



MANAGING RESILIENT NEXUS SYSTEMS THROUGH PARTICIPATORY SYSTEMS DYNAMICS MODELLING

Deliverable 2.5 – Activity of the REXUS Learning and Action Alliances (LAAs) – intermediate report

WP2 –Learning and Action Alliances

www.rexusproject.eu

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Executive Summary

This report is intended to describe the activities carried out within the Pilot “Learning Action Alliances” by Month 18.

As a first step, it presents the concept of Learning and Action Alliances, in general and within the framework of the REXUS project and how they are articulated at these different scales and levels. The roadmap and the planned participatory activities to be undertaken by the five local LAAs are also described.

For the REXUS local LAAs, the document also presents the conducted activities and the lessons learned so far. The document highlights the strategies developed by the LAAs in order to face the challenges they have been able to identify during the project.

The report also presents the activities carried out by the REXUS project LAA, the subjects that were discussed and how these activities created a space for dialogue, trust and exchanges between cities and all actors involved.

1. Background

REXUS has a clear focus on social learning as a central element to facilitate Nexus Thinking and drive Resilient Nexus Doing. Social learning is understood as a process supporting that a broad range of organisations frame and reframe the issues at stake in one or several domains and develop enhanced capabilities to deal with common problems which individuals or one single organisation often cannot resolve on their own.

This approach is mainly operationalised through Learning and Action Alliances (LAAs) where long-term relationships are maintained between participants based on co-producing knowledge (learning together and from each other), cooperating in the convergence of ideas, and exchanging knowledge within and between LAAs. Applying a social learning approach is expected to lead to the convergence of goals, criteria and knowledge of various actors, which in turn can lead to building of relations of trust and respect and to a change in behaviours arising from a developed mutual understanding of the issues at stake. The LAAs are made up of actors from various backgrounds, fields, and expertise with the common goal of contributing to the identification and development of solutions and facilitating their local adoption.

REXUS will operate LAAs at three levels: the pilot level, the intra-project level, and the trans-project level. At pilot level, co-development (e.g., PSDM approach, scenario generation), knowledge sharing, and dialogue will be strengthened through a series of visioning exercises for the development of REXUS strategic roadmaps. An intra-project LAA will be devoted to promoting mutual learning across the pilot LAAs and will also address transversal themes and transferability. Finally, a trans-project LAA initiative will be promoted to facilitate exchanges with other sister projects funded under the same topic as well as in related calls in PRIMA and other programmes.

2. Establishing Learning Action Alliances (LAAs)

2.1 Vision and mission of the LAAs

In REXUS, stakeholder involvement is mainly operationalised through LAAs. By Learning and Action Alliance (LAA) we mean *'discussion-and-action groups composed of a broad selection of stakeholders (leading to increased trust and understanding of one another) that iteratively convene through a structured series of workshops, participatory activities and discussion meetings with the aim to create communities in which learning resulting from project activities and outputs is directly translated into real action by the affected actors'*. Most importantly, it must be kept in mind that a LAA is a dynamic learning process, and a living collective body that is expected to evolve by trust, building among partners and common achievements. The establishment of LAAs is the binding element (our REXUS "cement") to achieve a truly interdisciplinary and transdisciplinary approach through the integration of scientific research from several disciplines with non-academic and non-formalized knowledge. This implies that LAAs may take part both in the formulation of the objectives and in the expected outcomes.

The REXUS LAAs build on the ideas of "Learning by Doing" and "co-development" rather than transfer of knowledge through joint learning where there are no established experts. As a result, mutual ownership will increase adaptive capacity and facilitate the identification and adoption of innovative solutions for complex socio-technical problems (see Box 1 – 'our challenge'). In terms of direct relationship with other project activities, the LAAs are the environment in which the System Dynamics Models and visioning approaches are developed, and Ecosystem-based Adaptation is planned.

REXUS brings together project partners and external stakeholders in the frame of a 3-tiered scheme of LAAs:

(1) At local level (city scale), the five local LAAs (one in each pilot) are expected to accelerate the operationalisation of Nexus approaches and building the trust of external stakeholders for moving forward and upscaling potential solutions into the local contexts.

(2) At intra-project level, one LAA provides mutual learning and knowledge exchange between the pilots regarding:

- Knowledge exchange between the REXUS pilots and cross-fertilisation between different actors.
- Better coordination of project activities and increased impact of REXUS.

(3) At trans-project level, we aim to enable knowledge transfer between REXUS and other projects, networks, and institutions. This action is expected to be channelled through the ongoing NEXUSNET Cost Action, where some REXUS partners are involved.

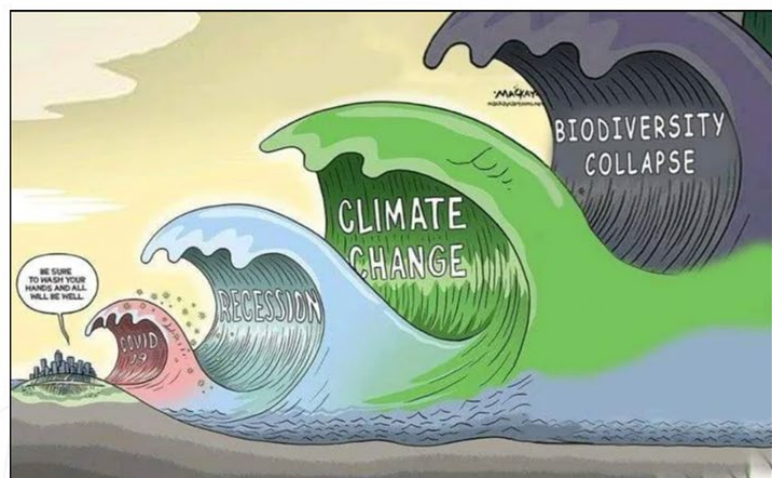
Box 1. Our challenge

The lack of communication, coordination and dialogue between WEF nexus related stakeholders at multiple levels (institutional-policy, resource management, resource/service delivery, resource users, etc.), as well as silo thinking and acting have been acknowledged since the beginning of the Nexus movement as one of the main causes of conflict as well as core challenges and barriers for an effective WEF nexus management. When adding climate change to the equation, the challenges become more transversal and the trade-offs are exacerbated, making this dialogue and coordination even more critical. Altogether, this pinpoints to the critical importance of placing stakeholders at the very centre of any approach to explore, understand and tackle nexus trade-offs, related conflicts and management challenges, as stakeholders' behaviours, contexts, expectations and actions are ultimately the origin and the only vehicle to achieve actual changes towards more a resilient nexus management.

Addressing the **Water-Energy-Food-Ecosystems Nexus problems** require good **understanding** from the different actors.

Key features of WEF nexus problems:

- Extremely complex
- Context-dependent
- Many different sectors and actors
- Different drivers and responses
- Limited exchange among stakeholders
- Timescale



2.2 Implementation roadmap of participatory activities for the pilot LAAs

As a follow-up from the initial design of participatory activities (see deliverable 2.1) conducted through the initial year of REXUS, we have carried out a collaborative work between pilot leaders, WP2 and WP6 for the specification of implementation roadmaps for the pilot activities, building around the realisation of participatory activities within the frame of the pilot LAAs.

As a first step, a generic allocation of participatory workshops, and key engagement and dissemination activities was shared and discussed with the pilot leaders, to allocate these activities to the five planned “regional meetings” (see Figure 1). As detailed in D2.1, not all pilots will implement all REXUS methods with the same depth (i.e., existence of core and side activities in each pilot) and no pilot will implement all the methods being developed by all technical work packages. As a result, this generic planning needs to be adapted to the specific aim of each pilot (e.g., depending on the different focus given to the development of system dynamic modelling, application of visioning or integration of ecosystem-based approaches into the recommended packages of solutions). Moreover, it was recommended to break down the participatory activities into workshops involving the participation of the broad group of stakeholders, and other side activities where smaller groups of actors convene to deal with specific topics more closely related to their expertise.

5 “Regional Meetings” (tentative timeline and content)



Figure 1. Generic timeline for the participatory activities

As a next step, WP2 and WP6 leaders did prepare generic boards in Miro software to support the pilot teams in the implementation of the roadmaps (Figure 2). WP2 leader (ICA) organised two specific training sessions for all pilots. The first session focused on explaining the proposed methodology and the functioning of the Miro tool (i.e., what it is expected to be done and how to use the tool for preparing the roadmap). A few weeks later, a round of individual follow-up session was organised for all pilots (i.e.,

individual meetings with the pilot teams) for the presentation, discussion, and validation of each roadmap.

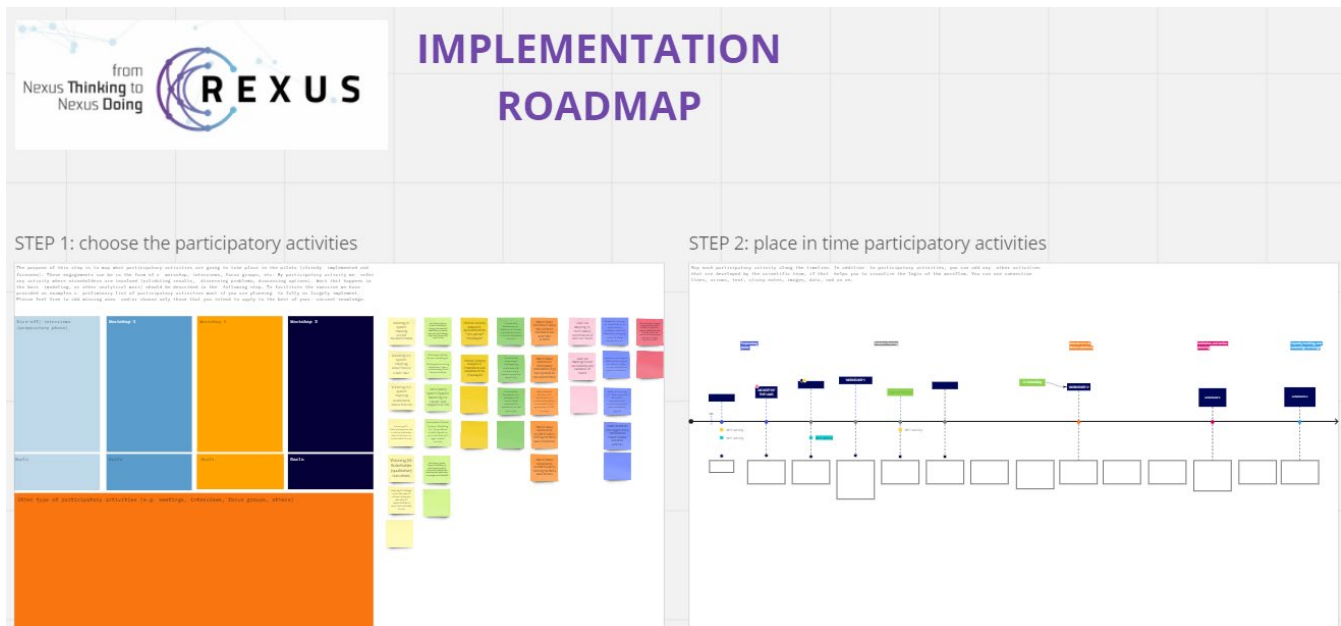


Figure 2. Initial template for the creation of the pilot implementation roadmaps

The application of this methodology included two steps:

