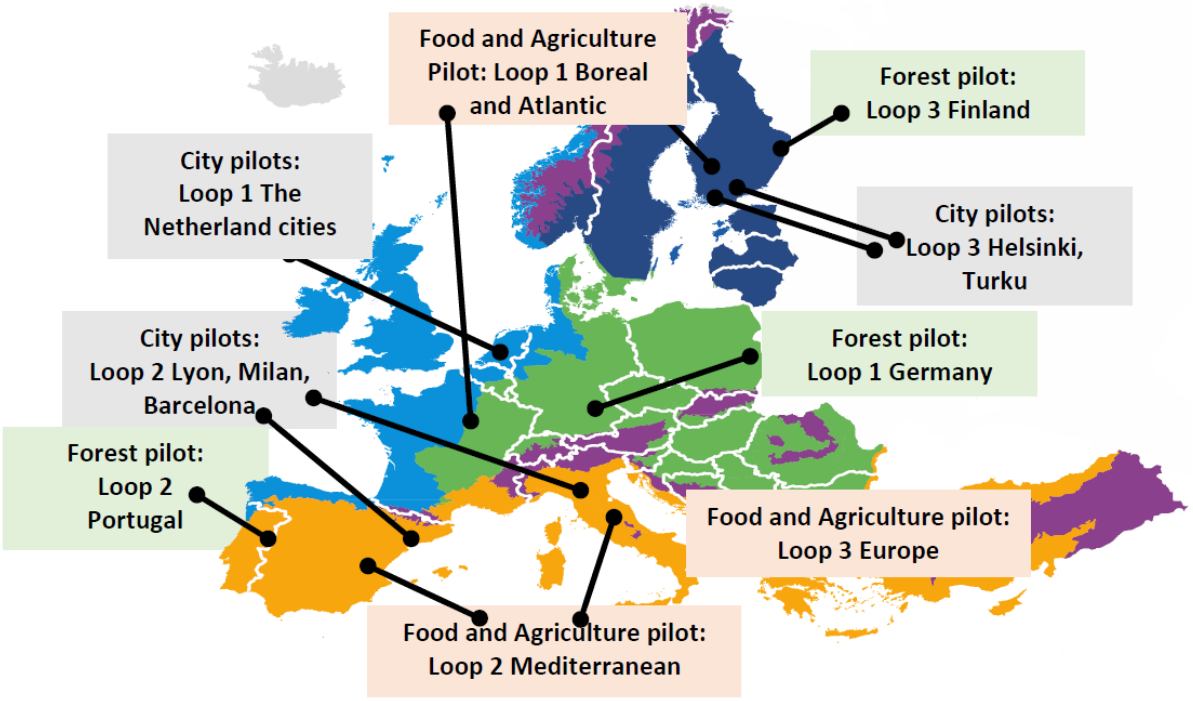

Figure 2: The approximate locations of pilots in PIISA. The coloured regions are based on the biogeographical climate.

1.1 Structure of a PIISA Pilot

The overall structure of a Pilot in the PIISA project is designed to facilitate its development through iterative processes. This structure includes *Loops* and *Phases* to ensure a systematic and adaptable approach to Pilot implementation.

1.1.1 Loops

The PIISA Pilots will undergo a process of continuous improvement and maturation, progressing through three development cycles known as *Loop 1*, *Loop 2,* and *Loop 3*. Each of these loops signifies a distinct stage in the evolution of the Pilots, which builds upon the insights and advancements gained from the previous loop. Feedback is actively collected from cities, countries, and regions where the Pilot was originally developed, as well as from areas with potential for expansion, replication, and wider adoption within the European Union. This inclusive feedback

mechanism ensures that the Pilots are refined and optimised to drive their effectiveness and enhance their scalability across diverse geographical contexts.

During the first Loop, we expect to learn about the insurance potential and feasibility, what is missing, and what solutions are fit for purpose. Then in the second Loop, we apply the concept to new areas to learn how the solutions, products, and risk modelling can help the other regions. In parallel, we aim to develop a totally novel dashboard which will benefit to all the Loops and feedback from the stakeholders, public, and sectoral users who are invited to help us. During the third year, we will already reach TRL which is higher than in the beginning. In the most mature cases, we expect it to be on the level of 7-8 (see Section 2.4).

1.1.2 Phases

Loops are organised into distinct Phases, which provide a common framework for all the Pilots while remaining flexible and adaptable to the specific needs of each Pilot. The Phases have the advantage of splitting the Pilots into smaller components, enabling easier monitoring and mitigation of potential delays in the project lifecycle.

Co-creation is one of the key development methods used in Piloting. In PIISA, co-creation mainly consists of three types of activities:

- Co-design: the process of working with stakeholders to design the objectives, activities and scope of the Pilot. This phase refines the understanding of the problems, needs and requirements, and lays the groundwork for the following activities.
- Co-development: the process of working with stakeholders to put into practice what was designed in the previous phase by developing new knowledge, tools, products or outcomes as joint effort by experts and relevant stakeholders. The co-development phase includes the iterative collection and taking into consideration the feedback from the stakeholders.
- Co-delivery: the process of collaborating with stakeholders and end-users to apply and test aspects of the created solution. Depending on the maturity level of the solutions, they will be tested and validated in controlled to operational environments. The co-delivery phase includes the iterative collection and implementation of feedback from the stakeholders.

Phases and Loops have been tailored and adapted to suit the specific context of the Pilots. For more comprehensive information, we recommend referring to Deliverable 2.2, which provides a deeper understanding of how the Phases and Loops align with the distinct requirements and objectives of the Pilots.

1.2 Pilots description

1.2.1 Cities and well being

The *Cities and Well-Being* thematic area is composed of two Pilots. In the first one, "*Green Roofs",* we aim to develop a European business model for insurance for the Nature Based Solutions (NBS) in cities, focusing on the Green Roofs (Task 3.2.1). In the other one, "*Climate adaptation dashboard for financial assessments*", we aim to develop a Dashboard for adaptation and finance for homeowners in Europe focusing on the risks associated with shrinkage-swelling clay soils.

1.2.1.1 Green roofs

Pilot title	Green roofs
Pilot location	The Netherlands (Loop 1) Boreal region (Loop 2) Mediterranean region (Loop 3)
Main objectives and scope	• Evaluate a climate adaptation strategy to stimulate the adoption of green roofs by policyholders; • provide a cost-benefit analysis of green roofs in the Netherlands; • test insurance incentives for green roof adoption and explore barriers; • identify public-private partnerships for sustainable finance and develop insurance business models; • inform other Pilot regions using expert interviews and qualitative analysis in loops 2 and 3.

Table 1: overview of the Green Roofs Pilot

1.2.1.2 Climate adaptation dashboard

Pilot title	Climate adaptation dashboard for financial assessments
Pilot location	Lyon, France (Loop 1 and Loop 2) Europe (Loop 3)
Main objectives and scope	• develop a robust methodology for assessing financial losses due to shrink-swell clay soils risk; • create a web application for homeowners to make decisions on insurance cover; • create a guide for homeowners on preparing for their upcoming meeting with their insurance advisor to request appropriate insurance coverage.

Table 2: overview of the Dashboard Pilot

1.2.2 Food and agriculture

The Pilot *Food and Agriculture* (Task 3.3) begins in the Boreal region in Finland (Loop 1), to explore the potential of weather index insurance and derivatives in the Finnish context. In the subsequent phase, Loop 2, we extend our analyses to the Mediterranean region, applying the lessons learned from the Boreal context. In Loop 3, we put into action the climate services co-developed in the previous loops and extend their implementation to a European scale.

Pilot title	Food and Agriculture
Pilot location	Finland (Loop 1) Mediterranean region (Loop 2) Europe (Loop 3)
Main objectives and scope	• Introduce parametric and carbon insurance; • measure the market potential of weather insurances and derivatives; • establish an effective and comprehensible weather index insurance system; • ensure that selected weather parameters effectively assess risk and are accepted by farmers.

	• develop an early-warning system covering the weather time scale (5-10 days), the seasonal scale (three coming months), and the climate projections scale (10-30 years).

Table 3: overview of the Agrifood Pilot

1.2.3 Forests and forestry

The Forests thematic area is composed of two Pilots. In the first one, "*Development based on existing forest insurance schemes*", we aim to develop innovative forest insurance schemes to increase coverage and enhance adaptation. In the second, "*New innovative forest insurance concepts to support wildfire prevention and management including adaptation measures in Portugal*", we aim to introduce new forest insurance concepts to support wildfire prevention and management including adaptation measures identified in Portugal's National Action Plan (NAP).

