



Sustainable Historic Environments  
hoListic reconstruction through  
Technological Enhancement &  
community-based Resilience



**Extract of D4.2 – Strategy for early recovery roadmap  
Galicia Roadmap**

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## Glossary

Acronym	Full name
BBB	Build Back Better
CA	Consortium Agreement
CCA	Climate Change Adaptation
CH	Cultural Heritage
CNH	Cultural and Natural Heritage
CNHM	Cultural and Natural Heritage Management
DRR	Disaster Risk Reduction
DRM	Disaster Risk Management
DoA	Description of Action
HA	Historic Area
LDRM	Local Disaster Recovery Manager
EC	European Commission
EOP	Emergency Operations Plan
NH	Natural Heritage
OL	Open Lab
PDRP	Pre-Disaster Recovery Plan/Planning
PDRR	Pre-Disaster Recovery Roadmap
PRT	Planning Resilience Team
SP	Spatial Planning
WHL	UNESCO World Heritage List
WP	Work Package

## 1 Applying the SHELTER Pre-Disaster Recovery Roadmap methodology to the five Open Labs

The SHELTER Pre-Disaster Recovery Roadmap (PDRR) methodology is tested and applied to each OLs. Five tailored early recovery Roadmaps have been drafted, taking into account: i) the activities the case studies have already performed prior to or regardless of SHELTER project. The inputs that OLs provided to other Tasks (e.g., the policy instruments already in place mapped in Task 4.2) during the project implementation were used; ii) the outputs and outcomes generated so far from the project.

The main purpose of this activity has been to understand which steps of the Roadmap have been already completed and what else should be done by OLs to build their own early recovery Roadmap. To achieve that, the following process has been applied:

- UNIBO drafted the five tailored Roadmaps based on the information gathered from the outputs and outcomes generated so far from the project and the inputs that OLs provided to other Tasks. Miro<sup>1</sup> has been used as a collaborative tool to show the Roadmap and to collect feedback from OLs.
- bilateral remote meetings have been scheduled in early May 2022 with each OL, involving OL coordinators and OL technical partners. During these meetings, the colleagues involved were asked to provide their feedback and comments on the PDRR, to check the activities foreseen by the Roadmap, the checklist and the five phases in detail. Each OL coordinator and OL technical partner were also asked to double-check if they agreed on the inputs coming from SHELTER Tasks and to inform about other possible inputs not considered yet, to better understand which activities have been completed by the OL and which are still to be implemented;
- UNIBO finalized the changes and comments provided by OLs.

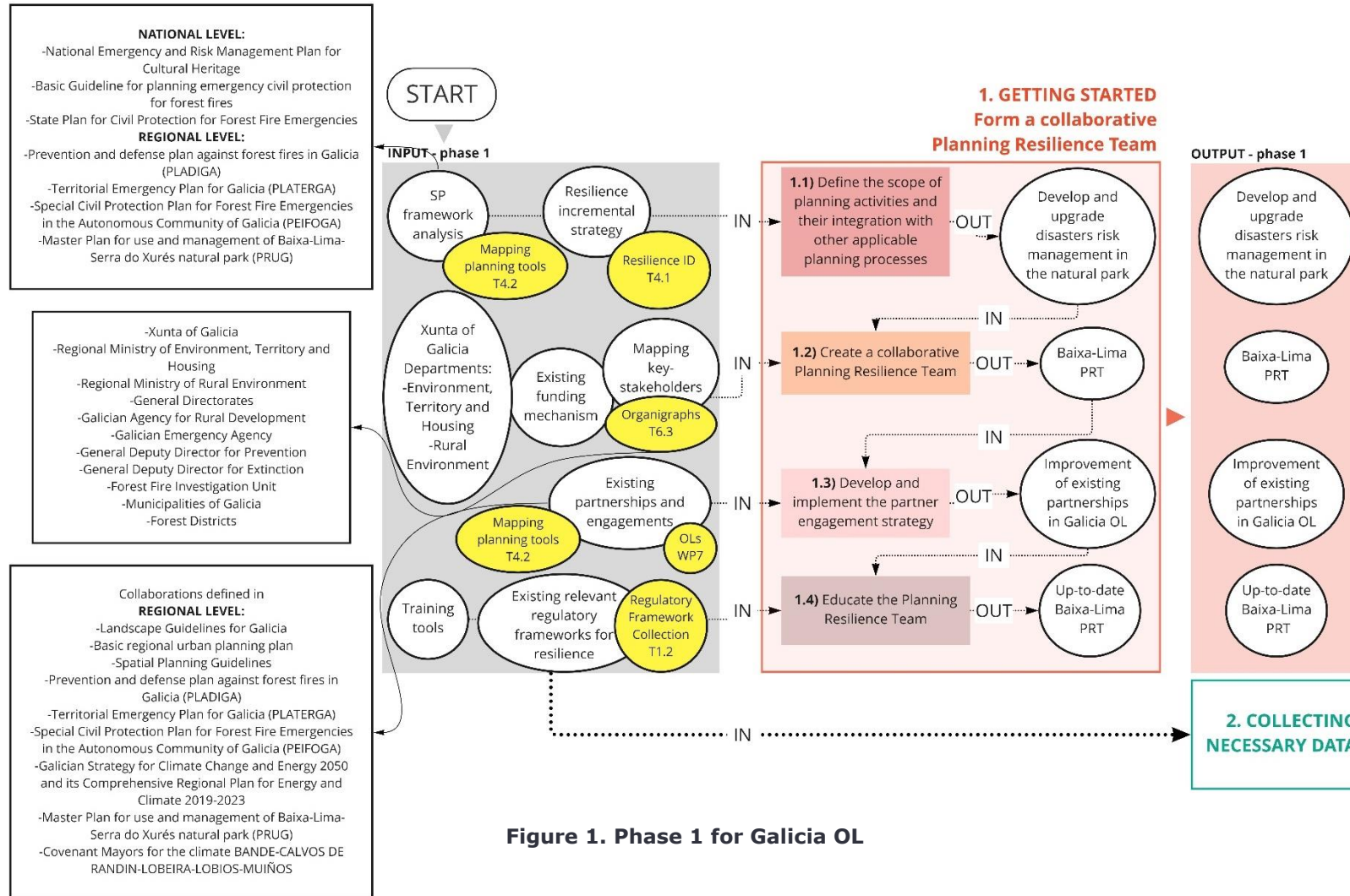
### 1.1 Galicia Open Lab

The Galicia OL is a cross-border OL, located in the Natural Park of Baixa Lima-Serra Do Xurés in Spain. This territory is subject to significant pressure due to the incidence of forest fires that take place. SHELTER particularly focuses on providing tools to increase the resilience of both its natural and historic built environment.