- Step 1. Choose the participatory activities

The purpose of this step was to map what participatory activities are going to take place in the pilots (i.e., including both activities already implemented and foreseen). These engagements can be in the form of a workshop, interviews, focus groups, or any other participatory format. By participatory activity, we refer to any activity where stakeholders are involved (e.g., validating results, discerning problems, discussing options). Work that happens in the back (modelling or other analytical work) was described in the following step. To facilitate the exercise, ICA included in the board notes describing a preliminary list of participatory activities that most of the pilots are planning to implement fully or largely. In addition, it was clarified that pilot teams were free to add missing ones and/or choose only those that they intend to apply to the best of their current knowledge.

- Step 2. Place in time the participatory activities

As a second step, the pilot teams were required to map each participatory activity along the timeline. In addition to participatory activities, they were asked to add any other activities (e.g., technical activities) that are an input to any of the planned participatory activities. This enables a clear visualisation of the logic of the overall workflow. The use of the Miro tool (e.g., use of connection lines, arrows, text, sticky notes, images, data, etc.) facilitates the execution of this design.

Results from this exercise are described in the next subsections broken down by pilot area.

2.2.1. Implementation roadmap for the Isonzo/Soča pilot

Participatory activities in the Isonzo/Soča pilot (Italy/Slovenia) are being organized and managed by AAWA (Alto Adriatico Water Authority). AAWA is an Italian public body that manages and regulates the Eastern Alps River Basin District, one of the country's eight hydrographic districts, and is responsible for the protection and sustainable use of water resources across the district.

Being a trans-national pilot, the participatory activities are being articulated around a series of large workshops where key stakeholders from Italy and Slovenia are invited to participate and exchange around challenges, opportunities, and alternatives for an improved management of the Water-Energy-Food-Ecosystems Nexus.

The Kick-Off Meeting and the Workshop#1 have already taken place with a broad participation of stakeholders and allowing for the identification of common systemic challenges in the basin (see section 3). Another two technical workshops are foreseen (see figure 3 and 4) as well as a potential final conference or workshop focusing on capacity building and dissemination of key findings and outcomes.

The Isonzo/Soča participatory roadmap is presented in Figures 3, 4 and 5.

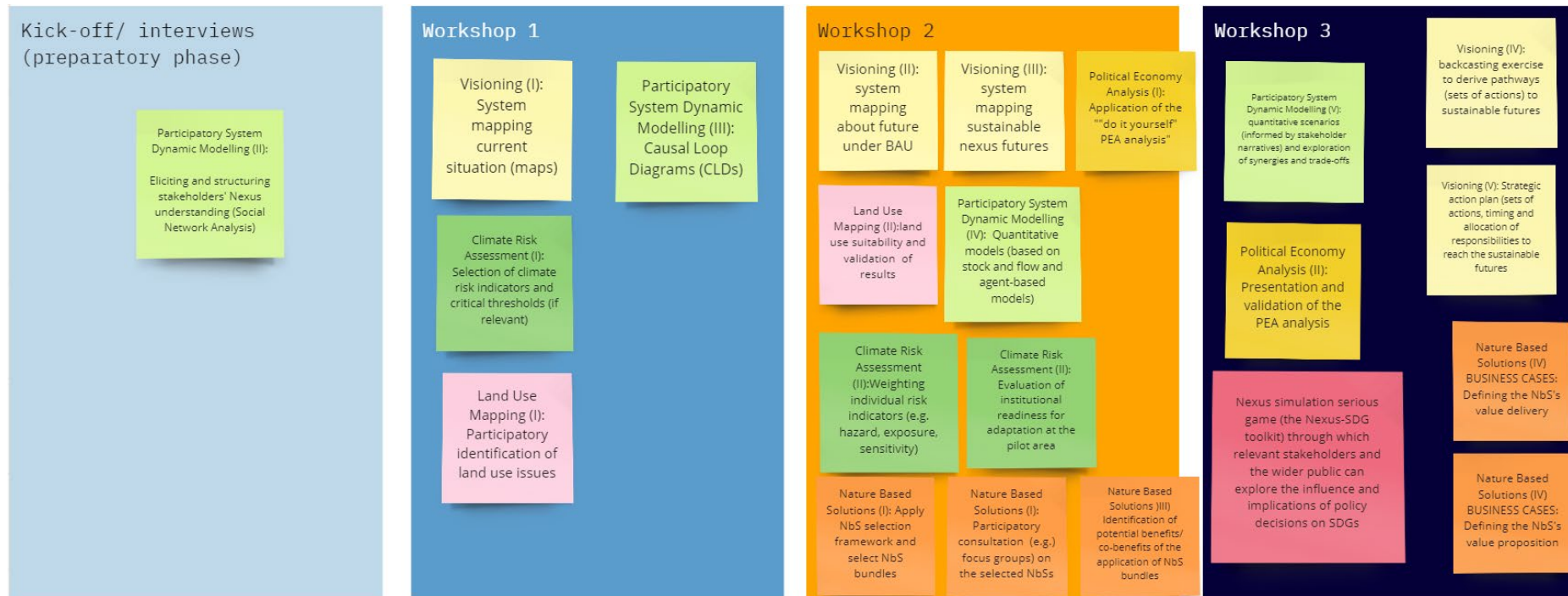


Figure 3. Planned allocation of participatory activities in the workshops of the Isonzo/Soča pilot

Goals

Provide an overview to the Stakeholder about REXUS Project and Isonzo Pilot

Goals

- WORKSHOP 1:14th of July in Gorizia:
- Overview of the project
- Define the conceptual model (CNR's model) of relations between resources/infrastructure/criticities for the Isonzo trough participative activities (e.g. participatory mapping)
- Present an overview of the scientific tools which will define the qualitative aspects of the model. Evaluation the list of indicators (e.g. Climate indicators or NBS) of these tool which are of most interest for the pilot implementation. Everal data request for the technical implementation

Goals

- WORKSHOP 2:
- Progress
- Shifting from qualitative to quantitative model; participatory activities for its implementation
- Present the first/intermediate results of the scientific tools (WP3) + Evaluation from SH of the indicators
- Identification of a set of measure (measures from FRMP or future Nbs that could be inserted in FRMP) which could have a positive effect also on the Status of NEXUS resources in the Isonzo Basin

Goals

- Present the final scientific products (E.g. NBS catalogue, Final maps of soil use and water footprint, etc.)
- Real time modelling (PDSM) of the impacts of the measures identified in the previous workshop
- Present possible future scenario and shop the effect of the FRMP measures considered in facing the NEXUS challenges. [Very ambitious] define common strategies at basin scale
- Evaluation of the output (possible WS4)

Figure 4. Main goals for the workshops of the Isonzo/Soča pilot

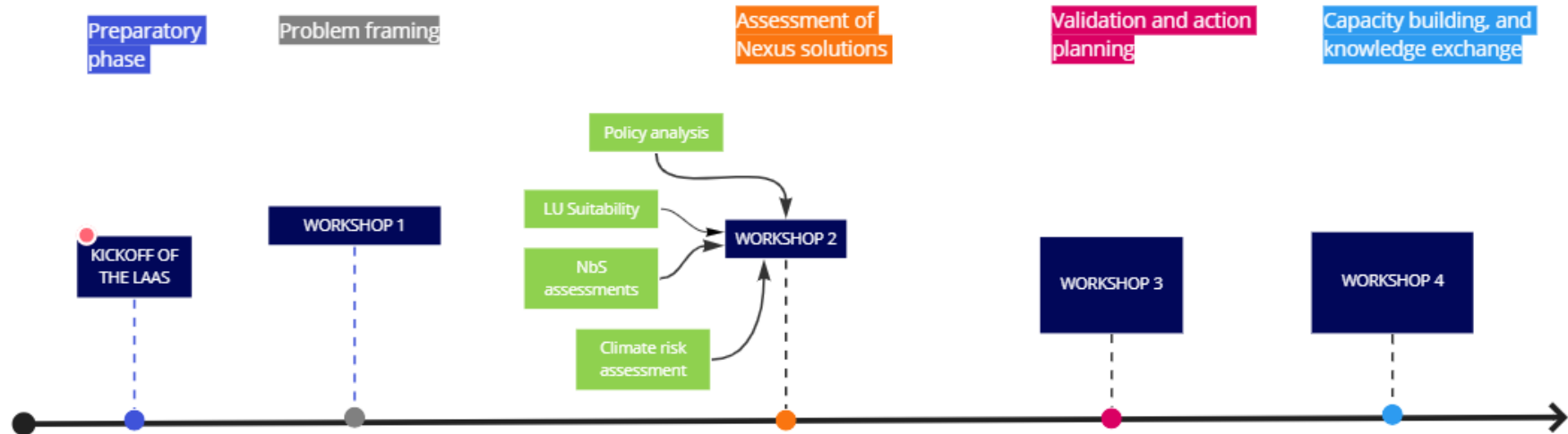


Figure 5. Tentative timeline for the workshops of the Isonzo/Soča pilot

2.2.2. Implementation roadmap for the Nima-Cauca pilot

The Nima-Cauca pilot (Colombia) is managed by CIAT-CGIAR (International Centre for Tropical Agriculture). CIAT is a research institute that works in collaboration with hundreds of partners (i.e., as part of Biodiversity International) to help developing countries make farming more competitive, profitable, and resilient through smarter, more sustainable natural resource management. The institute aims to help policymakers, scientists, and farmers respond to some of the most pressing challenges of our time, including food insecurity and malnutrition, climate change, and environmental degradation.