1.2.3.1 Development based on existing insurance

Pilot title	Development based on existing forest insurance schemes
Pilot location	Bavaria, Germany (Loop 1 and Loop 2) Europe (Loop 3)
Main objectives and scope	• test different insurance structures (indemnity, parametric, hybrid) at microclimatic scales for rapid payout related to wildfire and specific pest and disease threats; • design and conduct broader uptake test series with AXA Germany, involving surveys and choice experiments to refine insurance products; • organise a webinar to present new insurance schemes and lessons learned from Loops 1 and 2 to stakeholders; • organise a workshop on using insurance to encourage forest owners to mitigate hazards and plan for climate adaptation in Finland.

Table 4: overview of the first Forestry Pilot

1.2.3.2 New insurance schemes

Pilot title	New innovative forest insurance concepts to support wildfire prevention and management including adaptation measures in Portugal
Pilot location	Portugal (Loop 1 and Loop 2) Europe (Loop 3)
Main objectives and scope	• develop innovative wildfire insurance to incentivise adaptation measures at household and forest association levels; • develop innovative forest insurance concepts to support wildfire prevention and management in Portugal; • test the replicability and transferability of the developed solutions from Portugal to other European regions.

Table 5: overview of the second Forestry Pilot

Figure 3 illustrates a schematic representation of the Pilots, including their durations, loops, and associated deliverables.

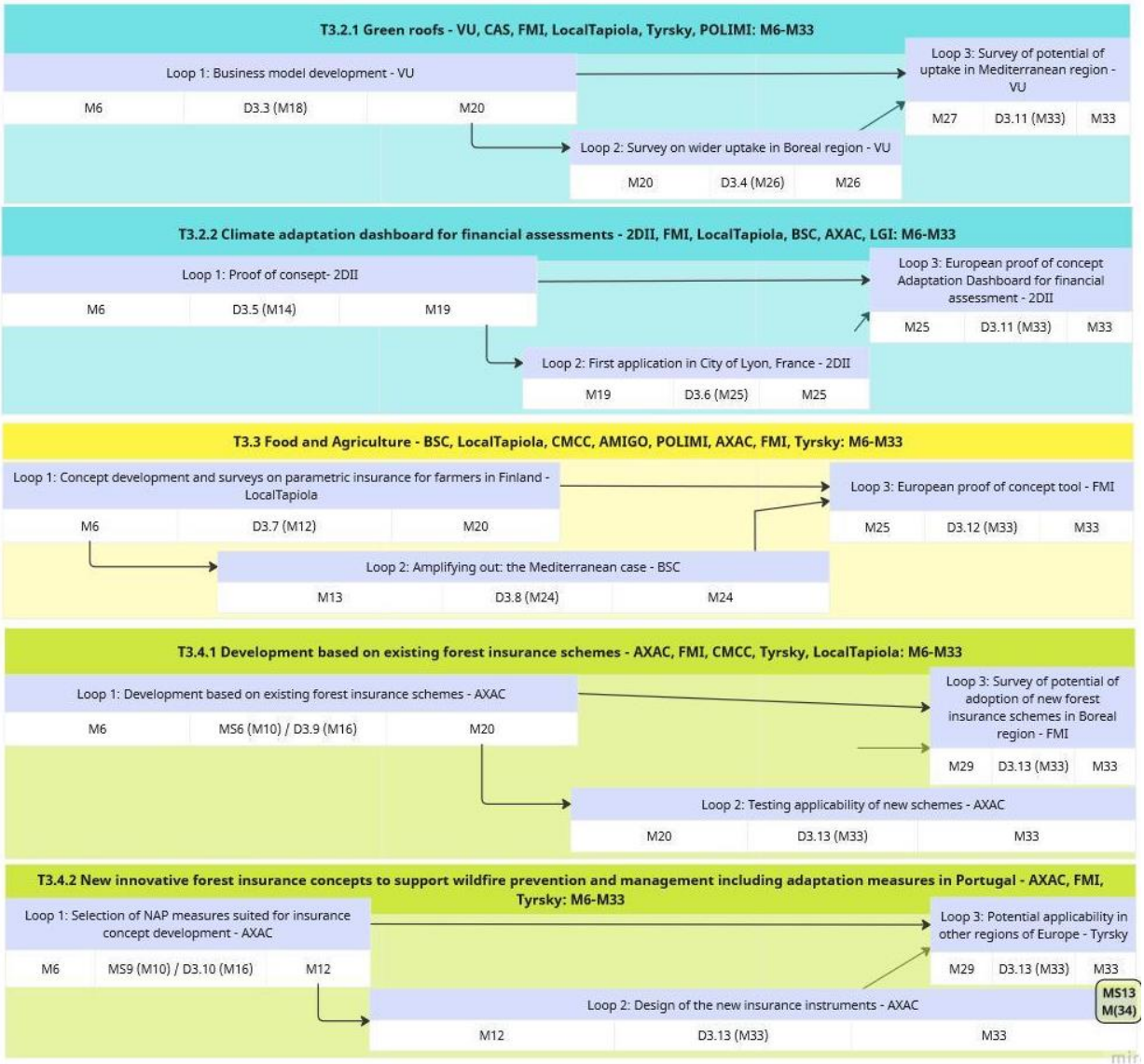

Figure 3: PERT diagram on Pilots in PIISA. Shown are sub-tasks of WP3 that perform Piloting in three Loops, start and end-months of Loops, and Deliverables and Milestones accomplished in Piloting.

2 Guidance on setting up Pilots

This section provides a shared basis for the implementation of the Pilots, with a detailed description of the key elements presented in dedicated sections. This description regards various aspects, such as steps, goals, responsibilities, timetable and defining KPIs.

2.1 How to set up a PIISA Pilot

The setup of the Pilots involves the definition of the following key elements, which were specified at the beginning of each Pilot:

- period
- objectives and methodology
- Key Performance Indicators (KPIs)
- partners and stakeholders involved
- expected output

This has been possible thanks to a series of preliminary activities carried out with the Partners involved in each Pilot. One of these was the compilation of a *Pilot form*, which is a table containing various information to clarify the Pilot details (see ANNEX 1: Pilot form). The partners responsible for each Pilot were requested to fill in the document to the best of their knowledge. Subsequently, multiple bilateral calls were arranged to facilitate in-depth discussions and further refinement of the Pilot details among the partners. Partners with expertise in co-design, such as CMCC, BSC, FMI, PoliMi, and Tyrsky, played an important role in the review of the document: their insights and comments were examined and taken into account during the subsequent bilateral meetings.

Starting from November 2023, joint virtual meetings will be arranged every two months (*bimonthly meetings*) bringing together all Pilot teams. These calls will be an opportunity for sharing and discussing progress updates within the Pilots and also for highlighting any potential issues or threats that may affect the progress of the Loops or Pilots.

2.1.1 Period

Each Pilot of the PIISA project operates within its own timeline, with varying durations for both the loops and the phases characterising them, based on specific needs and objectives.

Typically, Loop 1 has the longest duration among the Pilot loops, because it serves as the initial stage in which the Pilot team engages in planning, designing, and defining the fundamental structure of the Pilot. Loop 1 often involves most of the co-creation activities, or at least the co-design and co-development phases, where stakeholders are actively involved in setting the direction of the Pilot. The only Pilot in which Loop 1 lasts less than Loop 2 is the one related to Task 3.4.2, *New innovative forest insurance concepts to support wildfire prevention and management including adaptation measures in Portugal*. In this case, Loop 1 is centred only on the co-design phase while the co-development and co-delivery phases take place at the beginning of Loop 2. Typically, Loop 3 has the shortest duration among the loops, as it includes exploratory activities to scale and transfer the developed solution based on the results of the previous loops.

For this reason, it includes only the co-design of a solution targeting other regions in Europe.

2.1.2 Objectives and Methodology

The objectives of the project Pilots were initially outlined in a general way during the proposal drafting. To facilitate the Pilots management and efficiency, we structured them into distinct development cycles, called *Loops* (Section 1.1.1). Within each loop, we further divide the work into smaller, well-defined *Phases* (Section 1.1.2) that have very specific objectives. Within each of these phases, we build upon the proposal by refining and detailing our objectives based on the evolving insights and knowledge we gain as the project progresses. For instance, partners were asked to specify what they intended to achieve during the co-design phase, indicating the key information to be collected, and the clarifications required to facilitate the development of the solution. This iterative process will be implemented across all phases and will enable to better manage the work, and adapt the objectives to emerging needs, challenges, and opportunities while developing a deeper understanding of the dynamics of the project.

The same principles also apply to the methodology, which must be clearly delineated for each phase. Indeed, partners are requested to indicate the methods they intend to employ in each phase (see Table 8). For instance, in Phase 1, partners were asked to specify whether they would conduct interviews, surveys, or employ any other relevant techniques. This approach ensures that the methodology is well-defined and suited to the requirements of each phase.