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<sup>1</sup> Miro | Online Whiteboard for Visual Collaboration, available at: <https://miro.com/>

### 1.1.1 PHASE 1 – GETTING STARTED: Form a Collaborative Planning Resilience Team



**Activity 1.1** - Define the scope of planning activities and their integration with other applicable planning processes (Figure 73)

In order to better delineate the general scope of the PDRP activities, existing recovery, mitigation and adaptation plans and strategies have to be considered.

The planning tools, already collected in Task 4.2 *Definition of protocols, plans and guidelines for CCA/DRM and integration within planning policies*, that can be relevant in this step are the followings (Table 20).

LEVEL	SP TOOL
National level	National Emergency and Risk Management Plan for Cultural Heritage
	Basic Guideline for planning emergency civil protection for forest fires
	State Plan for Civil Protection for Forest Fire Emergencies
Regional level	Prevention and defense plan against forest fires in Galicia (PLADIGA)
	Territorial Emergency Plan for Galicia (PLATERGA)
	Special Civil Protection Plan for Forest Fire Emergencies in the Autonomous Community of Galicia (PEIFOGA)
	Master Plan for use and management of Baixa-Lima- Serra do Xurés natural park (PRUG)

**Table 1. Relevant SP tools for Galicia OL for Activity 1.1**

From the analysis of the SP framework, it can be defined that the scope of the PDR planning for Galicia OL is to develop and upgrade the DRM in the Natural Park of Baixa Lima-Serra Do Xurés, especially against wildfires.



**Figure 2. Key-activity 1.1 for Galicia OL**

**Activity 1.2** - Create a collaborative Planning Resilience Team (Figure 74)

According to the PDRR, the PRT should be formed by individuals with various skills and representatives of the whole community.

The Xunta of Galicia, and its Departments of Environment, Territory and Housing and Rural Environment can be considered as the starting point to form the team which leads the recovery planning process. According to the Organigraph, developed in Task 6.3, there are several political and technical entities that offer their contribution to the process:

- Regional Ministry of Environment, Territory and Housing
- Regional Ministry of Rural Environment
- General Directorates
- Galician Agency for Rural Development
- Galician Emergency Agency
- General Deputy Director for Prevention
- General Deputy Director for Extinction
- Forest Fire Investigation Unit
- Municipalities of Galicia
- Forest Districts