Due to the pandemic situation, initial engagement activities focused on interviews with the key actors (i.e., farmers from rural areas and the business sector), including an initial presentation of REXUS. As a result of this initial work, it was observed that main Nexus challenges mainly relate to water allocation and land management whereas water for energy aspects are not a central element of discussion in the area.

There is an ongoing land use planning process (i.e., 'Plan de Ordenamiento Territorial') run by Palmira municipality. The interaction with the actors managing this plan showed that REXUS methodologies for visioning and system dynamics modelling are very well aligned with some of the expected outcomes from this spatial planning process. Therefore, it was decided that both visioning and modelling activities will be at the centre of the participatory activities within the pilot with the key objective of informing the land use planning and help produce a positive impact in some key dimensions (e.g., biophysical, environmental, economic) by producing a consensus vision and supporting the identification of potential solutions to existing conflicts by building on sound science.

In parallel to the workshops, other participatory activities, e.g., participatory climate risk assessment using surveys, are envisaged to support the overall process.

The implementation roadmap for the participatory activities in the Nima-Cauca pilot is presented in Figures 6 and 7.

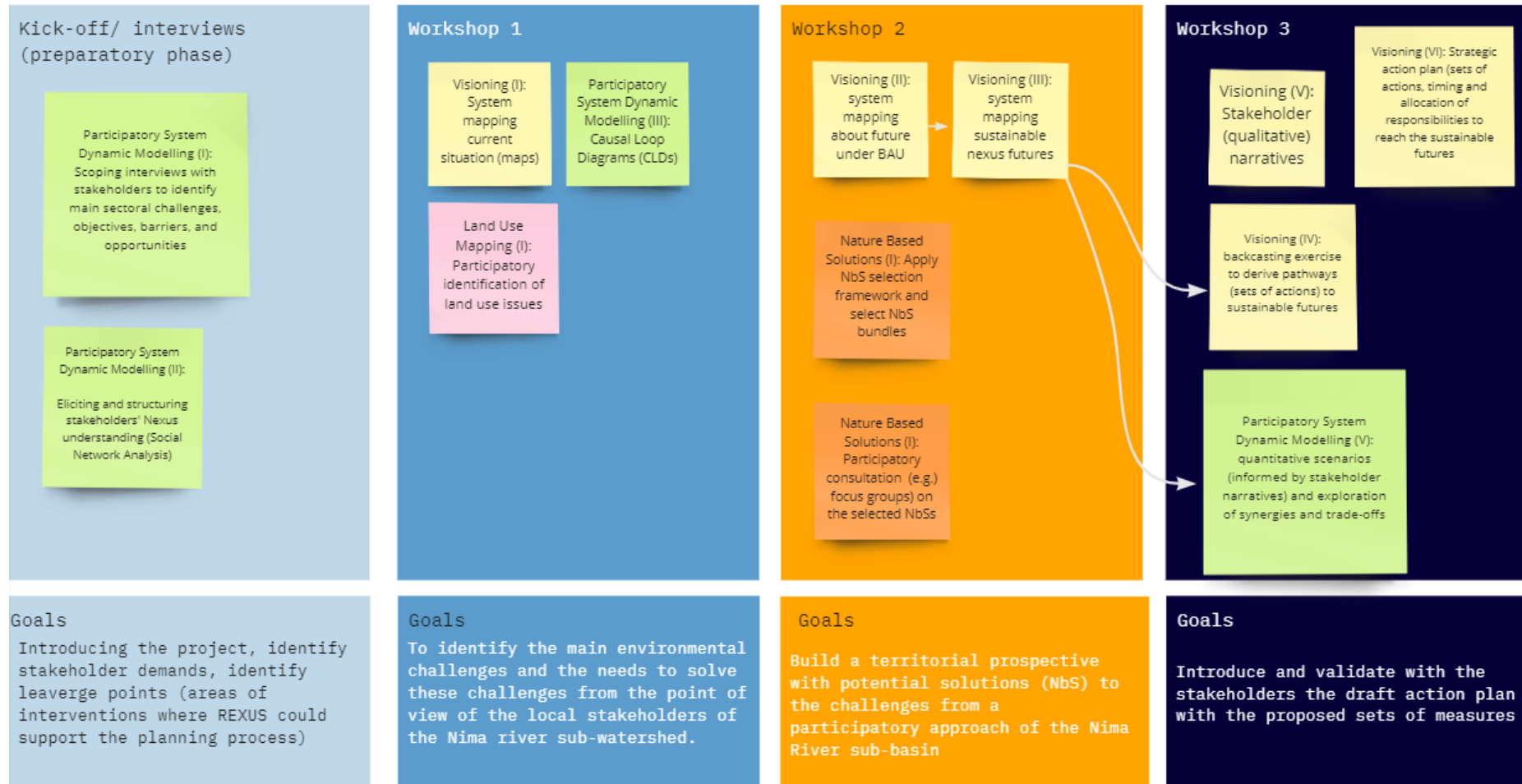


Figure 6. Planned allocation of participatory activities and key goals of the workshops of the Nima-Cauca pilot

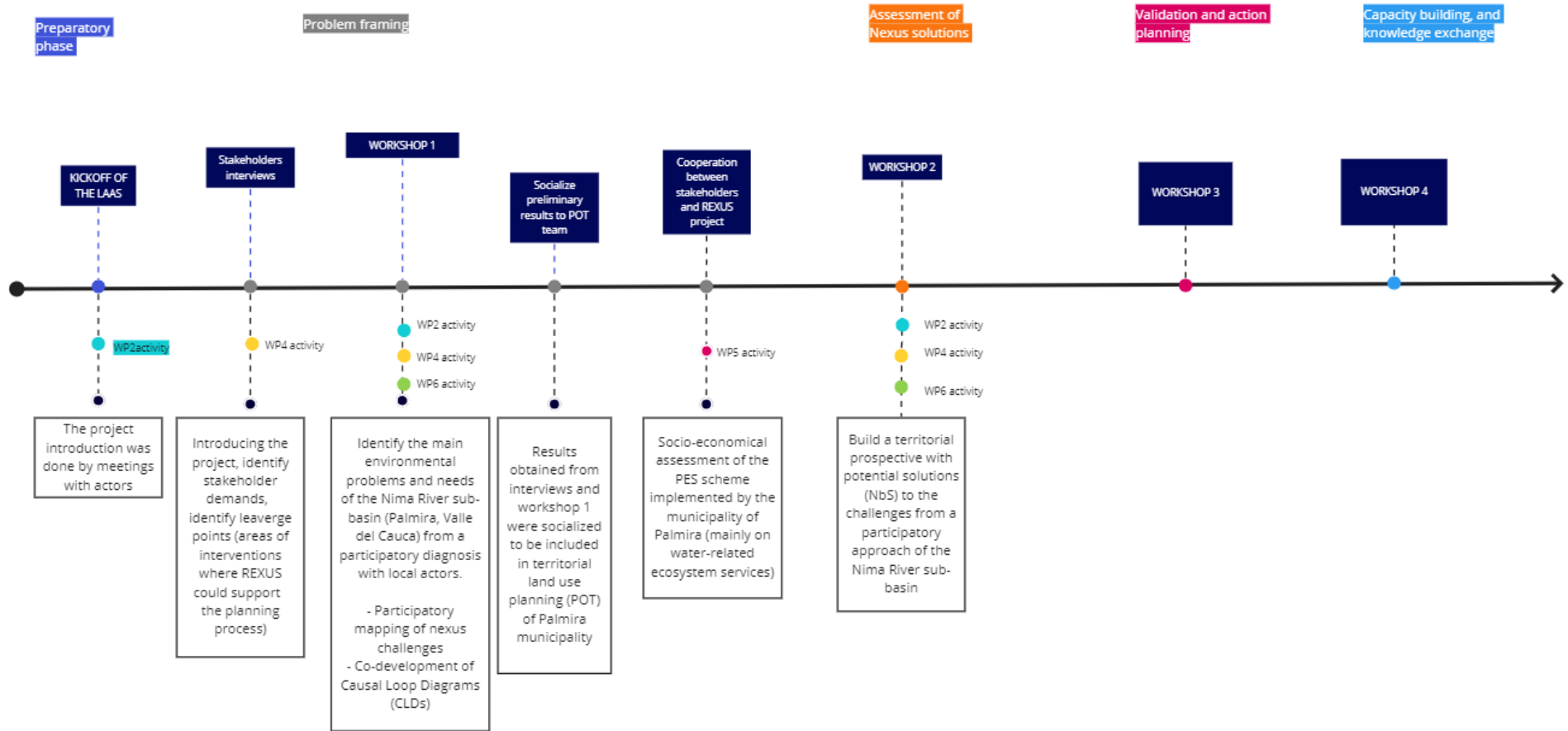


Figure 7. Tentative timeline for the workshops in the Nima-Cauca pilot

2.2.3. Implementation roadmap for the Lower Danube pilot

The REXUS pilot in the Lower Danube region (Romania) is managed by GeoEcoMar and WWF-Romania.

The National Institute for Research and Development on Marine Geology and Geo-ecology (GeoEcoMar) is a research and development institute created in 1993 under the Romanian Ministry of Education and Research coordination. GeoEcoMar represents the focal point of national excellence in research and consultancy on marine, coastal, fluvial, lacustrine geology, geophysics, and geo-ecology. Due to its technical capabilities and scientific performance achieved in a short period, the centre has become since 1996 an “Institute of National Interest”, its primary research focus being the complex study of the Danube River-Danube Delta-Black Sea macro-geosystem. An essential part is to improve the state of the Danube River ecosystem by actively participating in research projects to develop better solutions for the threats facing the macro-geosystem.

WWF-Romania is the Romanian branch of WWF (World Wildlife Fund) one of the largest environmental NGOs at the international level. WWF-Romania is actively working in the Lower Danube region for the application of Nature-based Solutions (NbS) that contribute to the restoration of ecosystem services and benefit a Nexus management approach in the area.

The overall participatory process articulates around three larger workshops representing three steps within a broader process:

- i) Identification of systemic societal challenges
- ii) Assessment of the potential for contributing to cope with the existing societal challenges through the implementation of NbS.
- iii) Agreement on a vision and an action plan for the operationalisation of NbS.

Other side participatory activities, e.g., focus group with farmers for the elicitation of key variables in farmers` behaviour and decision-making (organized for early November 2022) and a round of World Café exercises, are envisaged throughout REXUS implementation.