2.1.3 Key Performance Indicators (KPIs)

One of the requirements of the Pilots is to include a series of Key Performance Indicators (KPI), which are quantifiable measures of performance over time for a specific objective [1]. As for the Objectives and Methodology, KPIs have to be specified for each phase of the loops.
Before the beginning of the Piloting process, partners were asked to write KPIs and for each of them indicate a target value that they want to reach at the end of the co-design phase. The idea is that the KPIs target values define the minimum thresholds required for the successful execution of the co-design phase, ensuring it provides all the information needed for the co-development phase. It is essential for the indicators to be measurable and able to track how the phases are going, enabling us to promptly take preventive action if we are too far away from the target values. A few examples of KPIs include metrics such as the number of interviews conducted with insurers and actuaries, the number of engaged key stakeholders, the number of surveys, and the number of publications generated.
The KPIs will be periodically evaluated during the bimonthly meetings organised to update the living document. The KPIs at the time being will be compared with the KPI target value providing information on the progression of activities and checking whether the ongoing developments align with the initial expectations, or if adjustments in our approach are needed. Mitigation actions, if needed, will depend on the KPI and will be assessed on a case-by-case basis.
The monitoring KPIs will play a crucial role in evaluating the overall project KPIs. For this reason, they need to be aligned with the KPIs listed in the Grant Agreement (GA). In ANNEX 2: PIISA Key Performance Indicators (KPIs), we report Table 3.1b of the GA, which contains a comprehensive set of KPIs for filling in adaptation and insurance gaps, Piloting process and overall goals for the

PIISA project. This structured approach ensures that we monitor our progress in various aspects of the project.

2.1.4 Partners and Stakeholders involved

The PIISA project is characterised by close interactions between *partners* and key *stakeholders* to ensure a dynamic exchange of information and an effective exploitation of results. Partners, often referred to as *beneficiaries*, are organisations actively involved in implementing funded projects. Within a project, partners can have several roles, including lead partners, regular project partners, associated partners, and observers [2]. A stakeholder can be either a person, collective, company, or entity with a significant interest or involvement in a specific project, process, or initiative [3]. Examples of stakeholders that might be relevant in PIISA include policymakers and regulators to the insurance sector, as well as insurance users such as farmers, forest owners, or municipalities. Within PIISA, stakeholders will be actively engaged not only in reviewing the final results of the project but also in providing feedback on preliminary and intermediate findings. This involvement extends to surveys designed to evaluate overall awareness and the adoption rate of natural-based solutions, innovative insurance schemes, and other relevant aspects. Special emphasis will be placed on addressing the diverse knowledge needs of various stakeholders.
To establish this collaborative ecosystem, the PIISA project mapped key stakeholders related to climate change adaptation, risk management, and the insurance sector, as well as investigated the expectations of key stakeholders in face-to-face meetings.
Depending on stakeholders' interests, expected contributions to the project, and expectations of project outcomes, four types of interaction strategy were designed:

- Close collaboration with selected insurance companies and selected insurance users within the project.
- Collaboration with projects working on adaptation, insurance industry, consumer NGOs, and national authorities regulating the insurance market.
- Consultation with insurance users, policymakers, and stakeholders working on adaptation to supplement the project.
- Informing interested citizens, municipalities, and European federations of local authorities, infrastructure companies, and European umbrella organizations for infrastructure, broader insurance, and finance field through awareness raising, sharing, and activation.

Some of the selected insurance companies are associated partners of the PIISA project, such as LocalTapiola and AXA Climate. Some stakeholders are part of the External Advisory Board (EAB), such as Generali from Italy, the Agency for the Integrated Management of Rural Fires (AGIF) from Portugal, and Interpolis from the Netherlands. These entities, together with (potential) insurance users such as private individuals, SMEs, public administrations, farmers, architects, and others, will be involved in the co-creation process of the Pilots. They will be able to share their knowledge and opinions for the benefit of WP3 Pilots as the developed concepts are tested.

2.1.5 Expected output

An essential part of a Pilot setup is the definition of the expected outcomes. In particular, the partners leading the Pilots are asked to specify what they expect to achieve from the various phases (co-design, co-development, and co-delivery). This process enables us to concretely understand whether we are heading in the right direction. While outcomes are the actual changes or results achieved at the end of a phase, KPIs are metrics or measurements used to assess the performance, progress, or success of a project, and can be used to monitor and measure both intermediate and final results.

2.2 Guidance for collaboration with other WPs

Within the PIISA project, the collaboration between WPs leverages the collective expertise to enhance the project overall success.

An opportunity for discussion will certainly be the bimonthly joint virtual meetings which will bring together all the Pilot teams. During these meetings, one of the requests to the Pilot partners will be to indicate whether support is needed from other WPs. Additionally, the project includes update meetings where WP leaders actively participate to exchange progress updates, share insights, and collaborate. These processes will help identify specific areas where additional assistance, expertise, or collaboration is needed from different WPs to ensure the successful advancement of the Pilots.

2.2.1 Collaboration with WP1

WP3 will benefit from WP1 in understanding conditions that foster insurance innovation and adoption, as well as the use of psychometric surveys and interviews to assess attitudes toward insurance products. Moreover, WP3 will be informed with the WP1 review activities related to the existing actuarial and catastrophe models that are used in the insurance industry. These activities aim to identify current challenges and innovation potential for facilitating the design of new insurance products.
These inputs from WP1 will inform the co-development of a climate risk assessment model framework that serves as a starting point for the WP3 Pilots for designing new insurance solutions. Based on the results from WP1, we are jointly creating insurance solutions fitted to each WP3 Pilot needs.

2.2.2 Collaboration with WP2

WP3 and WP2 are strictly related to each other. Indeed, the activities of WP2 focus on the co-design, co-development, and co-production of climate services that meet the users' needs of each Pilot. Specifically, Task 2.1 of WP2 will manage all data on climate-related damages and losses that will be produced in WP1-WP3 or collected and rehabilitated from the local sources (WP3 Pilots) and which would otherwise not be available through existing loss data databases and systems. Additionally, Task 2.2 is centred on the scientific and technical results for service development and the outputs of this task will be tested in WP3 Pilots and refined through the

feedback collected collaboratively in WP4. The aim of Task 2.3 is to co-design and co-develop the services for each Pilot in WP3.

2.2.3 Collaboration with WP4

The collaboration with WP4 consists of coordinating together procedures for stakeholder communication and participation, as well as planning workshops in Pilots. The stakeholder engagement activities of WP4 (Task 4.2) include surveys and interviews collecting information on the success of Pilots at the end of the Loops of WP3. Hence, the cooperation with WP4 increases efficiency in stakeholder engagement work and improves coordination of WP3 input to WP4 work and deliverables. Task 3.1 of WP3 will compile relevant findings related to research and policy landscape to support WP4 in amplifying the use of services and solutions developed. Moreover, the preliminary results of Pilot activities made available from WP3 will be used in Task 4.5 of WP4 to assess the direct replicability of the Pilots to enhance the exploitation of their results.

2.2.4 Examples of collaboration for the co-design phase

During the preliminary bilateral meetings aimed at clarifying some aspects of the living documents, it emerged that in the co-design phase, which is the initial one, greater support is expected from WP1 and WP2.
Specifically:

- The Green Roof Pilot does not require support from WPs in the initial phase, as indicated;
- The Dashboard Pilot will rely on WP1 for assistance in establishing connections with actuarial and insurance experts in the networks of consortium members;
- The Agrifood Pilot needs support from WP1, to identify the regulatory barriers for parametric insurance, as well as to provide examples of existing parametric insurance to introduce farmers to this concept. WP2 expertise will support the Pilot in the definition of climate indices and data management;
- The first Forest Pilot seeks support from WP1, particularly from Task 1.1, which provides a mapping review and assessment of insurance solutions for forest assets across EU Member States. WP2 will contribute to the Pilot through Task 2.2, which translates the new end-user needs identified in both WP1 and T2.3 into sound scientific and technical requirements for service development, and Task 2.3, which involves co-developing services for the Pilots;
- The second Forest Pilot expects results derived from several WP1 and WP2 tasks, including Task 1.1 (Challenges, barriers, and opportunities to reduce insurance protection gap and accelerate adaptation and resilience), Task 1.2 (data collection and wildfire risk mapping), Task 1.3 (prioritising wildfire mitigation measures with the local partner), Task 1.4 (building wildfire mitigation scenarios for risk modelling), Task 2.1 (Actuarial Risk Modelling, state-of-the-art, challenges, and innovation potential), Task 2.2 (framework for harmonized sharing of risk and losses data), and Task 2.4. (co-development of the services for the Pilots).