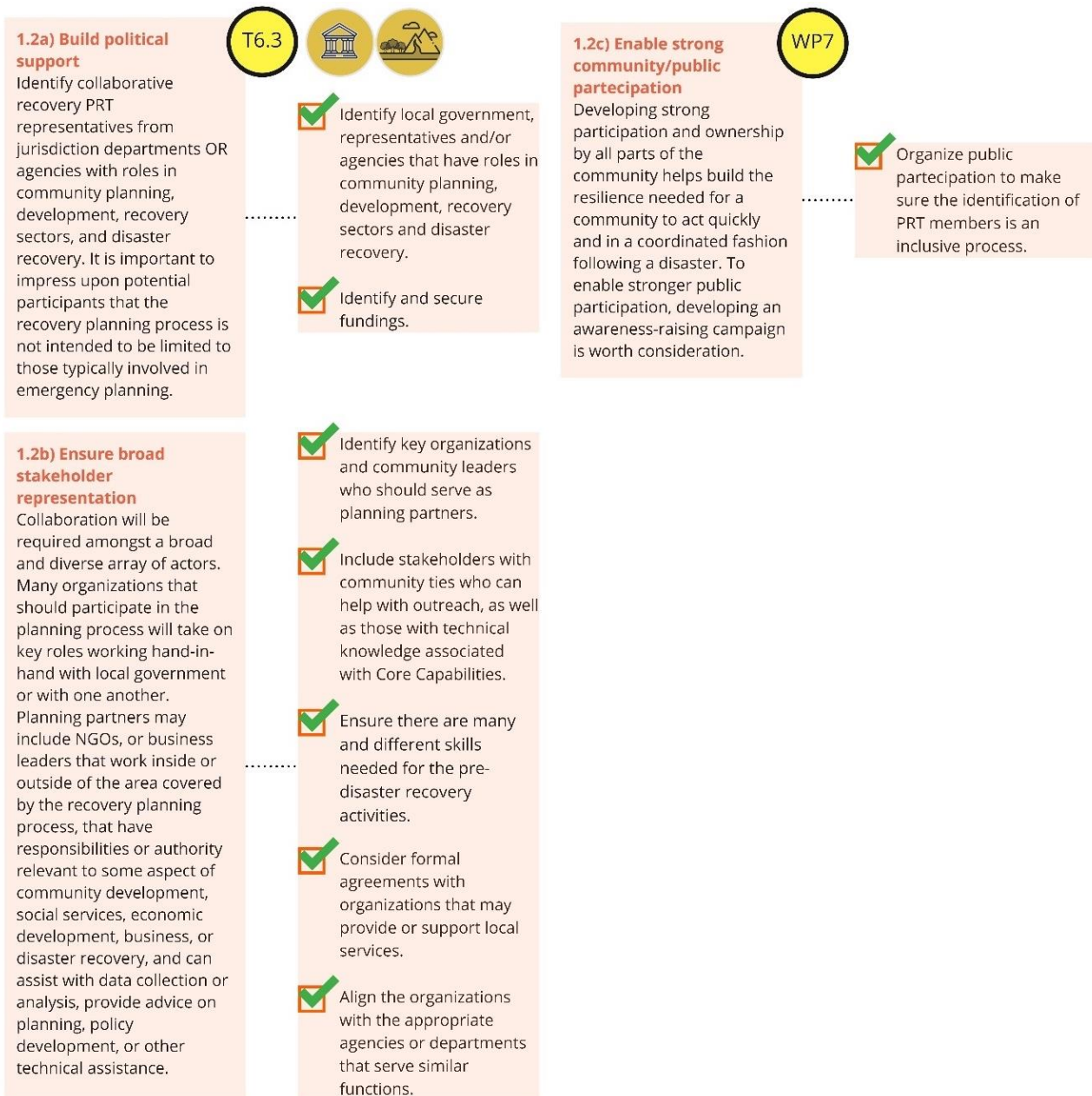


Figure 3. Key-activity 1.2 for Galicia OL

**Activity 1.3** – Develop and implement the partner engagement strategy (Figure 75)

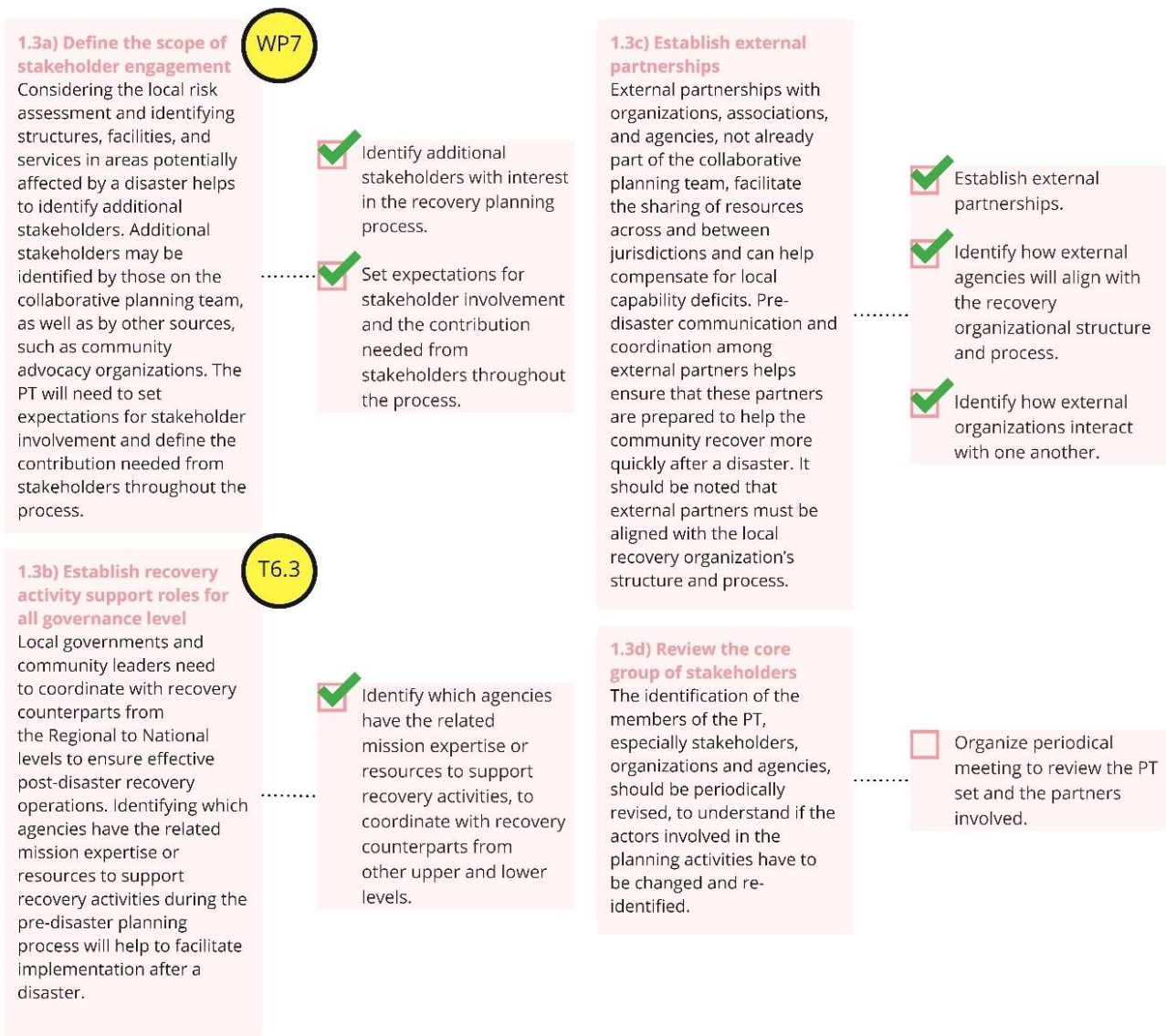
To evaluate continually additional stakeholders and new partners to be included as needed throughout the planning process, it is possible to consider the collaborations defined in the following planning tools (Table 21).

LEVEL	SP TOOL
Regional level	Landscape Guidelines for Galicia
	Basic regional urban planning plan
	SP Guidelines
	Prevention and defense plan against forest fires in Galicia (PLADIGA)