The implementation roadmap for the participatory activities in the Lower Danube pilot is presented in Figures 8 and 9.



Figure 8. Planned allocation of participatory activities in the workshops of the Lower Danube pilot

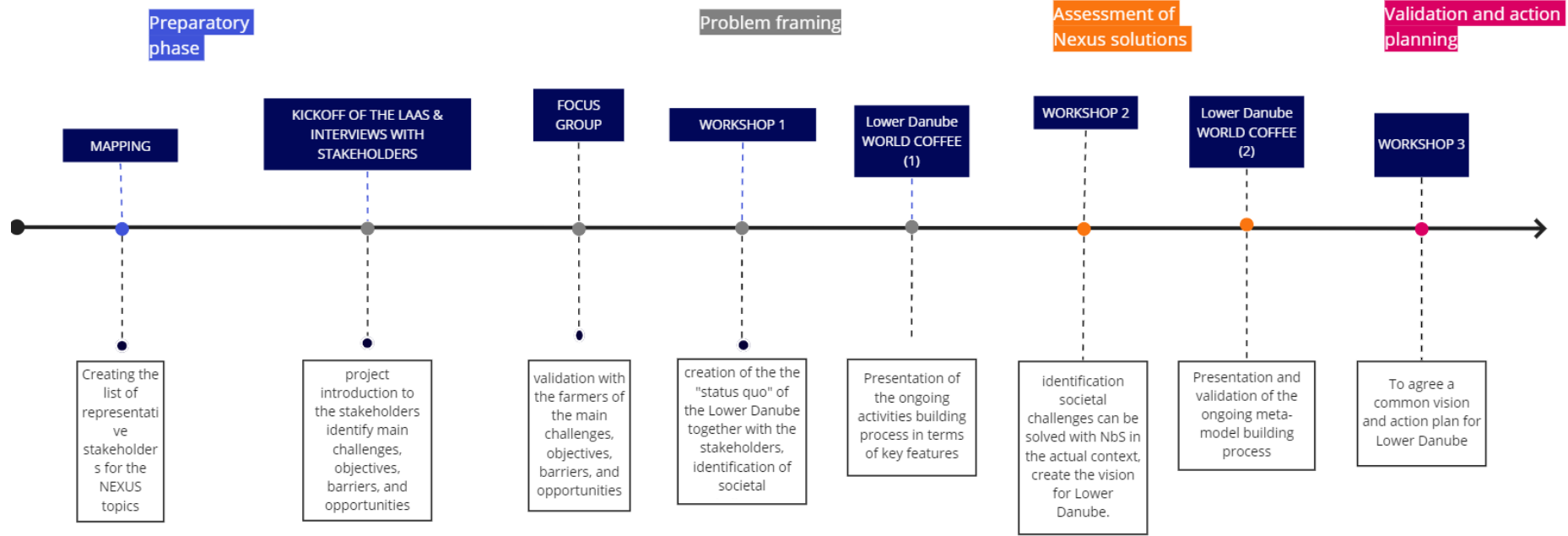


Figure 9. Tentative timeline for the workshops in the Nima-Cauca pilot

2.2.4. Implementation roadmap for the Pinios pilot

The Pinios basin pilot (Greece) is coordinated by the Soil and Water Resources Institute (SWRI). This is one of the 11 research institutes of the Hellenic Agricultural Organization-DEMETER in Greece that specializes in research on the protection and management of soil and water resources. It is involved in resource management and policy projects, focusing on environmental modelling, applying state-of-the-art technological solutions and sensors in environmental monitoring, collecting, and applying good agricultural practices, climate change impact assessment, environmental impact assessment in agriculture, and managing soil resources in agricultural areas.

In the Pinios pilot, there is a plan to organize three large in-person workshops. The first workshop has already taken place, and produced several key outcomes:

- The final confirmation and prioritization of challenges, problems, obstacles, strengths, opportunities, and indicators.
- The co-identification of cross-sectoral dependencies.
- The assessment of the institutional adaptation capacity to climate change.
- Initial data for the characterisation of the visioning exercise, to be further developed in future workshops.

Before this workshop, several preparatory activities were undertaken, in particular:

- A kick-off meeting for the pilot that enabled a presentation of the pilot, an identification of potential sectoral objectives, the presentation of stakeholders' roles, as well as the potential benefits out of their engagement.
- An intensive round of semi-structured interviews with stakeholders for characterizing sectoral challenges.

The participatory activities included another two main actions in addition to the workshops, namely:

- Focus groups, that allow for a further integration of REXUS results and outputs into the ongoing participatory process for the approval of the new River Basin Management Plan.
- REXUS cafés, devoted to dialogues and exchanges to enable that stakeholder's knowledge is well incorporated into the proposed solutions and supporting dissemination of the pilot' results and outcomes.

The implementation roadmap for the participatory activities in the Pinios pilot is presented in Figures 10, 11 and 12.



Figure 10. Participatory activities of the Pinios pilot

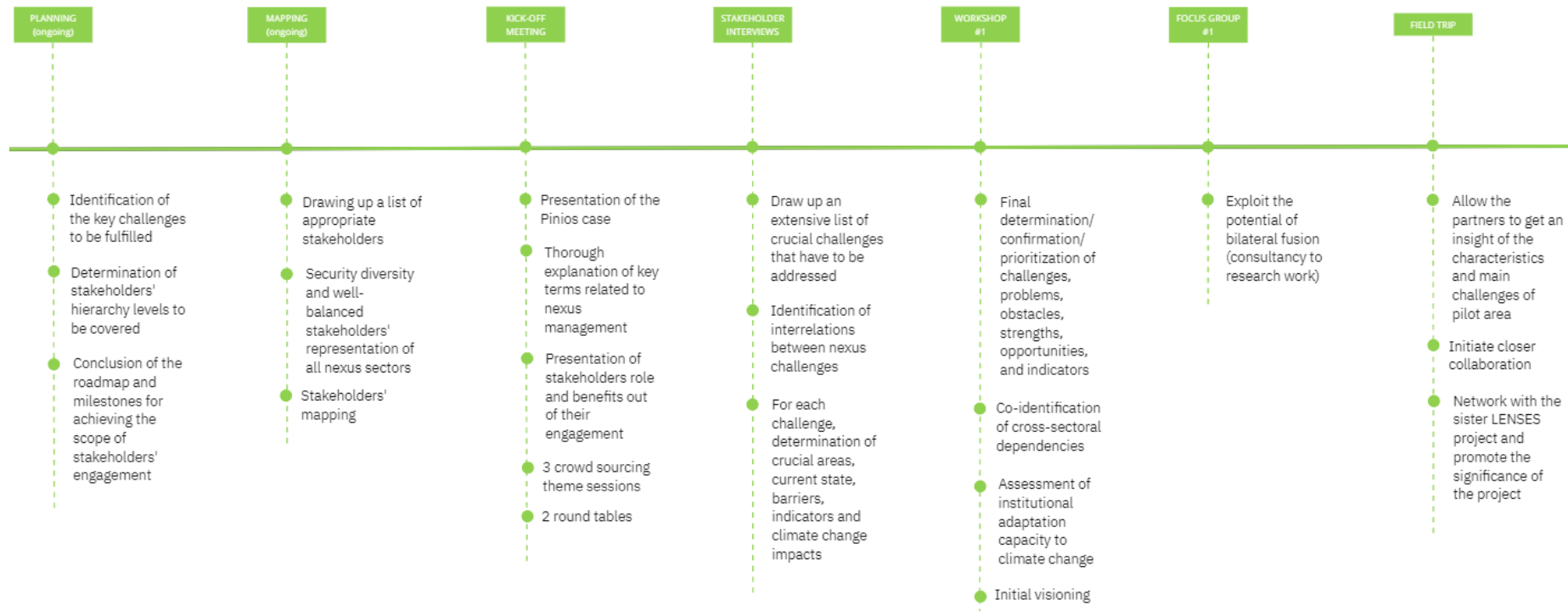


Figure 11. Timeline of participatory activities in the Pinios pilot: completed activities

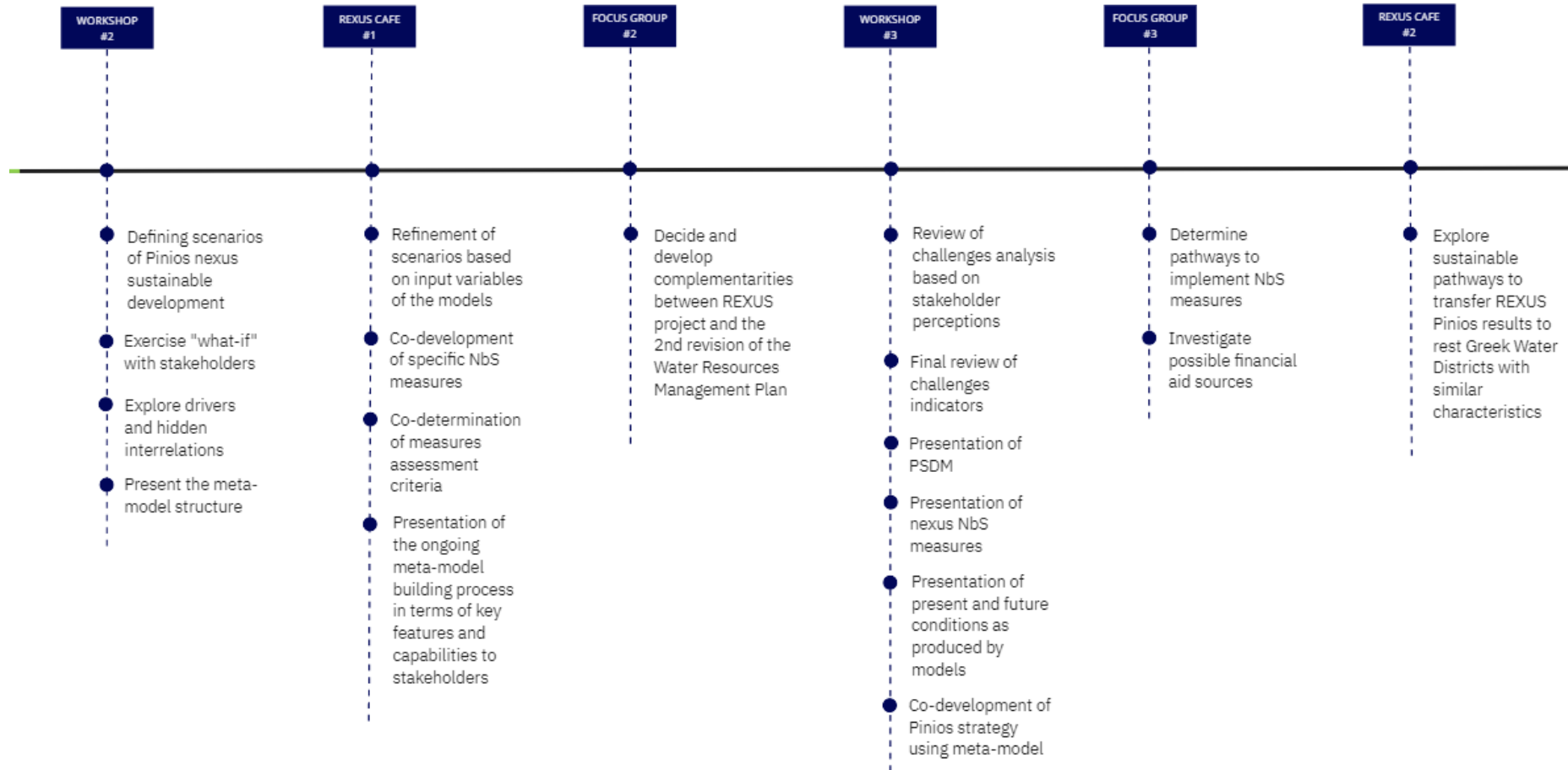


Figure 12. Timeline of participatory activities in the Pinios pilot: planned activities for the second part of REXUS