2.3 Guidance for collaboration with other projects and activities

Starting from November 2023, PIISA leaders will have monthly meetings, where the topic "collaboration with other projects" will be discussed. During these meetings, all leaders may suggest projects that fit the scope of PIISA and the Mission Adaptation of EU. It is important to create synergies and minimise overlaps and duplication of efforts. Also, a decision needs to be taken on how to collaborate (who/which WP and which Task will carry out collaboration) and made visible to all. Therefore, there are several levels to be considered and agreed based on how this collaboration is forming:

- Level 1: PIISA has raised interest and there are partners who wish to join PIISA via the new EU partnering mechanism
    - It was established during the General Assembly of PIISA Kick-Off, that invitations to join PIISA will need the approval of the General Assembly. If there is real synergy and PIISA lacks expertise that the partner wanting to join would be able to provide, the General Assembly will handle decision making.
- Level 2: PIISA has been invited to collaborate with other EU Mission Adaptation projects dealing with adaptation and financing
    - Any PIISA partner may arrange meetings with these projects to align with their working schedules.
    - The PIISA Management Team should be informed about these meetings, with partners collecting relevant information to share with the PIISA consortium.
    - The pertinence of such collaborations and their specific areas of focus should be discussed during the monthly meetings of WP leaders, that will start running from 31.10.2023. This ensures that awareness of new collaboration and ongoing collaboration is disseminated among PIISA leaders.
- Level 3: PIISA is inviting to collaborate
    - Within the monthly meetings of WP leads and, as necessary, during the bimonthly meetings of the Pilots, PIISA will examine a list of projects considered important for collaboration. Factors under consideration will include the full project name, project type (funding source and national/international scope), and the potential synergies and complementarities between projects. While the General Assembly approval is not mandatory at this level, it is important to ratify these decisions in the Executive Board (EB) meetings and document them in the minutes of meetings.

In all of the Levels 1-3, Table 6 should be used as a tool for documenting and tracking collaborative efforts. This table will be filled in and monitored during the monthly WP leaders' meetings. A separate monthly meetings folder will be made under WP5. We provide an illustrative example of collaboration between PIISA and the CLIMATEFIT project.

Project name	Type of Project (H2020, …)	Description of the Project	Main PIISA partner involved in the collaboration	Who/which WP of PIISA and the collaborative project	Which Task of PIISA and which Task of the collaborative project	Starting date of collaboration	Latest updates on collaboration
CLIMATE FIT	Mission Adaptation EU	CLIMATEFIT is working with financing and with 10 public authorities, 20 municipalities, and with greater emphasis on private sector and systematic approaches.	FMI	PIISA WP3, WP4, potentially WP1. CLIMATEFIT would like to interview insurance companies and inform about the future of financing. AXA Climate has been contacted and has shown interest.	PIISA WP3 Loop1 – Tasks dealing with Portugal and France – there is synergy. In Loops 2, 3 to be considered later.	October 2023	Meetings at least with Stella Whittaker and sharing ideas how to create a win-win situation. We agreed to concentrate on communication items first, later also data issues (impact data).
SWIFTT	Horizon 2020	Build a European-level platform which makes it possible to assess fire, wind, and insect-related damages for any forest at 10m resolution in near-real time.	AXA	PIISA WP3	PIISA WP3 T3.4.1 (Germany forestry pilot)	January 2024	Pending acceptance of amendment including AXA Climate in SWIFTT EU consortium.

Table 6: general information about collaboration with other projects

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2.4 Guidance on assessment of Technology Readiness Level

The Technology Readiness Level (TRL) is a method for defining the maturity of a product and its relation to the market [4]. This type of measurement system was established by NASA, and the European Commission decided to introduce it in EU-funded projects in 2012 [5].

TRL scale goes from 1 (the basic principles are documented) to 9 (the technology is released, and industrial production is started, and each value has the following definitions [6]:

- TRL 1 – basic principles observed;
- TRL 2 – technology concept formulated;
- TRL 3 – experimental proof of concept;
- TRL 4 – technology validated in the lab;
- TRL 5 – technology validated in the relevant environment (industrially relevant environment in the case of key enabling technologies);
- TRL 6 – technology demonstrated in the relevant environment (industrially relevant environment in the case of key enabling technologies);
- TRL 7 – system prototype demonstration in the operational environment;
- TRL 8 – system complete and qualified;
- TRL 9 – actual system proven in the operational environment (competitive manufacturing in the case of key enabling technologies; or in space).

It is important to emphasise that the TRL specifically addresses the level of maturity of the proposed solution, regardless of the existence of similar solutions on the market. Hence, each Pilot must consider the TRL status of its solution as an integral aspect of development and evaluation.

2.5 The PIISA vision for a resilient Europe

In human systems, adaptation is a process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities [7]. Risk sharing helps to optimise, inform and promote adaptation and resilience management, while keeping the overall adaptation process affordable. Given the needs to significantly increase adaptation efforts in Europe and elsewhere, the complementary role of risk sharing services should be amplified by making them smarter, easier to adopt, widely applicable, affordable, transparent and incentivising risk reduction-oriented adaptation efforts.

The PIISA project aims at innovative context-sensitised insurance products based on an integrated approach promoting virtuous interaction between risk sharing and risk reduction in climate adaptation planning and implementation. The ambitious vision of PIISA is that by 2030 the losses wholly or partly attributable to climate change effects in Europe will be covered for at least 50% by insurance. Simultaneously, PIISA seeks to substantially narrow the adaptation gap and actively contribute to its reduction through the introduction of novel insurance solutions. To advance towards PIISA's vision, the following Specific Objectives (SO) are especially relevant:

- **SO2**: Develop and implement mechanisms to collect and share comprehensive and harmonized data on climate-related risks and losses. The developed and approved mechanisms and data will be integrated with the risk platforms as is the Risk Data Hub. WP2 is the main contributor to SO2, but Pilots will also collect information on relevant sources of available climate-related risk and loss data suited to be integrated in the Risk Data Hub.
- **SO4**: Trial innovative risk transfer to deal with climate-induced risk, including parametric insurance of nature-based solutions. - Innovative risk transfer will be the core objective of WP3. Parametric insurances and/or nature-based solutions will be explored in the fields of agriculture and green roofs.
- **SO5**: Provide direct support to the Atlantic, Boreal, Continental and Mediterranean regions by Piloting insurance concepts. - Pilots will collectively address the four biographical climate risk zones.
- **SO7**: Engage in 3 or more regions vulnerable to different climate risks, presenting advice on insurance gaps to be addressed by public budgets in regions. Providing guidance and support regarding types of insurance products that would best address the region's climate risk. Presenting advice on managing insurance and adaptation gaps to be addressed by public budgets in the regions. Sharing topical state-of-the-art knowledge, best practices, and emerging innovations on insurance solutions to a wider audience via the extensive network of PIISA. - Together with WP4, Pilots will reach out and inform public authorities on insurance solutions that have potential to reduce adaptation gap in the city/region/country with, or without, support from public funding and/or other relevant support from public authorities. Also, the wider audience in the city/region/country will be informed of such solutions.
- **SO8**: Open up opportunities in the insurance market for cutting-edge risk transfer solutions. - This objective refers to communication activities directed to the insurance sector including academia.
- **SO9**: Reinforce policy frameworks to facilitate the allocation of substantial additional national and regional budgets to increase the penetration in the EU of insurance solutions to deal with climate-induced risks. - WP1 is the main contributor to SO9, but Pilots will also try to identify stakeholders relevant to SO9, and produce stories of successes achieved in Piloting, as well as report identified obstacles for wider uptake and potential solutions to overcome them.

The PIISA Grant Agreement contains a list of project's KPIs (see ANNEX 2: PIISA Key Performance Indicators (KPIs)). Some of them are especially relevant to Piloting in WP3 and to preparing ground for a wider uptake of insurance solutions and climate services.

Adaptation and insurance gap filling KPIs

- KPI 1: Pilots will contribute to awareness raising of risks and new solutions focusing their respective topic and sector, but also communicate the main messages related to climate risks, adaptation gap, benefits of risk sharing, and potential of new insurance solutions and climate services, which will be formulated and supporting material produced in WP4.

- KPI 3: At least one of the Pilots contributes to the development of business model for Nature Based Solutions and insurance. Green roofs and insurance solution applicability in other region(s) will be assessed and steps to amplify use of green roofs via insurance will be presented.
- KPI 4: Pilot on wildfires will use and produce local data translating them into financial terms.
- KPI 5: Dashboard to inform homeowner insurance holders on soil stability risks will support efforts of EIOPA.

Piloting process KPIs

- KPI 6: Together with WP2 and WP5, more than 10 open-source risk indicators will be integrated to Risk data Hub.
- KPI 7: All Pilots combined at least 10 Pilot domains (sector-product combinations)
- KPI 8: Piloting addresses more than ten cities/regions/countries.
- KPI 10: At least one of the Pilots acts as user of DestinE ClimateDT simulations.
- KPI 12: Seasonal forecasts will be semi-operational and disseminated via C3S as outlooks and tailored for agriculture.
- KPI 13: In collaboration with WP1 and WP4, identify and develop models that can be used to support risk reduction in forests and development of new insurances, e.g. carbon sequestration and storage.
- KPI 15: Demonstrate a carbon-farming (or regenerative farming) insurance developed in WP1 utilising events, surveys and/or stakeholders of WP3.