	Territorial Emergency Plan for Galicia (PLATERGA)
	Special Civil Protection Plan for Forest Fire Emergencies in the Autonomous Community of Galicia (PEIFOGA)
	Galician Strategy for Climate Change and Energy 2050 2050 and its Comprehensive Regional Plan for Energy and Climate 2019-2023
	Master Plan for use and management of Baixa-Lima- Serra do Xurés natural park (PRUG)
	Covenant Mayors for the climate BANDE-CALVOS DE RANDIN-LOBEIRA-LOBIOS-MUIÑOS

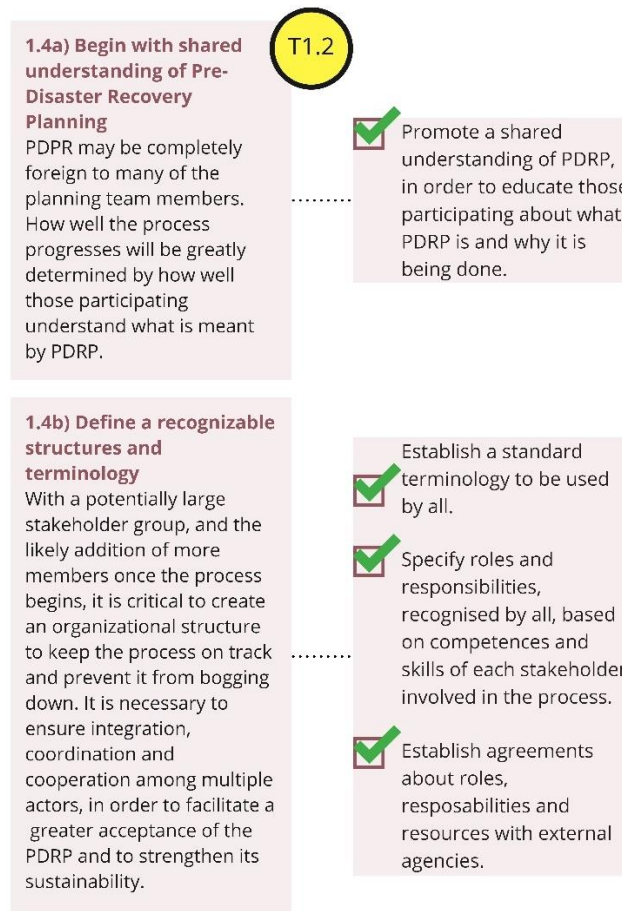
**Table 2. Relevant SP tools for Galicia OL for Activity 1.3**