2.2.5. Implementation roadmap for the Spain pilot

The Spain pilot is being managed by Agrisat, an SME based in Albacete (Spain), founded in 2014 as a spin-off of the University of Castilla-La Mancha. Its primary focus is on developing and demonstrating the operational use of Earth Observation (EO) and webGIS for water management and farm advisory.

The pilot is organized at three different scales, i.e., local (Mancha Oriental aquifer), regional (Júcar river basin) and national (peninsular Spain).

Figures 13-16 provide the implementation roadmap for the Spain pilot. This builds on a series of structured workshops at different scales and a broad number of participatory activities with mode-specific audiences, e.g., support activities for the implementation of methodologies related to water accounting, implementation of NbS or climate risk assessment.

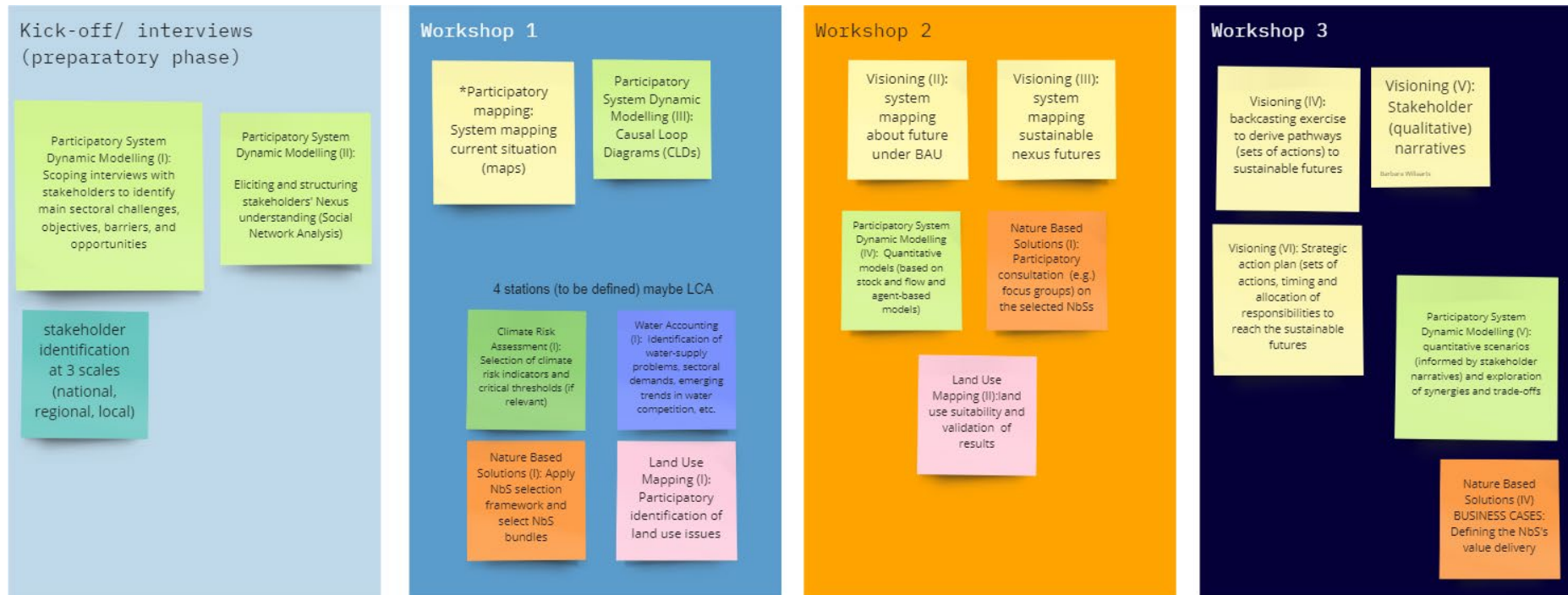


Figure 13. Planned allocation of activities for the workshops in the Spain pilot

Other type of participatory activities (e.g. meetings, interviews, focus groups, others)



Figure 14. Side participatory activities considered for the Spain pilot

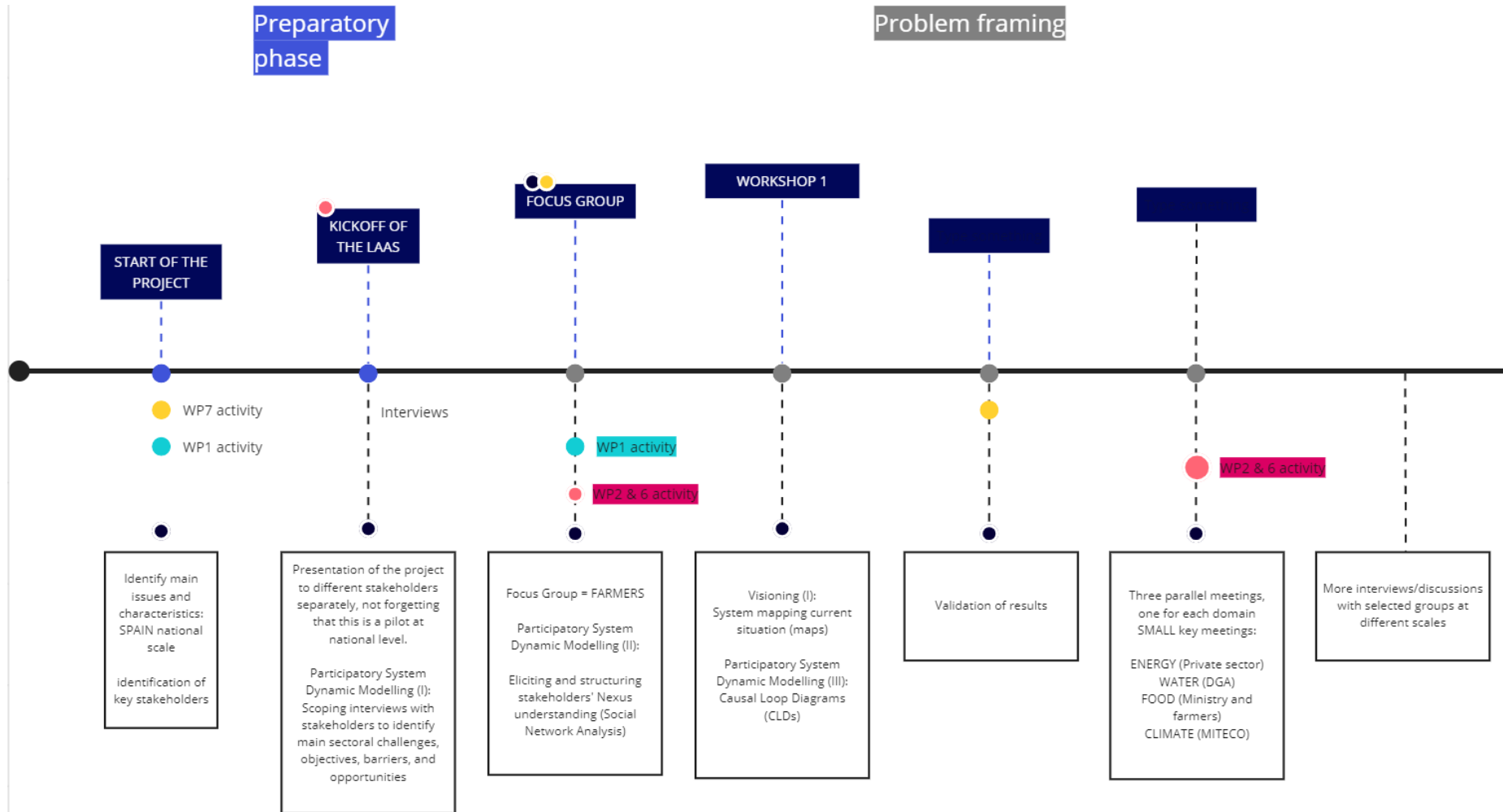


Figure 15. Timeline for participatory activities in the Spain pilot (initial stage)