Piloting has a pivotal role in meeting PIISA objectives and reaching KPIs targets. KPIs of individual Pilots assist in monitoring their progress. However, Pilots need also to support and produce information to monitor PIISA KPIs (including Engagement, Dissemination, and Communication items) as well as meet the PIISA Specific Objectives. This will be coordinated with WP4 and WP5.

3 Living documents

In the context of the PIISA project, living documents are dynamic documents that will be used throughout the duration of the project to monitor the evolution of the Pilots. Every Pilot has a dedicated living document, which initially contains information that was filled in before the beginning of the activities as a result of the discussions to refine the planning of the Pilots (Section 2.1). The living documents will be used to keep track of the activities that are carried out during the project, and they will be updated during the bimonthly meetings to capture the iteration between the different Loops. PIISA partners can access the living documents in the *LivingDocument* subfolder, located within the *WP3* folder shared with the PIISA team.

3.1 Template for the living document

This section illustrates the structure of a typical living document, by displaying the template used as a reference for project participants. The text in italic below also appear in the living documents as an explanation for the PIISA Pilot Leaders and contributors.

Pilot Title
TX.X

This document is an example of the living document that will be used throughout the duration of the project to monitor the evolution of the Pilots. A document like the following one has been created for each Pilot. Part of the document has been filled in before the beginning of the activities as a result of the discussions to refine the planning of the Pilots. Part of it will be used to keep track of the activities that are carried out during the project.

Pilot ID

Table 7 includes the general information on the Pilot. Such an overview has been prepared before the beginning of the activities. Most of the information has been collected thanks to the Pilot form (see Section 2). It has been finalised during the second round of bilateral meetings (see Section 2) to refine the validation strategy.

Partners involved	Leader: …
Pilot location	*Pilot location including a map.*
Pilot description as in the proposal	*Text describing the Pilot as in the proposal.*
Context	*Briefly describe the context in which the Pilot will take place. What are the general conditions in the area supported by some statistics (to be defined) on socio-economic conditions and natural resources? What is the context in the insurance industry?*
Problem statement	*What are the issues being addressed? What is affecting the considered area / industry? What is currently missing from weather risk management and climate change adaptation?*
Objectives	*What do you plan to achieve during PIISA? What is the main purpose of the Pilot?*
Target stakeholders	*What groups of stakeholders do you think is it necessary to involve? What are the most relevant stakeholders involved in the activities?*
Aims of each Loop	*What are the main aims and outcomes of each Loop? (short description)*
Related adaptation measures	*How could insurances support risk management and adaptation?*
Related climate services	*How could climate services support decision making and risk management?*
Initial TRL	*Please assess the Technology Readiness Level of the solution at the beginning of the Pilot.*

Table 7: Pilot ID

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Co-creation

Co-creation is one of the key development methods used in Piloting. In PIISA it mainly consists of three types of co-creation activities:

- *Co-design: Process of working with stakeholders to design the objectives, activities and scope of the Pilot. This phase refines the understanding of the problems, needs and requirements, and lays the groundwork for the following activities.*
- *Co-development: Process of working with stakeholders to put into practice what was designed in the previous phase by developing new knowledge, tools, products or outcomes as joint effort by experts and relevant stakeholders. The co-development phase includes the iterative collection and taking into consideration of the feedback from the stakeholders.*
- *Co-delivery: Process of collaborating with stakeholders and end-users to apply and test aspects of the created solution. Depending on the maturity level of the solutions, they will be tested and validated in controlled operational environments. The co-delivery phase includes the iterative collection and implementation of feedback from the stakeholders.*

The Phases provide a common structure for all the Pilots but are flexible enough to be adapted to the specific needs of each Pilot. A second advantage is that they split the Pilots into smaller components that can be easily monitored. In this way, we can mitigate potential delays early enough in the project lifecycle. A brief description of how this structure is tailored to the different Pilots is included in each Living Document as well as a GANTT-like chart as in Figure 3.

Loop 1

Phase 1 – Co-design

Table 8 includes the general information on the Co-design phase. Such an overview has been prepared before the beginning of the activities.

Overview		
Period	*When will this phase take place?*	
Objectives of phase 1	*What do you plan to achieve during the co-design phase? What is the information that needs to be collected? What do we need to clarify to develop the solution?*	
Methodology of phase 1	*What are the methods that you plan to adopt? Are you going to carry out interviews, surveys, etc? Is there any other technical approach you need to use?*	
KPIs	KPI description	Target value
KPI number and name	*Please provide a short description of the Key Performance Indicators you plan to use to keep track of the evolution of the Pilot.*	*What value do we want to reach at the end of this phase?*

Support expected from the other WPs	*Please describe information, expertise, technical support, etc. needed.*
Partners involved	*Which partners will be involved?*
Stakeholders involved	*Which external stakeholders will be involved?*
Output	*What do you expect to obtain as a result of this phase?*

Table 8: information on the co-design phase

Table 9 should be used to take minutes of the bimonthly joint virtual meetings of all Pilots (taking place every 2 months). This template will be copied and pasted hereafter: one copy for each meeting. We will ask the responsible partner to fill in the table prior to the meeting, with the support of the involved partners, to facilitate discussion.

Update – DD/MM/YY		
Activity logbook	Partners involved	Description
	Who is taking care of the activities?	*What activities have been carried out?*
Threats	Description	Mitigation actions

	Are there any problems or threats that might affect the Loop / Pilot?	*Can we envision a solution?*
Tech. req. for climate services	Status of the service:	
	Data:	
	Climate indicators:	
	Methods to analyse data:	
	Service outputs:	
KPIs	KPI evolution	Comments
KPI number and name	*KPI at the time being / KPI target value*	*Please add any comment concerning the evolution of the activities. Is it as envisioned? Is it better / worse than expected? Do we need to think of adjustments?*
Support needed from ...	Partner interested in the support	Requests

WP1	*Partner that needs support*	*What support is needed, in what context, and by when. Please remember to include any actions to be carried out in the "To-do list" below.*
WP2		
WP4		
WP5		
Sister projects and other activities	Partner – source of information	News from sister projects and other activities
Project / activity	*Please specify who obtained the information. Moreover, please include what was the occasion: was it a personal communication? If so, with whom and when? Was it through participation in an event? If so, which event, and when did it take place? If there are references (e.g. deliverables), please include them too.*	*Please briefly summarise the key information useful for the PIISA project.*
To-do list (for the next 2 months)	Responsible partner	Activities
	Who is taking care of the future activities?	*What do we plan to do in the upcoming months?*

Table 9: notes of the bimonthly meetings

Table 10 summarises the results of the activities of Phase 1.

Final outcomes		
Results	*What did we achieve in Phase 1? The results should supposedly map or extend the objective stated in the overview of the Phase 1.*	
Challenges	*What are the challenges we had to face? Are any of these still unsolved?*	
KPIs	KPI description	KPI final value
KPI number and name	*Short description of the Key Performance Indicators as in the overview of the Phase 1.*	*Final value of the KPI.*
Data	*What data did we use? What data do we need to use for the following activities?*	
Climate services	*What are the climate services we plan to co-develop?*	
Adaptation measures	*What are the adaptation measures we plan to support or implement?*	
Partners involved	*Which partners have been involved?*	
Stakeholders involved	*Which external stakeholders have been involved? Please fill in stakeholder information (add link to template).*	

Table 10: summary of the results of the activities of Phase 1

Phase 2 – Co-development

This section will include the exact same Tables as Phase 1. At the beginning of Phase 2, a new overview table will be prepared, with the specific objectives, methods, and KPIs of this Phase. Such information might differ from the one of Phase 1.

Phase 3 – Co-delivery

This section will include the exact same table as Phase 1 and Phase 2.

Outputs of Loop 1

This table collects the outputs and lessons learnt of Loop 1 during all the Phases of development of the solutions.

Final outputs	*What have we achieved during this Loop?*
Lessons learnt	*What are the key lessons we learnt?*
Challenges	*What are the challenges we needed to face?*
Final TRL	*Please specify the Technology Readiness Level of the solution at the end of Loop 1.*
Funding opportunities	*During the activities, did we find any funding opportunities to support further development?*
Information for Loop 2	*What do we need to report to Loop 2 from Loop 1 for a smooth transition?*
Information from sister projects and other activities	*What can we transfer from the knowledge gained by the sister projects and other activities we are networking with?*

Table 11: outputs and lessons learnt of Loop 1

Loop 2/3

Loop 2 and Loop 3 are structured according to the needs, depending on the phases of activities that will be included. The corresponding tables in Loop 1 are copied and pasted hereafter.