The development and implementation of these planning tools foresaw collaborative processes among Regional governmental administrations, several Departments of Xunta, including emergency ones, and local and provincial administrations. Local communities do not participate in co-creation and co-management of planning tools, assuming that the public and participatory information process is mandatory.



**Figure 4. Key-activity 1.3 for Galicia OL**

**Activity 1.4** – Educate the Planning Resilience Team (Figure 76)



**Figure 5. Key-activity 1.4 for Galicia OL**

Regarding the first phase, it is possible to say that Galicia OL has a well-defined team, in terms of planning resilience: it has a clear structure, a large range of actors with different skills and all roles and responsibilities are very well determined.

The local communities are involved in this planning process by the administrations of each Galician municipality; however, their engagement is realized not in a formal way.

1.1.2 PHASE 2 – COLLECTING NECESSARY DATA: Understand the situation

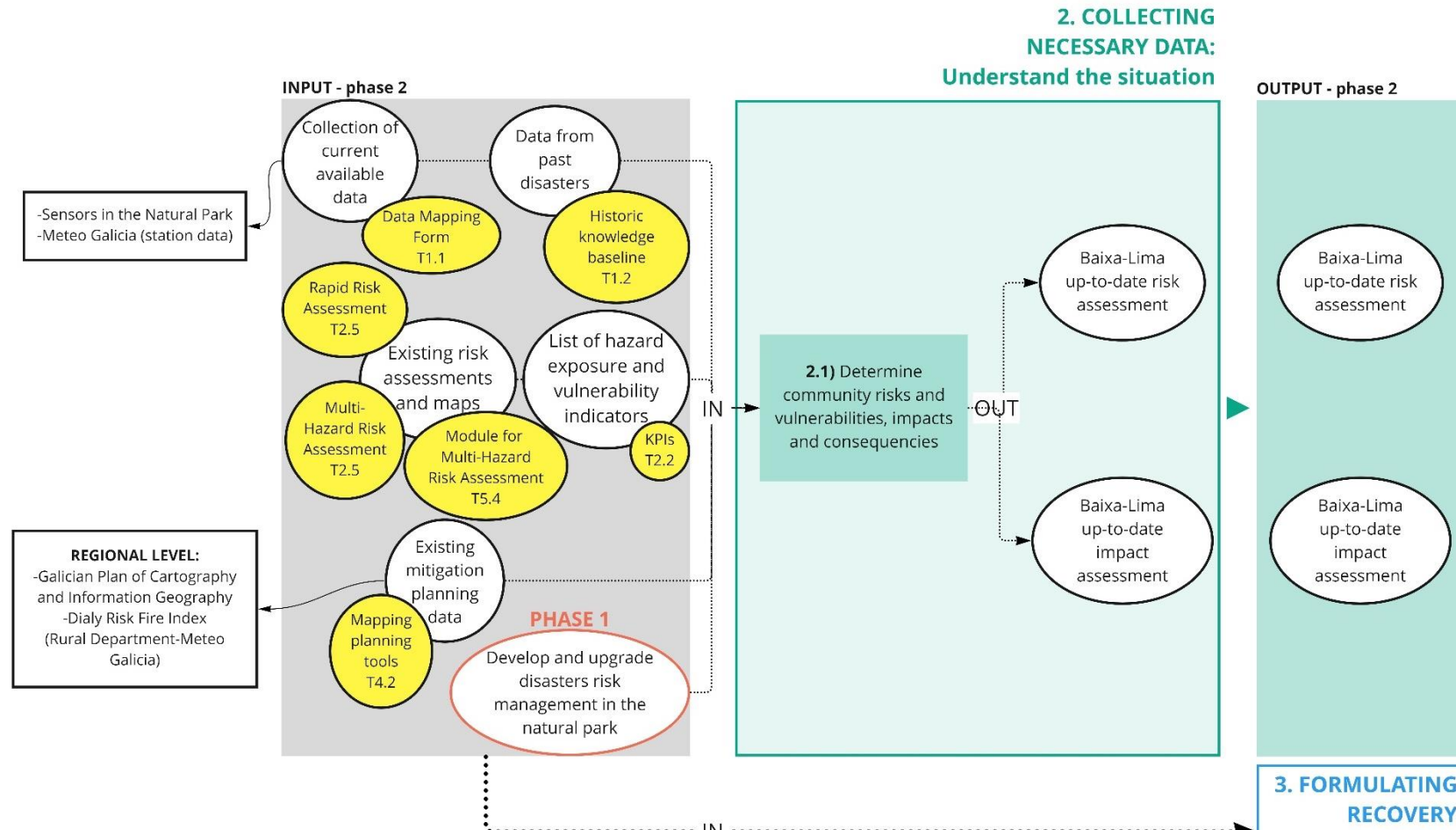


Figure 6. Phase 2 for Galicia OL

**Activity 2.1** - Determine community risks and vulnerabilities, impacts and consequences (Figure 78)

The Galicia OL can use many different instruments to obtain specific disaster risk information.

From SHELTER, the available inputs are:

- Data Mapping Form, which collects all current available data
- Historic knowledge baseline, to be informed about past events' impacts
- Multi-Hazard Risk Assessment
- Rapid Risk Assessment
- Set of KPIs, as hazard exposure and vulnerability indicators

The PRT can also gather data from sensors installed in the Natural Park and meteo station data, present in all the territory.

Furthermore, there are two useful tools, that provide specific disaster risk information.

The first is the *Galician Plan of Cartography and Information Geography*. It ensures consistency, continuity and interoperability of geographical information on the Galician territory, organizing and integrating them in a homogeneous data model. It contains also specific maps for wildfire risk and also other natural risk.