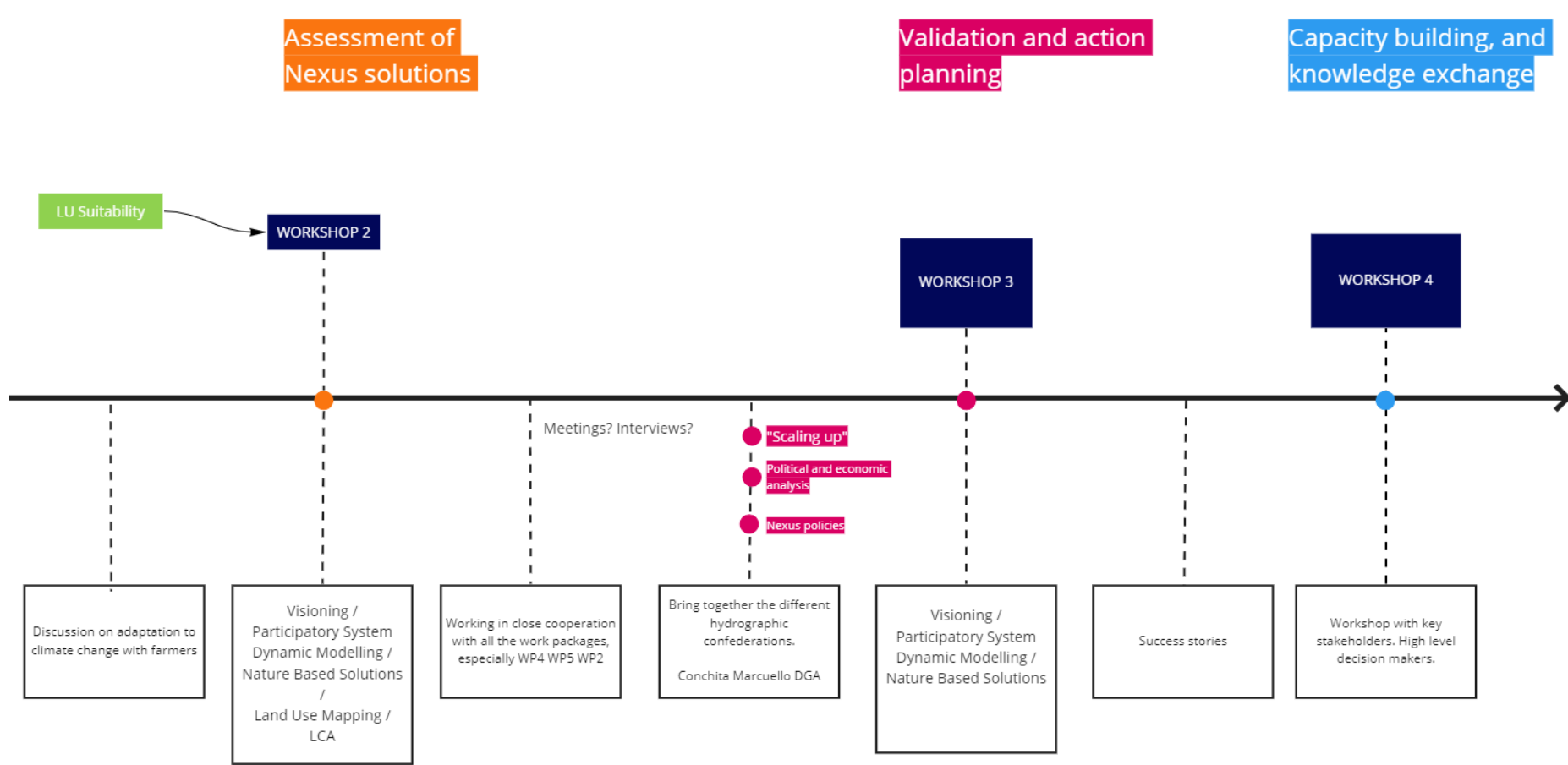


Figure 16. Timeline for participatory activities in the Spain pilot (final stage)

3. LAAs in action

This section reports the specific activities conducted by the REXUS LAAs throughout the initial 18 months of the project, involving:

- Five pilot LAAs (section 3.1)
- The project LAA (section 3.2)
- The trans-project LAA (section 3.3)

3.1. Pilot LAAs

This subsection documents the main participatory activities organised within the frame of each pilot LAA, with a focus on workshops and other activities involving the broad group of local and regional stakeholders.

3.1.1. Main participatory activities in the Isonzo/Soča pilot

LAA meeting#1a: Kick-off meeting with Italian stakeholders

The kick-off meeting was held online on the 3rd of March 2022, with the participation of 11 Italian stakeholders as well as 25 REXUS team members from different organisations. The purpose of this meeting was to provide to the first group of identified stakeholders an overview of the REXUS project, the main goals for the pilot and the proposed methodology to be applied in the Isonzo/Soča pilot area.

The meeting was held remotely (via Microsoft Teams Platform) due to pandemic restrictions. The activity started with a round of introductions of the stakeholders and included presentations about the project (the consortium, the pilots, key concepts, main objectives, etc.), the Isonzo/ Soča Pilot (why this pilot, the current issue, the goals) and the next participatory activities. Moreover, some of the technical partners introduced the planned technical developments of REXUS (UCLM as coordinator and for WP3, IRSA for WP4, ETIFOR and UNIPD for WP5).

This meeting was the first occasion for the REXUS consortium and stakeholders to meet each other and allowed to attract the interest of many stakeholders for our joint action as well as to identify some other stakeholders to be engaged into future participatory activities.

LAA meeting#1b: Kick-off meeting with Slovenian stakeholders

The kick-off meeting with Slovenian stakeholders was held online on the afternoon of the same day as Italian stakeholders, with the participation of 5 Slovenian stakeholders and 25 REXUS team members from different organisations. The purpose and agenda of the meeting were similar to the previous meeting with Italian stakeholders, although in this case all presentations and interactions produced in English.

LAA meeting#2: Workshop#1

The first project workshop for the Isonzo/Soča pilot took place on the 14th of July in Ronchi dei Legionari (Italy) from 9:15 to 13:30 CET. There was a total of 16 stakeholders and 18 REXUS team members from different organisations of the consortium and was facilitated by ETIFOR. This activity is described using a [blog format within the Rexus website](#).

The workshop was divided into three parts:

1. Initially, the REXUS team members briefly reminded the key concepts of the project and the main goals of the Isonzo/Soča Pilot, already presented in the previous kick off meeting.

2. In the second part, the stakeholders were introduced, in a dynamic and interactive way, to the scientific tools and models used in REXUS for supporting the operationalisation of the WEFE Nexus. This activity was configured as a Pro-action Cafè Session with four thematic posts namely:
 - Station 1: Water accounting and land use and suitability
 - Station 2: Energy and carbon footprints
 - Station 3: Climate projections and indicators
 - Station: Ecosystem services and nature-based solutions

Each station was set up with a thematic poster near a table equipped with leaflets in three languages. Exchanges among stakeholders took place around each table led by a 'host' from REXUS consortium.

3. The final activity was a participatory mapping exercise aimed to engage actively the Slovenian and Italian stakeholders in developing a map showing the main elements affecting the Nexus sustainable management and their relationships. In addition, the activity included the co-definition of the non-linear cause-effects chains affecting the Nexus management (Causal Loop Diagram, in short CLD). In order to perform this mapping activity, stakeholders were divided in three tables according to sectoral interactions, with the water as a common thread (i.e., water for energy, water for environment, water for agriculture).

Led by a moderator and a note keeper from the REXUS team, the stakeholders worked together in the definition and mapping of the main resources, socioeconomic activities and pressures, and then collaborated in the definition of the CLD (see Figure 17).

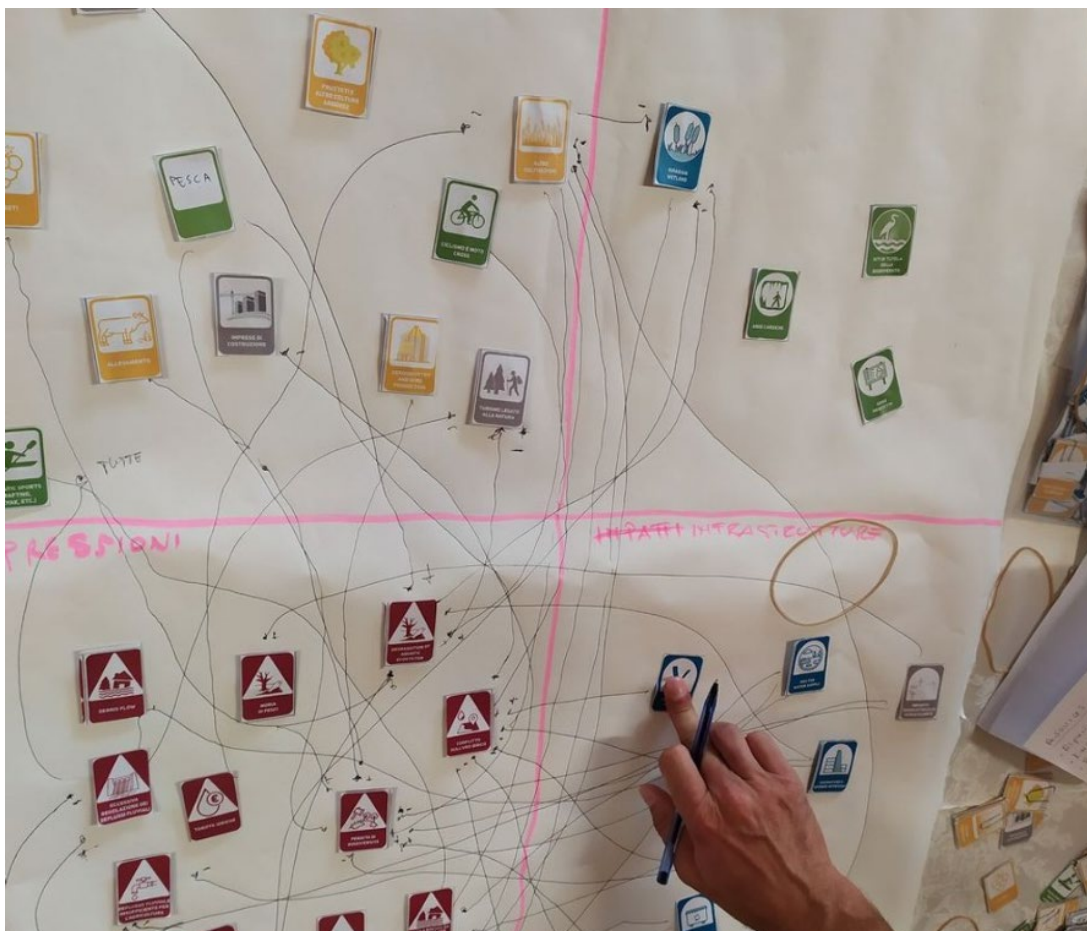


Figure 17. Process of elaboration of a Causal Loop Diagram

The workshop ended with drawing the conclusion of the various activities (i.e., stakeholders agreeing on the utility of the approach to gain a deeper understanding of the dynamics (social, economic, environmental, political, technical) of the territory), and the next steps for the next workshops.