3.2 Process to prepare and fill in the Living documents

In the initial phase, Amigo developed a first draft of the living document, which was circulated to the partners around mid-August (M2). Before distributing the living document for partner input, partners were invited to review it and provide feedback on its clarity, utility, and completeness, and identify any potential improvements or missing elements that needed to be implemented. In response to the feedback and suggestions provided, Amigo finalised the first version of the living document.

The partners were subsequently asked to fill in the first parts of the document. In particular, the *Pilot ID*, a table prepared before the start of the activities which includes general information about the Pilot. In Table 8, partners were asked to provide information related specifically to the co-design phase of Loop 1. A guide with instructions on how to fill in each aspect of this table is present in Section 3.1 of this deliverable.

Most of the input to these two tables was collected thanks to the Pilot form that was sent to Pilot partners and finalised during the first round of bilateral meetings to refine the validation strategy (see ANNEX 1: Pilot form). Subsequently, Amigo scheduled multiple bilateral calls with Pilot partners to facilitate in-depth discussions and further refinement of the Pilot details, ultimately resulting in the finalisation of Tables 7 and 8.

The remaining sections of the living document will be filled in and updated as the project advances. Every two months we will meet with all the Pilot leaders and use the update table (Table 9) to keep track of the activities that are carried out during the project and plan the next steps. While the Pilot ID and Co-creation table were completed before the beginning of the project, Table 9 will be employed to take the minutes of the bimonthly joint virtual meetings between all Pilots. The template of Table 9 will be duplicated for each meeting, and the responsible partner must fill it in before the meeting with the support of the involved partners, to facilitate discussion.

The template of Table 10 is used to summarise the activities of each phase, so this table will be duplicated for each phase (co-design, co-development, co-delivery) and each Loop. Finally, the template of Table 11 will be duplicated for Loop 1, 2 and 3 to collect the outputs and lessons learned from each Loop during all the Phases of development of the solutions.

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4 Coordinated approach for surveys, interviews and workshops

PIISA uses diverse methods, mainly different types of surveys, interviews and workshops, for collecting data from different stakeholders and project partners. Below their characteristics and the differences between them are described.

Surveys are structured data collection tools that involve a set of questions or statements provided to a selected group of respondents. Surveys are efficient for collecting quantitative data or qualitative data, either in form of multiple-choice or open-ended questions, from a large group of participants in order to get the information needed by the project.

Interviews are more in-depth than surveys. Interviews can be seen as conversations between a researcher and a participant or group of participants. They can be structured (with a predetermined set of questions) or unstructured (open-ended, with questions evolving based on the conversation). Also, semi-structured interviews are commonly used. Interviews are useful for collecting detailed qualitative data and insights, exploring more complex topics than in surveys. They allow for follow-up questions enabling researchers to delve deeper into responses.

Workshops are interactive group sessions where participants collaborate and engage in discussions, activities, and exercises, usually facilitated by workshop organizers. Workshops can be used to gather qualitative data and for problem-solving, consensus building and idea generation. Compared to surveys or interviews, workshops are more interactive as the participants can brainstorm and co-create knowledge together as a group. Workshops can be either organized online or as live events. Hybrid events are also possible.

Therefore, surveys are useful to get an overview on chosen topics, to numerically assess what is the current knowledge and if there are information gaps which can be addressed in the interviews. Because surveys are intended to produce information on a more superficial level than interviews, surveys allow for more topics to be addressed than it is possible in interviews. Surveys are also useful when comprehensive exploration of various perspectives or multiple angles of a certain subject is needed. Interviews can explore key topics in greater depth and workshops are useful to brainstorm or generate ideas based on the insights gained from surveys and interviews. The choice of method or combination of methods depends on the objectives and the nature of the data needed. All three forms of data collection will complement each other, therefore allowing for a comprehensive understanding of the issue addressed in the project.

4.1 General strategy

For the successful implementation of surveys, interviews, and workshops, a coordinated approach is of paramount importance. To ensure a well-organized process, we identified a general strategy, which consists of the following steps:

(1) work sharing and ownership assignment;
(2) assessment of the surveys and desk reviews that already existed;
(3) identification of key stakeholders to be involved;

(4) collection of feedback from stakeholders;
(5) information sharing with other partners in the consortium.

4.1.1 Assessment of the surveys and desk reviews that already existed

When it comes to surveys and desk reviews, an in-depth examination of the existing literature is not only a practical step to avoid duplication but also it helps to go beyond the current State of the Art. By building upon the established knowledge and methods, researchers can identify gaps, opportunities for improvement, and innovative approaches to enhance data collection and analysis. In this way, we ensure that our efforts are well-informed, efficient, and aligned with the best practices in the field.

In the PIISA context, references regarding surveys, questionnaires and interviews will be searched primarily within the academic peer reviewed literature, and, to a lesser extent, within insurance industry reports and policy reports. Industry and policy reports are less likely to be focused exclusively on surveys and questionnaires, but could contain them within the discussion of a more general analysis.

In assessing academic references, we employ a comprehensive set of criteria. For instance, we will look at the following:

- quality of the journal (impact factor [8], H index [9], SJR [10], etc);
- number of citations (how many times that article has been cited, both academic and non-academic citations);
- authors (H index, number of citations, field of expertise).

Regarding the timeframe for literature search, our approach considers several dynamic factors. In line with best practices, we place a primary focus on recent publications, typically within the last five years, as they are more likely to encompass the latest advancements and research trends in our field. However, we maintain flexibility and do not disregard older references, especially if they continue to hold relevance to our specific research.

Within the PIISA context, the search for academic references will start with an interrogation of the main databases for the academic literature: Scopus (https://www.scopus.com/), Web of Science (http://webofscience.com/) and Google Scholar (https://scholar.google.com/). The search will be conducted within Title, Abstract and Keywords, using keywords such as "climate insurance", "disaster insurance", "natcat insurance", "survey", "questionnaire", "interviews" (the exact string of keywords will have to be determined based on needs and results). This can then be complemented and double-checked with online AI tools for cross-referencing, such as ResearchRabbit (https://www.researchrabbit.ai/) or Litmaps (https://www.litmaps.com/), which can help validate the reference initially found and suggest additional related ones that were not provided with the initial interrogation. Peer reviewed journals that often publish articles on climate risk insurance include, but are not limited to, Climate Risk Management, International Journal of Disaster Risk Reduction, International Journal of Disaster Risk Science, Natural Hazards, Natural Hazards and Earth System Sciences, Environmental Hazards, Ecological Economics, Environmental and Resource Economics.

Industry and policy reports can be searched from the following sources:

- The European Insurance and Occupational Pensions Authority (EIOPA, https://www.eiopa.europa.eu/document-library/reports-and-research_en);
- The Global Federation of Insurance Associations (GFIA, https://gfiainsurance.org/publications);
- Insurance Europe (https://www.insuranceeurope.eu/publications);
- The Geneva Association (https://www.genevaassociation.org/publications);
- Swiss Re (https://www.swissre.com/institute/research.html);
- Munich Re (https://www.munichre.com/en/insights.html?filter1Tag=insights:topics/climate-change-and-natural-disasters);
- Gallagher Re (https://www.ajg.com/gallagherre/gallagher-research-centre/)

Industry and policy reports can also appear amongst the results of a Google Scholar search.

Some academic and non-academic studies include insights and findings derived from consultations with stakeholders, policymakers, insurance providers, and other relevant parties. These consultations essentially resemble interviews in terms of data collection. While it might be less common to find the term "consultations" explicitly mentioned in the article's title, keywords, or abstract, it could still be a valuable component of the search strategy for comprehensive results.

4.1.2 Identification of key stakeholders to be involved

Before starting data collection, it is important to outline the target groups for each data collection method. The target groups may include key stakeholders previously identified within the project, such as collaborators in pilot projects, individuals designated for consultation, new stakeholders, or, in some cases, project partners.

Several key questions require consideration, such as:

- Identifying entities that have the relevant information we seek.
- Determine whether the target is a specific country or region.
- If the data collection involves feedback on an insurance tool or product developed under the project, assess potential user demographics for the tool or product.

In the PIISA Communication, Dissemination and Stakeholder Engagement Plan (CDSEP), which is found in the WP4/CDSEP folder of PIISA Teams channel, the following broad target group categories are described:

1. Adaptation experts and stakeholders in the adaptation field
2. Insurance sector
3. Policy makers
4. Citizens
5. Specific insurance user groups, for example farmers, forest owners, house owners, real estate brokers and developers, cities
6. Scientific communities

PIISA has established a **stakeholder registry**, which is available in the WP4 folder of PIISA Teams channel. The stakeholder registry is a living document which will be filled in during the project. Partners are asked to add all stakeholders they identify in the stakeholder registry and fill in the relevant information on them. Using the categorization of the registry, it will be possible to search for stakeholders for example by geographical area, stakeholder type and sector. This will facilitate identification of the target groups and contacting them.