The second is the *Dialy risk Fire Index*, developed by the Rural Department of the Xunta of Galicia. This Index predicts the zones with low, medium, high and extreme risk of fires, four days in advance, for each of the 360 cells of 10 km x 10 km that cover the total Galicia surface. For the prediction of the fire risk, the system uses the meteorological data taken directly from the automatic meteorological stations. The Index is visualized by means of a GIS, on a Galicia map, where the cells appear in the color corresponding to the risk level (green, yellow, brown and red).

Regarding the second phase, it is possible to say that Galicia OL has many available data, to gather information about hazards, risks and vulnerabilities to address in its territory. The PRT can also use the inventory of NH in terms of area, species and climate change variability.

The potential needs, identified by the OL, are the sharing of these data among partners, considering that some of them are not totally public; the combination of different types of data; the creation of a final index to summarize all risks and vulnerabilities affected the area, as an implemented tool to lead the process of making decisions around recovery.

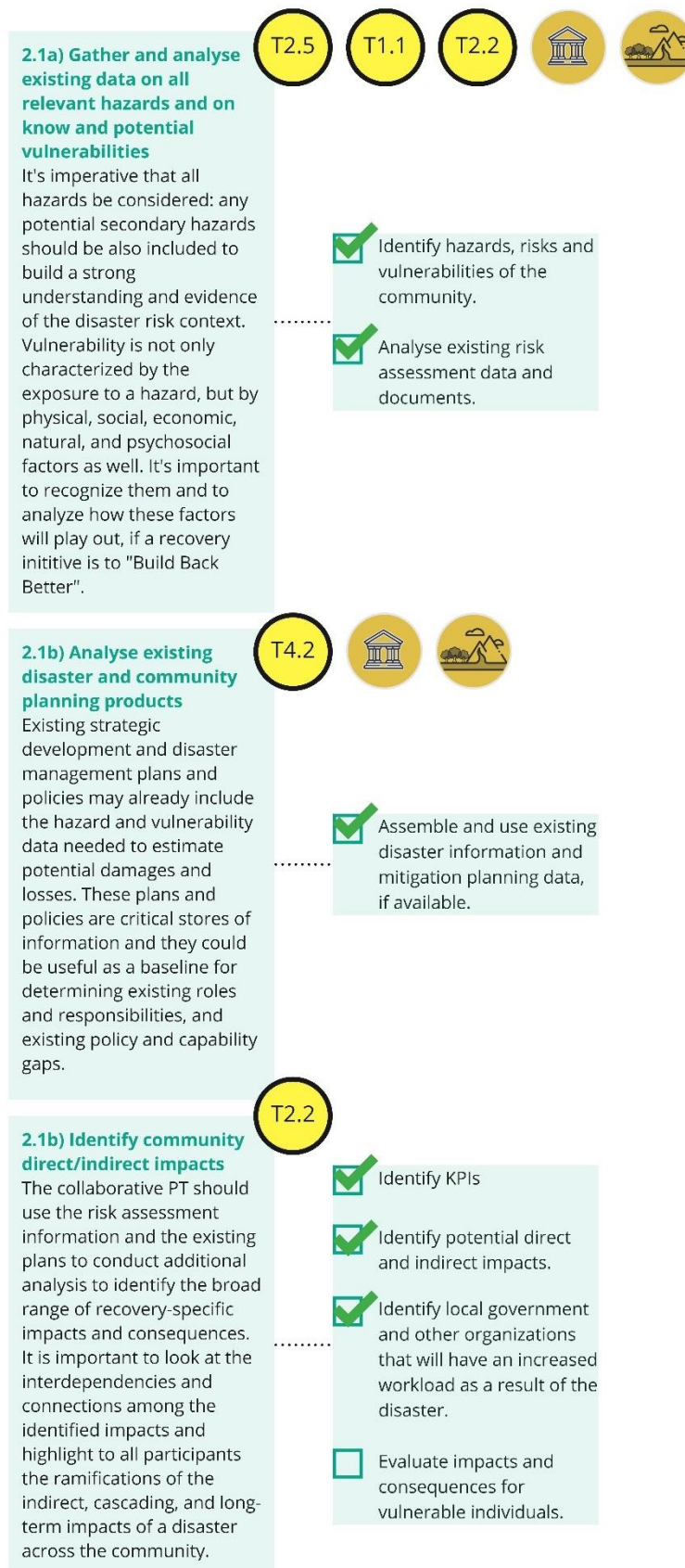


Figure 7. Key-activity 2.1 for Galicia OL

### 1.1.3 PHASE 3 – FORMULATING RECOVERY GOALS AND PRINCIPLES

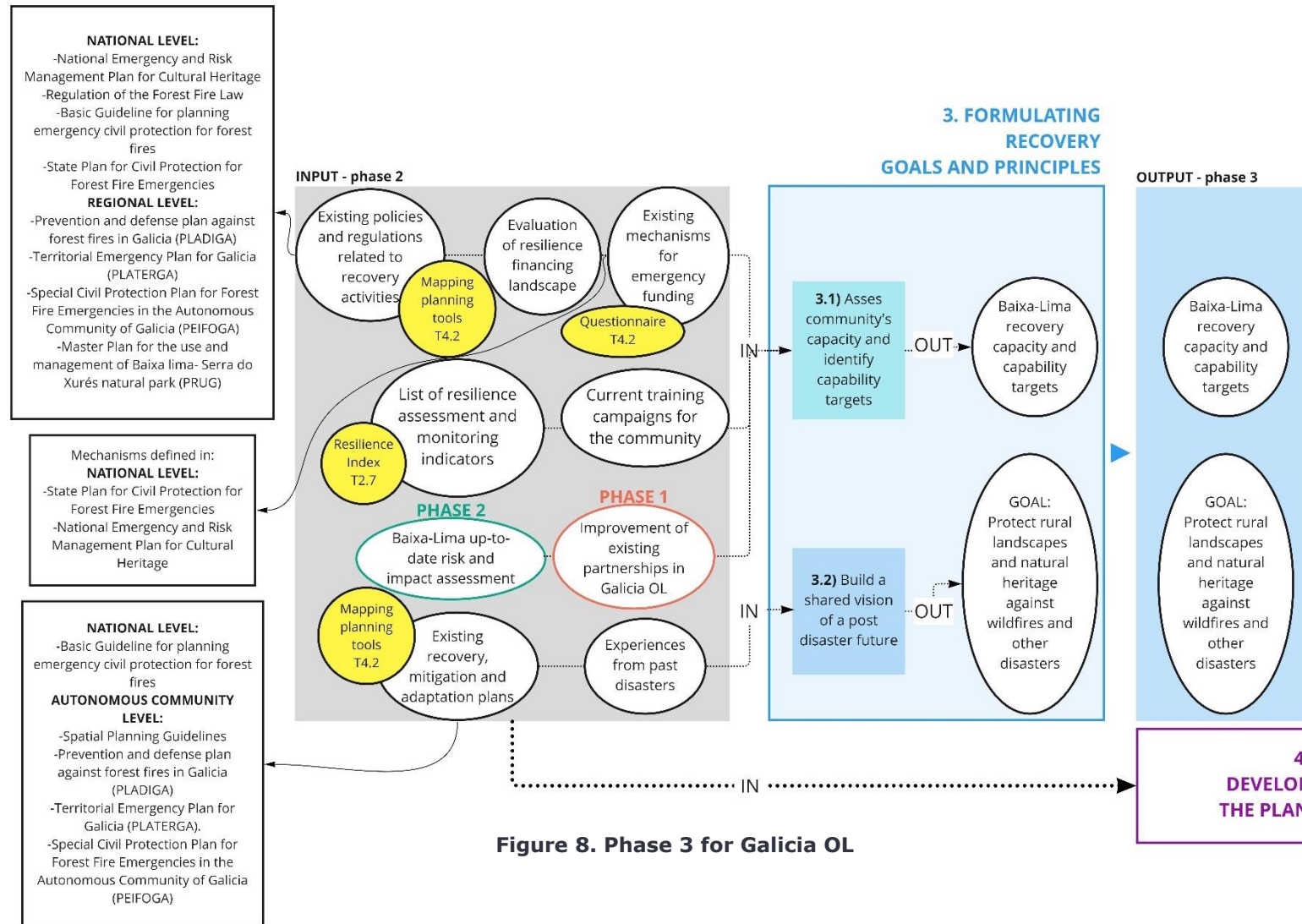


Figure 8. Phase 3 for Galicia OL

**Activity 3.1** – Assess community’s capacity and identify capability targets (Figure 80)

Based on the risk assessment of the previous phase, this activity is to evaluate strengths and weakness of existing DRM operations and organizations.

First of all, it is possible to take relevant information from some planning tools collected in Task 4.2, related to recovery activities.

The most important tools are the followings (Table 22).

LEVEL	SP TOOL
National level	National Emergency and Risk Management Plan for Cultural Heritage
	Regulation of the Forest Fire Law
	Basic Guideline for planning emergency civil protection for forest fires
	State Plan for Civil Protection for Forest Fire Emergencies
Regional level	Prevention and defense plan against forest fires in Galicia (PLADIGA)
	Territorial Emergency Plan for Galicia (PLATERGA)
	Special Civil Protection Plan for Forest Fire Emergencies in the Autonomous Community of Galicia (PEIFOGA)
	Master Plan for the use and management of Baixa lima- Serra do Xurés natural park (PRUG)

**Table 3. Relevant SP tools for Galicia OL for Activity 3.1**

From SHELTER, the available input is:

- Resilience Index, which provides a list of resilience assessment and monitoring indicators

In this step, it is relevant to take into account all the previous assessments, regarding threats, risks and impacts that the community should address. Also, the partner engagement strategy, developed in phase 1, is helpful to evaluate staffing resource, in terms of quantity and expertise, and the financial resources available, identifying potential community needs and gaps.