3.1.2. Main participatory activities in the Lower Danube pilot

LAA meeting#1: Initial round of interviews with stakeholders

As an initial activity, a first round of semi-structured interviews was carried out in the pilot by GeoEcoMar and CNR-IRSA staff. The team took advantage of this activity to present the project to the main stakeholders in the area since the pandemic situation was still perceived as a strong constraint for the organisation of a face-to-face meeting. The interviews allowed to collect stakeholder' knowledge regarding: i) the most important ecosystem services for the Nexus security; ii) the key ecological resources and ecological processes needed to produce these ecosystem services; iii) the key actors interested/involved in their production and provision; iv) the infrastructures needed for the actual use of the ecosystem services; and v) the main barriers hampering the processes producing these ecosystem services.

LAA meeting#2: Workshop#1

This workshop will happen on November 1st, 2022, and therefore is not reported in this deliverable. The agenda for the event is now fully closed and covers four main elements:

- i) Introductory phase, including registration and introduction of the participants (i.e., through a round circle activity), a welcome speech, and short presentations for introducing the REXUS project and the visioning approach.
- ii) A Pro-action Café like the activity organised in the Isonzo/Soča pilot (see section 3.1.1.) and setting up posters related to 1) water accounting, land use and suitability; 2) energy and carbon footprint; 3) climate projections and indicators; and 4) nature-based solutions,
- iii) A participatory mapping" activity of the Lower Danube pilot area that aims to help identify the main systemic Nexus challenges within the area and to elaborate Causal Loop Diagrams establishing linkages between resources providing ecosystem services, socioeconomic activities, and main pressures and impacts.
- iv) A conclusion phase allowing to recap on the main findings and results from the workshop and to present the next planned participatory activities.

3.1.3. Main participatory activities in the Nima-Cauca pilot

LAA meeting#1: Initial round of interviews with stakeholders

This activity took place between February and March 2022 and consisted of a series of in-depth interviews with a total of 10 stakeholders, selected from the stakeholder mapping exercise. It is in depth described as part of the news section [of the Rexus website](#).

The main objective of this activity was introducing the project to key stakeholders, as well as identifying their main pain and leverage points, in which REXUS could support them in their ongoing actions. For the Nima pilot area, one key aspect was identifying areas of interventions where REXUS could influence the new territorial plan for the Palmira region.

These interviews were held with stakeholders from forest plantation companies, the sugarcane industry, rural aqueducts planners, the farming sector, rural communities' councils, environmental organisations, and the energy sector (See Figure 18). Questions covered: i) the most important Ecosystem Services (ES) for the security of the Nexus and local development, ii) the resources and ecological processes

necessary to secure the delivery of ES, iii) the key actors interested or involved in the production and provision of ES, iv) the necessary infrastructures in place for the use of ES, and v) the main barriers that hinder the delivery and supply of ES.



Figure 18. Stakeholder interviews in the Nima-Cauca pilot. Source: CIAT

The results from these interviews provided an overview of the situation of Nima river and helped realise the main challenges upstream and downstream.

LAA meeting#2: Workshop#1

The information collected thus far was used to design the **first stakeholders' workshop**. WP2 (ICA), WP4 (IRSA, CNR) and WP6 (AGRISAT) supported CIAT in such a design process. This is reported in the [REXUS web page using a blog format](#).

The meeting took place on August 3rd in the city of Palmira (Colombia) and was attended by 19 stakeholders. The main goal of the workshop was to identify the main nexus challenges and needs to address these challenges, from the point of view of the stakeholders. The methods followed were outlined by WP2 and WP4 and consisted of a two-step process. First, the facilitators conducted the participatory mapping of nexus challenges, and secondly, they assisted participants in the co-development of Causal Loop Diagrams (CLDs). The activity was managed by CIAT with direct support from AGRISAT.

During the first part of the workshop, stakeholders were divided into two groups and were asked to map the main economic activities, technologies, and pressures located in upstream and downstream areas using a set of cards (see Figure 19). At the same time, the facilitators summarised in two tables the most important results separately for upstream and downstream areas. These results were socialised right after the workshop with participants, as means to ensure they were included in the Territorial Land Use Planning (POT) of the municipality of Palmira.



Figure 19. Stakeholders discussing in working groups sectoral challenges in the Nima basin. Source: CIAT.

The second part of the activity focused on the elaboration and validation of Causal Loop Diagrams that elicit the connections between the territorial elements related to the Nexus challenges in the pilot area, i.e., key resources, main socioeconomic activities, pressures to the availability and accessibility of ecosystem services and existing impacts.

3.2.4 Main participatory activities in Pinios pilot

The work in the Pinios pilot kicked off in September 2021 with several **scoping interviews** undertaken by the SWRI team and supported by REXUS partners. The purpose of this first batch of interviews was to get an understanding from the sectoral experts on what are “hot topics” in the space of WFEC. Also, which indicators would be most useful to monitor and evaluate the progress of the identified problems. A preliminary understanding of the underlying causes or drivers of these sectoral challenges was also identified. The results of the scoping interviews together with a **desktop baseline assessment** (see D6.1) conducted by the SWRI team of the basin across its different physical and socio-institutional features helped to come up with 1) a preliminary list of challenges, drivers, and indicators, 2) a preliminary mapping of relevant stakeholders, and 3) a preliminary causal relationship among challenges, sectors, and drivers.

Challenges were clustered along six main sectors/domains: water, energy, agriculture, ecosystems, governance, and climate change related. For each cluster, different types of drivers were identified: political, infrastructural, legal, education/training/information level, and policy related.

LAA meeting#1: Kick-off meeting for the Pinios LAA

Upon the finalisation of the stakeholder mapping, the SRWI team organised a **kick-off meeting**. This meeting took place on 30 November 2021 virtually and was attended by 38 stakeholders. The main goal was to introduce the project by the REXUS team (i.e., SWRI team, but also the project coordinator and other consortium partners) to the extended community of stakeholders. Likewise, an important objective of this meeting was to constitute and present the core stakeholder group and trigger a first high level discussion on the key nexus challenges in Pinios. This last activity was carried out by presenting in the first place the results of the scoping work (results of the interviews and baseline assessment) and various participatory exercises (using online tools like Mentimeter and two round tables). This meeting was also used to identify stakeholder demands and expectations about the project i.e., in which way this project can support the generation of knowledge and tools to address most pressing problems.¹

Following the kick-off meeting the SWRI team and REXUS partners continued their activities processing the results of the workshop and conducting further analytical work. Following his line, the SWRI team conducted another 19 additional interviews for collecting additional information related to the main sectoral challenges within the basin (e.g., by identifying key resources, main actors related to the provision of ecosystem services, barriers hampering the potential provision of these ecosystem services and relevant infrastructures required).

LAA meeting#2: Workshop#1

This compendium of information was used to design the first **technical workshop**. This meeting took place on May 17th in Larissa (Greece) and was attended by 30 stakeholders. This activity is also reported within the [REXUS website using a blog format](#).

The goals of the meeting included a validation and prioritization of the sectoral challenges identified in earlier stages, in-depth assessment of the prioritized challenges by identifying the barriers, opportunities and potential solutions to be explored, and a collaborative exercise to explore cross-sectoral dependencies between challenges and sectors. The workshop was structured into three main sessions. To start the SWRI team and REXUS partners presented an update of the activities carried out since the beginning of the project and some preliminary results emerging from the analytical work and earlier consultations. This was followed by a second session, where stakeholders were grouped into working groups to dive further into the validation, enrichment, and prioritization of nexus challenges. Here, stakeholders worked with the list of challenges identified in earlier phases, and supporting information (e.g., basin maps, sector statistics, etc.) to facilitate the discussions. Working groups were requested to select which challenges they considered most relevant for each of the six sectors identified (water, energy, agriculture, ecosystems, governance, and climate change), and enrich the description of each challenge by providing detailed information on potential drivers, barriers, risks, strengths, and opportunities.

¹ For further details, please refer to the meeting report “Stakeholders’ mapping and LAA kick off in Pinios pilot, Greece”, which is available in the REXUS project website.



Figure 20. Examples of activities conducted in the first technical workshop in the Pinios pilot. Source: SWRI

During the second part of the working group session, stakeholders were requested to draw all the interrelations between drivers, challenges, needs and impacts that exist in the Pinios pilot, so as to develop a Causal Loop Diagram (CLD). This exercise proved to be extremely challenging but also extremely relevant to gain collective understanding among stakeholders and the research team of the level of complexity and sectoral interlinkages that exists in the basin.

The next planned activities include the organisation of a second workshop to co-develop future visions that can be used as inputs to develop quantitative scenarios.

3.1.5. Main participatory activities in the Spain pilot

Since the beginning of the project (e.g., virtual kick-off meeting), stakeholders from the Júcar river basin have been engaged in the project activities. The first workshop with stakeholders in this basin is planned for the end of 2022. Stakeholders at the national level (e.g., ministries of agriculture and environment) have also been approached for future upscaling activities from the regional to the country level.

In October 2022, another participatory activity was organised at the local level (i.e., Mancha Oriental aquifer within the Júcar basin) as preliminary action. This was a focus group with farmers (mostly irrigators) co-organised by AgriSat and UCLM, with the close support of the Central Board of Irrigation of Mancha Oriental (Junta Central de Regantes Mancha Oriental – JCRMO <https://www.jcrmo.org/>). It was held at the premises of the Provincial Government with a total of 24 participants (Figure 21). During the meeting, the current agriculture situation was discussed, especially with the rising energy cost and with the request that the policymakers take decisions from the knowledge. The discussion was organised

around three main topics, namely: i) Nexus challenges; ii) “Farmer’s decisions”; and iii) “Role of the socio-institutional-political contexts in influencing their decision”.



Figure 21. Focus group with farmers from Mancha Oriental aquifer

3.2. Project level LAA

The project LAA provides a tool to facilitate knowledge exchange across the REXUS pilots (i.e., with a focus on mutual learning) and between the REXUS pilots and the technical work packages (with a focus on cross-fertilization).

In terms of mutual learning, pilots can exchange their experiences regarding the identification of Nexus challenges and the operationalisation of potential solutions adopting a Nexus approach, while comparing these innovations to current solutions used to deal with similar problems from a sectoral perspective. One relevant aspect from these interactions is to identify drivers, constraints, and barriers for the adoption of these systemic solutions. This work helps to highlight key transferability issues for the successful uptake of the solutions in a different context. Key aspects to be addressed include reflecting on the outcomes of the local demonstration: what worked well (key drivers), what were the issues of implementation (main barriers and drawbacks), what could have been done differently, and what would be considered for replication in another setting.