If needed, WP4 will provide support in stakeholder identification.

4.1.3 Collection of feedback from stakeholders

An important step for effective data collection and analysis from surveys, interviews and workshops is collecting feedback from participating stakeholders. Collecting feedback from stakeholders and other partners typically includes surveys or (formal/informal) interviews. When collecting feedback from stakeholders (as well as conducting surveys), it is important to address constraints on tools for data collection and storage to ensure that the processes are in compliance with EU data policy and the PIISA data management plan (D5.10 "PIISAs DMP"). To ensure clarity and transparency as well as EU Data Policy Compliance when collecting feedback from stakeholders, considering these aspects is necessary:

- **EU Data Policy Compliance**: all data collection and storage processes must be fully compliant with EU data policy regulations, such as the General Data Protection Regulation (GDPR) to protect the privacy and rights of survey participants.
- **Data Minimization and Limitation**: Data collection tools should be designed to collect the minimum amount of data necessary for the survey's purpose. This aligns with the GDPR principle of data minimisation, which discourages the collection of excessive or unnecessary personal information.
- **Informed Consent**: Administrations need to obtain clear and informed consent from survey participants before collecting any data. Participants must be fully aware of the purpose of data collection, how their data will be used, and their rights regarding data protection.
- **Anonymization and Pseudonymization**: Use of anonymization and pseudonymization techniques to protect the identities of survey participants are recommended when sensitive or personal data isn't valuable to the objective of the survey. Anonymizing personal data ensures that individuals cannot be identified, while pseudonymization involves replacing identifying information with pseudonyms.
- **Secure Data Collection Tools**: Use of secure survey tools that comply with EU data protection regulations are recommended. Ensure that the chosen tools have appropriate security measures in place to protect the data collected, including encryption and access controls. Access to survey data should be restricted to authorized personnel only.
- **Data Encryption**: Choose data collection tools that support data encryption both during transmission and while at rest. Encryption ensures that data is protected against unauthorized access, reducing the risk of data breaches and complying with EU data policy requirements.
- **Data Retention and Deletion Policies**: clear data retention and deletion policies ensure that Data is not retained longer than necessary for the survey's purpose, and when it is no longer needed, the data is securely deleted.
- **Documentation and Record-Keeping**: Maintaining records of data processing activities is a GDPR requirement. The tools should facilitate the creation and maintenance of records

that document data processing activities. GDPR requires data controllers to maintain records of data processing for compliance purposes.

- Secure Data Storage and Access Control: Select data storage solutions that offer robust security features, including access controls, authentication, and encryption. These tools should comply with GDPR standards for secure data storage and access.

By following these guidelines, you can help ensure that data collection within the PIISA project is conducted in a manner that respects EU data policy, protects the rights of participants, and maintains data security and compliance. The information provided is based on generally recognized best practices and guidelines for ensuring compliance with EU data policy and the General Data Protection Regulation (GDPR) when dealing with personal and non-personal data. These best practices are informed by legal requirements and widely accepted data privacy and security standards in the European Union.

For this reason, it's important to note that specific data management and compliance guidelines can vary depending on the nature of the survey, the tools and technologies being used, and the organization's data protection policies. Therefore, while the information provided reflects common practices, it should be adapted to the specific context and requirements of the organization and its survey activities. When dealing with data protection and privacy matters, it is advisable to consult with legal experts or data protection officers to ensure full compliance with relevant regulations and guidelines.

To find more official and up-to-date information from the EU Commission on data protection and GDPR compliance, please visit the EU Commission's Data Protection page (https://commission.europa.eu/law/law-topic/data-protection_en). You can search for specific guidance documents, regulations, and resources related to data protection and GDPR compliance. The EU Commission's website provides a wealth of information on this topic and is a reliable source for official EU guidelines and regulations. You can access the EU Commission's Data Protection page by visiting the official EU Commission website (europa.eu) and navigating to the relevant section on data protection and privacy.

4.1.4 Sharing information with other partners in the consortium

Data sharing within partners of PIISA can boost cooperation. However, it must take place in compliance with EU data policy and follow the PIISA data management plan (D5.10, see the previous section).

PIISA supports sharing of survey data and results among partners through the following activities:

- maintain a survey plan table;
- discuss survey plans and implementation in EB meetings to coordinate work and resources between WPs;
- inform all partners via PIISA internal newsletters or PIISA email lists;
- share preliminary results of survey analyses in internal briefings and workshops when needed;
- report surveys analyses in respective PIISA deliverables.

4.2 Survey plan

Before starting the Piloting process, a survey plan table was shared with partners to be regularly updated to monitor progress in the survey strategy. This table contains information such as the type of activity (it can be either survey, interview, or workshop as described at the beginning of Section 4), the partner responsible for the activity, the associated WP and Task, the country, duration, participants, purpose and expected amount of feedback.

Type of activity (survey, interview, workshop)	**Consortium Partner in charge**	**WP**	**Related Task(s)**	**Purpose / Objective**	**Targeted audience** (e.g.: final clients, insurance companies, other EU projects, Climate Risks actors etc.)	**Stakeholders involved**	**Preparation month**	**Delivery month**	**Inputs needed from other partners**	**Survey KPI / Target amount of feedback** (e.g. X% answers to questionnaire, X interview, etc)	**Country**
Survey	PolMi	WP1	Task 1.1. Review protocol	The survey will support the review protocol and will work as a foundation for WP3 by assessing the customers' awareness on nature based-solutions to address the climate change and by measuring the diffusion of nature based-solutions among relevant stakeholders.	- Insurance customers, both private and SMEs. - Public Administration - Professionals such as architects, farmers, …	TBD	TBD	TBD	TBD	TBD	TBD
Survey	AXA	WP1	Task 1.3. Dialogues across the financial and risk modelling epistemic communities 1/3	These surveys will support the 3 workshops to organize in months 12, 24 and 34. The objective will be to present the intermediate results of PIISA on WP 1, WP2 and WP3, in order to best prepare the workshops.	- Other Mission Adaptation and Horizon Europe projects - European regulators - Climate Risk initiatives - Insurance brokers - Other insurance compagnies - Potential clients for PIISA innovative products	(Illustrative) - Firelogue, Naturance - EIOPA - Disaster Risk Management Knowledge Centre (DRMKC) and JRC/Risk Data Hub	M9	M10	Intermediate results from WP1, 2 and 3, stopped on month 8	80% rate of answers on a 30 targeted audience, making around 24 answers minimum to be collected.	TBD
Survey	AXA	WP1	Task 1.3. Dialogues across the financial and risk modelling	These surveys will support the 3 workshops to organize in months 12, 24 and 34. The objective will be to	- Other Mission Adaptation and Horizon Europe projects	(Illustrative) - Firelogue, Naturance - EIOPA - Disaster Risk	M21	M22	Intermediate results from WP1, 2 and 3,	80% rate of answers on a 30 targeted audience, making around 24 answers	TBD

			epistemic communities 2/3	present the intermediate results of PIISA on WP 1, WP2 and WP3, in order to best prepare the workshops.	- European regulators - Climate Risk initiatives - Insurance brokers - Other insurance compagnies - Potential clients for PIISA innovative products	Management Knowledge Centre (DRMKC) and JRC/Risk Data Hub			stopped on month 20	minimum to be collected.	
Survey	AXA Climate	WP1	Task 1.3. Dialogues across the financial and risk modelling epistemic communities 3/3	These surveys will support the 3 workshops to organize in months 12, 24 and 34. The objective will be to present the intermediate results of PIISA on WP 1, WP2 and WP3, in order to best prepare the workshops.	- Other Mission Adaptation and Horizon Europe projects - European regulators - Climate Risk initiatives - Insurance brokers - Other insurance compagnies - Potential clients for PIISA innovative products	(Illustrative) - Firelogue, Naturance - EIOPA - Disaster Risk Management Knowledge Centre (DRMKC) and JRC/Risk Data Hub	M31	M32	Intermediate results from WP1, 2 and 3, stopped on month 30	80% rate of answers on a 30 targeted audience, making around 24 answers minimum to be collected.	TBD
Workshop	AXA	WP3	Task 3.4. Forests - Pilot 3.4.2	This workshop will be conducted with active participants at the end of the pilot, to define potential for replication, barriers and enablers	Regional territorial management commission and fire management agency	- Comissão de Coordenação e Desenvolvimento Regional do Centro (CCDRC) - Agência de Gestão Integrada de Fogos Rurais (AGIF)	M32	M33	Final results from Loop 1 and 2	workshop with 10-15 participants	Portugal
Survey	LocalTapiola	WP3	Initial assessment of potential for agricultural insurance in Boreal region. Report is a result of Task 3.3.	The aim is to measure the market potential of parametric weather insurances in Finland. We will work closely with farmers to understand their needs concerning climate-related insurances in the early stage of the project, which bring insights on the agro-climatic indicators to be co-developed.	farmers, insurance companies, PIISA partners	Young farmers, MTK (farmers union), LocalTapiola sails personnel, LocalTapiola customers		M12	Description of parametric insurances used in other EU countries, examples	Minimum 200 answers, conformed with sociodemographic information.	Finland

Table 12: survey plan shared with partners that will be regularly updated to monitor progress in the survey strategy

5 Conclusion

This deliverable provides a comprehensive guideline to assist partners who are leading and contributing to the implementation of Pilots. It contains detailed instructions to carry out a PIISA Pilot and implement Living documents, effective strategies for conducting surveys and procedures for stakeholder engagement. The ultimate objective of this guideline is to provide support to partners involved in the Pilots, enabling them to have a comprehensive set of resources to effectively plan, execute, and manage their work within the PIISA framework.