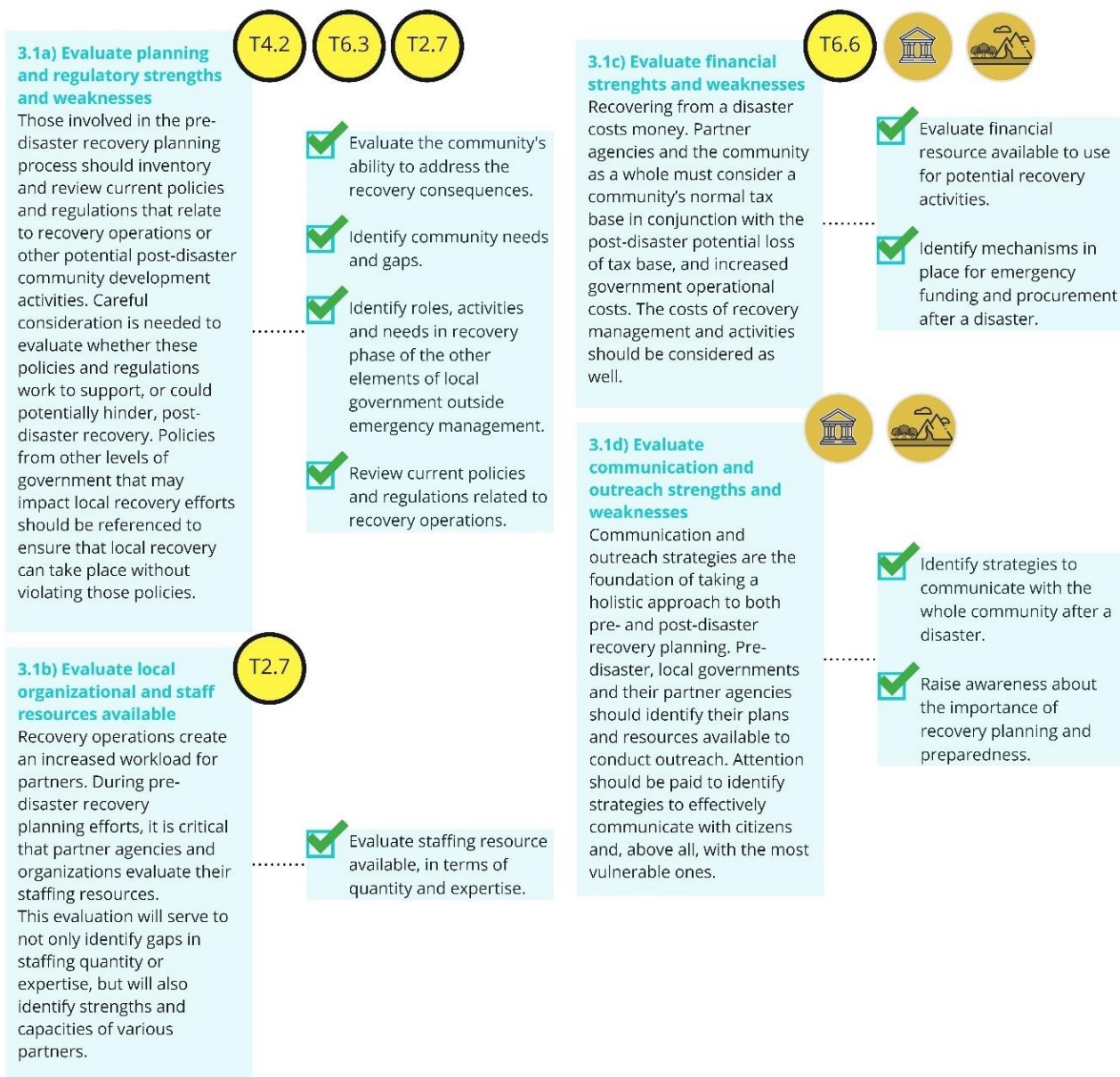


Figure 9. Key-activity 3.1 for Galicia OL

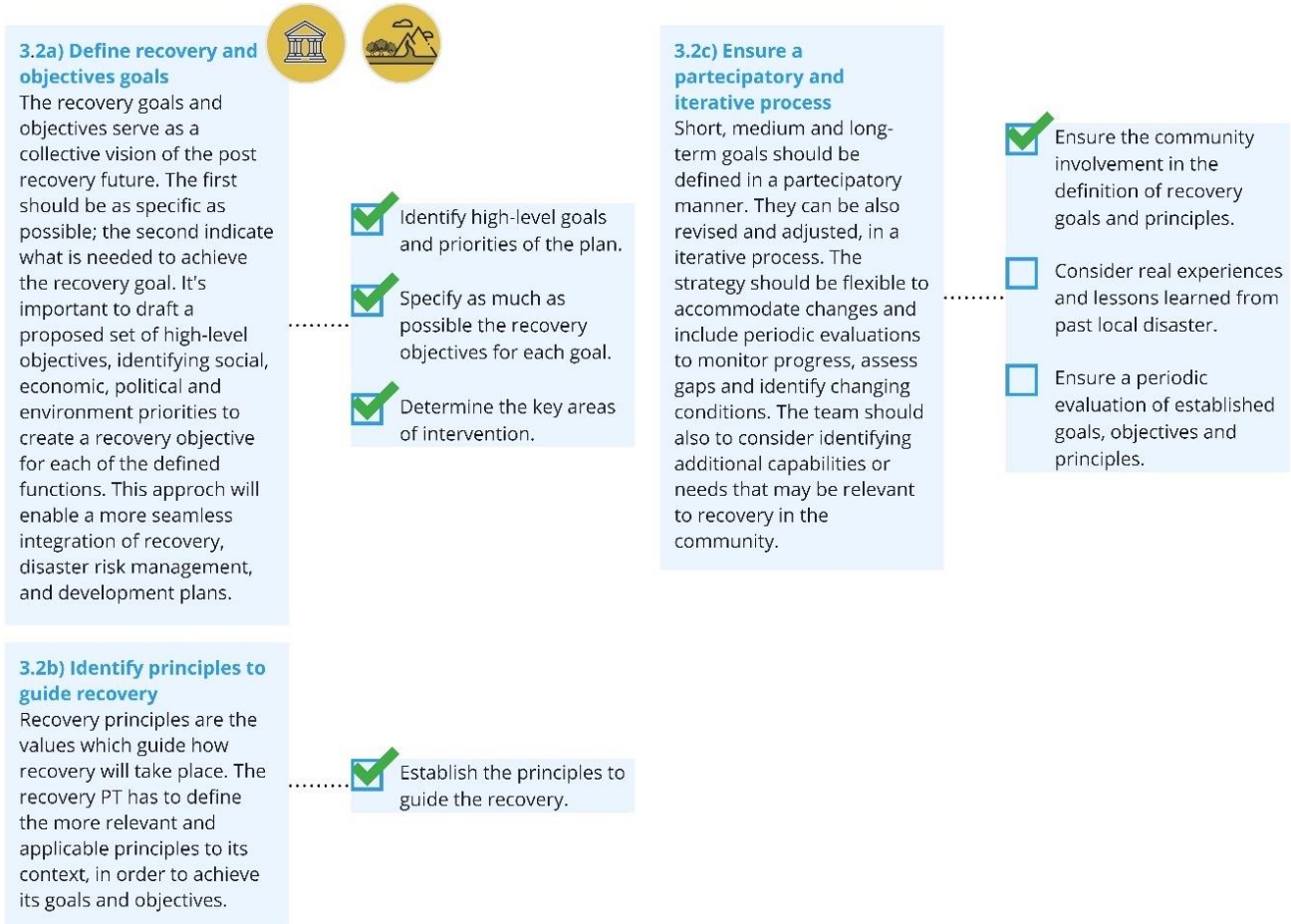
**Activity 3.2** – Build a shared vision of a post disaster future (Figure 81)

The main potential recovery goal for Galicia OL could be to protect rural landscapes and NH against wildfires and other disasters. This goal coincides with the overall aims and the objectives of the following planning tools (Table 23).