In terms of cross-fertilization, the project LAA provides a space for discussion around the transversal topics addressed by REXUS, where technical partners and REXUS pilots can meet.

The project LAA is facilitated by ICA (as leader of WP2). In general, the project LAA are organised as virtual meetings although when possible, these are organised in coincidence with other project meetings, e.g. General Assembly or WP technical meetings, taking advantage of the organization of a larger meeting where many of the project LAA members are also attending. The project LAA is expected to convene every two or three months throughout the project.

This subsection summarises the project LAA activities undertaken during the initial 18 months of REXUS.

Project LAA meeting#1

This initial meeting took place in early December 2021 with the participation of all pilot leaders.

As a first step, the main aspects regarding the functioning of this LAA (i.e., what is the project LAA, who will participate in the meetings, what are the potential topics to be addressed, and how often, when and for how long will the project LAA convene) were presented, discussed and agreed between the pilot leaders.

As a second step, ICA produced a presentation on tips and key aspects to be considered and addressed for the organisation of a successful workshop.

Finally, a participatory activity was organised using the Jamboard tool to brainstorm about potential topics for next project LAA meetings. Results are shown in Figure 22.



Figure 22. Topics for next project LAA sessions identified in the initial project LAA meeting

Project LAA meeting#2

The second project LAA meeting took place in mid-February 2022. As a central topic, SWRI presented the other pilots the design and results from the first technical workshop in the Pinios pilot, including the presentation of lessons learnt and tips to improve the organisation. As a second point, ICA presented

the generic structure for the realisation of a generic roadmap of participatory activities, where technical workshops and other dissemination workshops involving the broad group of stakeholders are assimilated to the Regional Meetings. Finally, the initial version of the guidelines for stakeholder engagement were presented, and questions related to the suggested approach for stakeholder mapping were answered back.

Project LAA meeting#3

The third project LAA was a training session organised as part of the first REXUS Plenary Meeting (Albacete, April 29th 2022). The training was a face-to-face session where the pilot teams and some other partners could learn about the implementation of the participatory mapping approach developed by ICA, which has been later integrated with the work performed by IRSA for the development of participatory system dynamics models.

As training materials we used A0 plotted maps (using the Lower Danube pilot area as an example) and a set of cards detailing resources, infrastructures, socioeconomic activities, pressures and impacts for the main Nexus domains.

- Step 1: Mapping resources, activities and infrastructure
- Step 2: Mapping pressures and impacts
- Step 3: Identifying main challenges, risks and opportunities
- Step 4: Participatory development of Causal Loop Diagrams

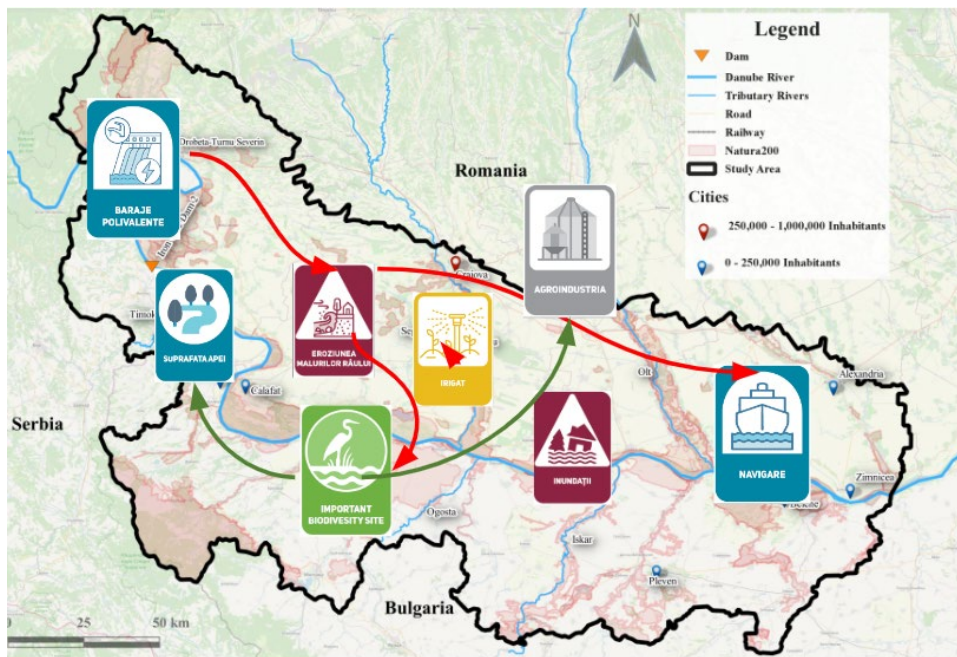


Figure 23. Example of materials created for the training on participatory mapping

The session concluded with a feedback collection exercise, which was later completed with inputs from the organising team and distributed to the participants. This approach is being applied in most of the REXUS pilots.

Project LAA meeting#4

The fourth project LAA was a virtual meeting organised in early June 2022.

The central topic was the exchange about the REXUS Learning Platform. The concept and key aims of the platform were introduced and then a real online mock-up with an initial structure although with non-real content was presented to the pilot teams. It was agreed that a short capacity building program was going to be organised by ICA to allow pilot teams to populate the platform with actual content and take the control over the sections describing the progress of the participatory activities within each pilot.

As part of this session, a recap of the progress in each pilot was shared among the participants with a clear focus on the organisation of workshops and the identification of barriers and constraints for the success of these activities.

Project LAA meeting#5

This activity has taken place in two separate online meetings in October 2022 where pilot leaders and WP2 and WP6 partners were interviewed and shared experiences and insights about the actual progress of the participatory activities in REXUS. The materials produced in these conversations are a core input for the creation of e-dialogues as part of the outcomes from WP7 on dissemination and communication.

Next project LAA activities will take place in the next General Assembly meeting (Craiova, November 2022) where the main topics will be the realisation of visioning exercises within the second round of workshops and the identification of synergies between the participatory mapping and the framework for selection of applicable nature-based solutions.

3.3. Trans-project LAA

The trans-project LAA aims to organise some knowledge exchange and mutual learning activities between REXUS pilots and other projects in the final year of REXUS, once the progress in our pilots is consolidated.

So far, WP2 has been in contact with other related projects (i.e., LENSES and GoNEXUS) to present this idea and start planning ahead some potential networking and clustering activities.

In parallel to this, REXUS has entered into the Nexus Cluster, a group of independent research initiatives who team up for increased and more impacting communication and dissemination of the Nexus. More recently, some of the key partners in this initiative have started the NEXUS NET project, funded as a COST action. Some members of the ICA team for REXUS are actively involved in this new initiative, which will allow us to explore some options to organise the planned mutual learning activities with other Nexus actions.

4. Final remarks

The REXUS LAAs are proving to be an effective approach to foster a participatory approach in the analysis, co-design, and co-development of systemic Nexus solutions. Stakeholders in all pilots are enthusiastically participating and embracing into REXUS activities, and the interaction and exchange between pilots is regular and active.

Although WP2 is coordinating the LAA activities, this is done in close cooperation with WP6 on 'Pilot implementation' (e.g., through regular weekly meetings and the joint elaboration of the implementation roadmaps) and WP7 on 'Pathways to impact' (e.g., joint activities to amplify dissemination of the progress of the pilots). Moreover, the use of the LAA approach is proving fundamental for the identification of synergies between WP2 and other WPs. As examples, WP2 and WP4 have started

cooperating to combine the participatory mapping approach with the methodology for the development of the system dynamics models. Moreover, a similar collaboration is now being envisaged between WP2 and WP5 in relation to the selection of NbS by the pilots.

Therefore, the activity of the LAAs at their different levels is acting as a catalyser for increasing the cohesion of the overall REXUS concept as well as enabling the direct involvement of local and regional actors, thus closely supporting our core aim of moving from Nexus thinking to Nexus Doing.

Nevertheless, there is room for improvement, for example, regarding gender issues. REXUS commits with gender equality (see article 33.1 on the Grant Agreement) and aspires to reach gender balance at all levels regarding personnel. Although internally this promise has been kept, and REXUS beneficiaries promote equal opportunities in the implementation of the action, it is much harder to ensure this balance externally, for example, when organizing participatory activities with stakeholders (see Figure 24). Other cases are those in which REXUS is dealing with socio-economic indicators in Nexus systems, for example, when dealing with different types of ES beneficiaries or validating NbS business cases. In this type of activities, REXUS teams are considering diverse demographic and socio-economic groups, and their key features (age, gender, income) are explicitly addressed.

LAAs approach aims to promote broad gender-balanced stakeholder participation, as means to challenge existing mind sets and power structures which determine access, use, and management of ES. Nevertheless, it has been more important to REXUS pilot leaders to consider institutions interviewed or invited to workshops, rather than the gender of the representant who attended. There have been several activities in which gender-balance stakeholder participation was not met; the most extreme example was a farmer’s focus group in which no female farmer was present. Nevertheless, we do not consider it a failure, as the focus so far in all pilot areas has been to facilitate a dialogue in which everyone could speak freely and showed respect to each other’s point of view, rather than, if, the person taking the space was a man or a woman. Overall, the LAAs will activate stakeholders’ networks to avoid poor sectoral coordination and institutional fragmentation, but also, the LAAs aspire to serve as a platform for previously unheard voices to be expressed thus promoting inclusion of marginalized stakeholder groups.

	Women	Total
Pinios		
Kick-off meeting	13	33
Interviews	10	46
Workshop #1	9	27
River Basin Management Plan Focus Group #1	7	12
Field trip	2	13
Lower Danube		
Interviews	8	22
Isonzo-Soča		
Italian kick-off meeting	13	36

Slovenian kick-off meeting	10	29
Workshop #1	9	32
Nima		
Interviews	6	10
Workshop #1	10	19
Spain		
Local-scale meeting	3	7
Regional-scale meeting	4	7
National-scale meeting	3	5
Focus group with local farmers	6	24

Figure 24. Gender balance in REXUS' participatory activities

Thus, to ensure that, in the future, pilot leaders consider these complex issues, WP2 will inform them to keep records of the gender and power position of participants in every stakeholder interaction (for example, by providing them a checklist or a questionnaire). Afterwards, this information will be shared with the task 1.3.5 "Sex and Gender Analysis" as means to perform a realistic assessment on interventions, when exploring different nexus options and scenarios, and their differentiated impacts on gender. These methods will be continuously improved and will be extended to account for diversity.

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