As we move forward with the project, we recommend that partners regularly review and update their strategies and plans, particularly in response to the insights and experiences gained throughout the Pilot implementation process. We suggest to periodically monitor the KPIs and use them as a tool for ongoing evaluation and adjustment to ensure alignment with project objectives. We also encourage partners to share their learning and to collaborate, ensuring that best practices and lessons learned in one Pilot can benefit others and contribute to the overall success of the project.

We are confident that PIISA's experience can serve as a model of best practices for co-creation in the field of climate change adaptation. The tools and methodologies developed here have the potential for wider application, and the living document stands as a compelling example of their effectiveness.

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ANNEX 1: Pilot form

Task number		Task X.X Loop X
General information	Pilot title	*Potential for agricultural insurance in Boreal region*
	Responsible partner	
	Other partners involved	*Include the acronyms and contact points of the other organisations involved*
	Pilot location	*Please indicate the Pilot location*
	Context	*Briefly describe the context in which the Pilot will take place. What are the general conditions in the area? What is the context in the industry?*
Final goal	Problem statement	*What is currently going wrong? What is affecting the considered area / industry?*
	Needs	*What is currently missing? What is limiting the solution of the previously stated problem?*
	Description of main objectives and scope	*What do you plan to achieve during PIISA? What is the main purpose of the Pilot?*
	Adaptation measure	*What do you envision the adaptation measure will be?*
	Linked insurance	*What insurance would you link to such adaptation measure?*
Activities	Approach to co-develop the solution	*What kind of activities will be done to engage with stakeholders? How do you plan to ensure that the final results are tailored to the previously defined needs?*
	Data to be used for the validation	*How do you plan to validate the product developed during the Pilot?*
	Climate service to be developed	*Do you think it is necessary to develop a specific climate service for this Pilot? If so, can you tell us how you envision it? If no, can you tell us why? Climate indices, forecasts, visualization tools, maps, charts, decision support tools, reports, text messages or voice messages are some of possible climate service.*

	Possible quantitative targets for the KPIs	*How would you track the successful development of the Pilot?*
	Target groups and actors involved	*What groups of stakeholder do you think is necessary to involve? Can you tell us why that is the case (for each of them)?*
	Risks and potential barriers	*What would cause you problem, slow you down or make you get stack in the development of the Pilot?*
Outcomes and impacts	Expected results	*What is the immediate, short-term outputs of the Pilot? Please be practical.*
	TRLs of the results (start/end), if applicable	*Where do we start from in terms of TRL? Where do you plan to get?*
	Description of the expected outcomes	*How do you think this Pilot will impact the society and the insurance industry and its customers?*
Scaling up and contestualisation	Generalisation to loop 2 and 3	*How do you plan to generalise the activities and results of loop 1 to loop2? And to loop 3?*
	Previous related projects/initiatives/products	*Is there any project or initiatives or products we can build on?*
	Best practices, if any	*Is there any inspiring examples we can build on?*

ANNEX 2: PIISA Key Performance Indicators (KPIs)

Adaptation and insurance gap filling KPIs	Target
KPI 1 (D1.3, D2.2, D3.1, D3.5, D4.2) Climate risks regarding city and well-being, food, and agriculture as well as forest growth risks will be better presented and awareness in the need to adapt will be rising. (WP1, WP2, WP3, WP4)	PIISA mapping and surveying responses will be high, and awareness can be seen from them.
KPI 2 (D1.2, D1.4) Knowledge on adaptation alternatives employing Nature-Based-Solutions (NBS) will be rising. (WP1)	Collection of NBS published and liked (> 1000) in Twitter.
KPI 3 (D4.7) Business models for NBS and insurance will be developed, demonstrated and the replication strategy documented. (WP1, WP2, WP3, WP4)	Published in open access journals.
KPI 4 (D3.2) PIISA granular climate adaptation dashboard will complement EIOPA's bottom-up approach by providing very local data and translating the scientific and meteorological data regarding the protection gaps for natural catastrophes (hazards are earthquakes, floods, wildfires, and windstorms) into financial terms. (WP1, WP2, WP3)	Vulnerability, exposure, and insurance coverage will be built in the PIISA Adaptation dashboard for Citizens.
KPI 5 (D2.2, D3.6) PIISA granular climate adaptation dashboard will be co-designed rapidly because in the co-development phase, the PIISA consortium will employ several state-of-the-art tools which we learned to exist during the proposal preparation phase. (WP2, WP3)	Entering as planned to Pilot the PIISA Adaptation Dashboard for citizens to support efforts of EIOPA.
Piloting process KPIs	**Target**
KPI 6 (WP2, WP3 and WP5) Nr of novel Piloted open-source risk indicators integrated to Risk Data Hub	> 10
KPI 7 (WP3 D3.14) Nr of Pilot domains (sector-product combinations)	10
KPI 8 (WP3, WP5, D3.2) Nr of areas Piloted (EEA climate risk zones, countries, regions, cities)	> 10
KPI 9 (WP5 D5.11, D5.12) Growth rate of clients interested in parametric insurance solutions	Based on surveys: increasing
KPI 10 (WP2, WP3, D3.2) Nr of domain Pilot demonstrations based on Destination Earth simulations	1
KPI 11 (WP1 and WP2, D2.3) Open sharing solutions for hazard risks, damage risks and insurance will be in use by supervisors for adaptation and insurance companies when Pilots are tested and considered functional. The PIISA granular platform will be open-access.	TRL from 5 to 7-8
KPI 12 (WP2, WP3 and WP5, D5.12) Seasonal forecasts will be semi-operational and disseminated via C3S as outlooks and tailored for agriculture for the farmers and insurers during the growing season.	TRL from 5 to 7-8
KPI 13 (WP1, WP3 and WP4) For the local forests, novel microclimatic quick simulations will be applicable for carbon insurance solution testing and support immediate adaptation gap filling.	TRL from 5 to 7
KPI 14 (WP2) For the forests in the EU, novel indicators for mid- and long-term adaptation planning will be developed and can be further developed.	TRL from 3 to 4
KPI 15 (WP1 and WP3) Carbon farming insurance will be demonstrated.	TRL from 3 to 4
Engagement, Dissemination, and Communication items and measures in WP4 and monitoring in WP5	**Target**

KPI 16 (D4.2, D4.6) Project website	> 12000 visitors
KPI 17 (D4.2, D4.6) social media	> 1000 total followers
KPI 18 (D4.2, D4.6) Newsletters	> 200 subscribers
KPI 19 (D4.6, D5.3) PIISA presented in conferences and events	> 40 events attended
KPI 20 ((D5.9) Scientific publications	> 10 publications
KPI 21 (D4.6, D4.8, D4.9, D5.3) Webinar series (3 webinars)	> 1000 total attendees
KPI 22 (D4.2) Blog	12 posts
KPI 23 (D4.4, D4.5, D4.9, D5.3) Policy briefs and white papers	> 2 documents
KPI 24 (D4.6, D4.9, D4.10, D5.3) Workshops, round tables and discussion sessions organized	> 10 PIISA events
KPI 25 (D5.3) Clustering activities with related projects and initiatives	8 projects engaged
KPI 26 (D4.8, D5.3) Mid-term online event	> 150 attendees
KPI 27 (D4.9, D5.3) Final event	> 150 attendees

Table 3.1b from the Grant Agreement. WP3 issues highlighted with yellow. The key performance indicators for filling in adaptation and insurance gaps, Piloting process KPIs and goals in total for PIISA as progress KPIs. All KPIs will be reported in project status reports: D5.11 (M18) and D5.12 (M35). The first columns of tables below indicate Deliverables and/or WPs responsible for achieving KPIs.