LEVEL	SP TOOL
National level	Basic Guideline for planning emergency civil protection for forest fires
	SP Guidelines
Regional level	Prevention and defense plan against forest fires in Galicia (PLADIGA)
	Territorial Emergency Plan for Galicia (PLATERGA)

	Special Civil Protection Plan for Forest Fire Emergencies in the Autonomous Community of Galicia (PEIFOGA)
	Master Plan for the use and management of Baixa lima- Serra do Xurés natural park (PRUG)

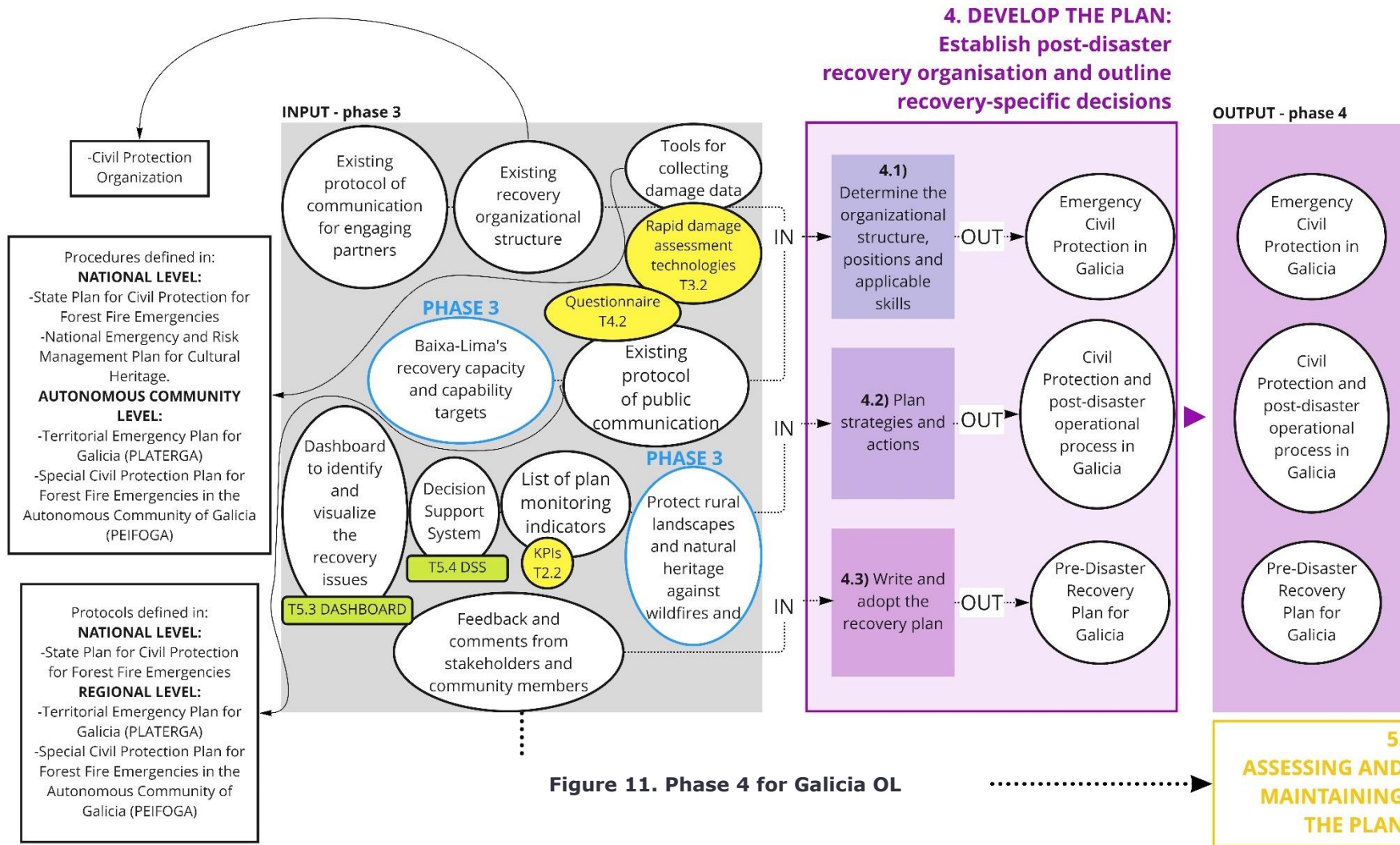
**Table 4. Relevant SP tools for Galicia OL for Activity 3.2**



**Figure 10. Key-activity 3.2 for Galicia OL**

Regarding the third phase, it is possible to say that in Galicia OL the identification of community needs and gaps is very well-covered. At the same time, the recovery goals and objectives are well defined, but it is relevant to notice that they are established in a very high and strategic level in the recovery, mitigation and adaptation plans at upper level than the local one. The establishment of goals and objectives is determined by the specific plans focused on the local areas where the recovery would take place.

**1.1.4 PHASE 4 – DEVELOP THE PLAN: Establish post-disaster recovery organisation and outline recovery-specific decisions**



**Activity 4.1** – Determine the organizational structure, positions and applicable skills (Figure 83)

Those involved in the planning process should start by evaluating the existing recovery organization. The National Civil Protection System is structured through three levels, national, regional and local. The activation of each system depends on the territorial influence of the event. Usually, since the event has location at the regional level, the action will be led by the autonomous community of Galicia.

The *State Plan for Civil Protection for Forest Fire Emergency* provides the organizational structure that allows the direction and coordination of the set of Public Administrations in emergency situations due to fires forestry, in which the national interest is present. It is also the main reference for mechanisms and procedures to coordinate the contribution of means and resources, for intervention in emergencies, for cases in which those provided in the corresponding plans of the autonomous communities are manifestly insufficient. It establishes and keeps updated information on capacities available in wildfire emergencies, in support of the Autonomous community plans, and defines the information system and procedure, related to the monitoring of forest fires with potential consequences for Civil Protection.

It may be relevant also to consider the *National Emergency and Risk Management Plan for Cultural Heritage*. It establishes resources and protocols for urgent action for the safeguarding and rescue of cultural property in the event of an emergency, coordination mechanisms between the different administrations, procedures to exchange knowledge and experiences between the different institutions that intervene in an emergency.

At the autonomous community level, the two most relevant planning tools are the *Territorial Emergency Plan for Galicia (PLATERGA)* and the *Special Civil Protection Plan for Forest Fire Emergencies in the Autonomous Community of Galicia (PEIFOGA)*.

The first, that aims to obtain maximum protection for people, the environment and the goods affected in any emergency situation, provides information regarding the appropriate coordination of all public and private services called to intervene, and the procedures to inform the population, also using social communication media, about the evolution of events. The second, constitutes the organizational structure and procedures for emergency intervention by forest fires, within the territory of the Autonomous Community of Galicia. The *PEIFOGA* establishes also mechanisms and procedures for coordination with the organizations of the local administrations, organizational systems for coaching volunteer staff and procedures for informing the population.

It is important to highlight that in Galicia, the system of Civil Protection is involved mainly during the emergency; instead, in the recovery stage all the stakeholders are involved and they are part of a very well-defined organizational structure, headed by a Commission with representatives of all the different administrations in the territory, that could be considered a Disaster Recovery Manager.

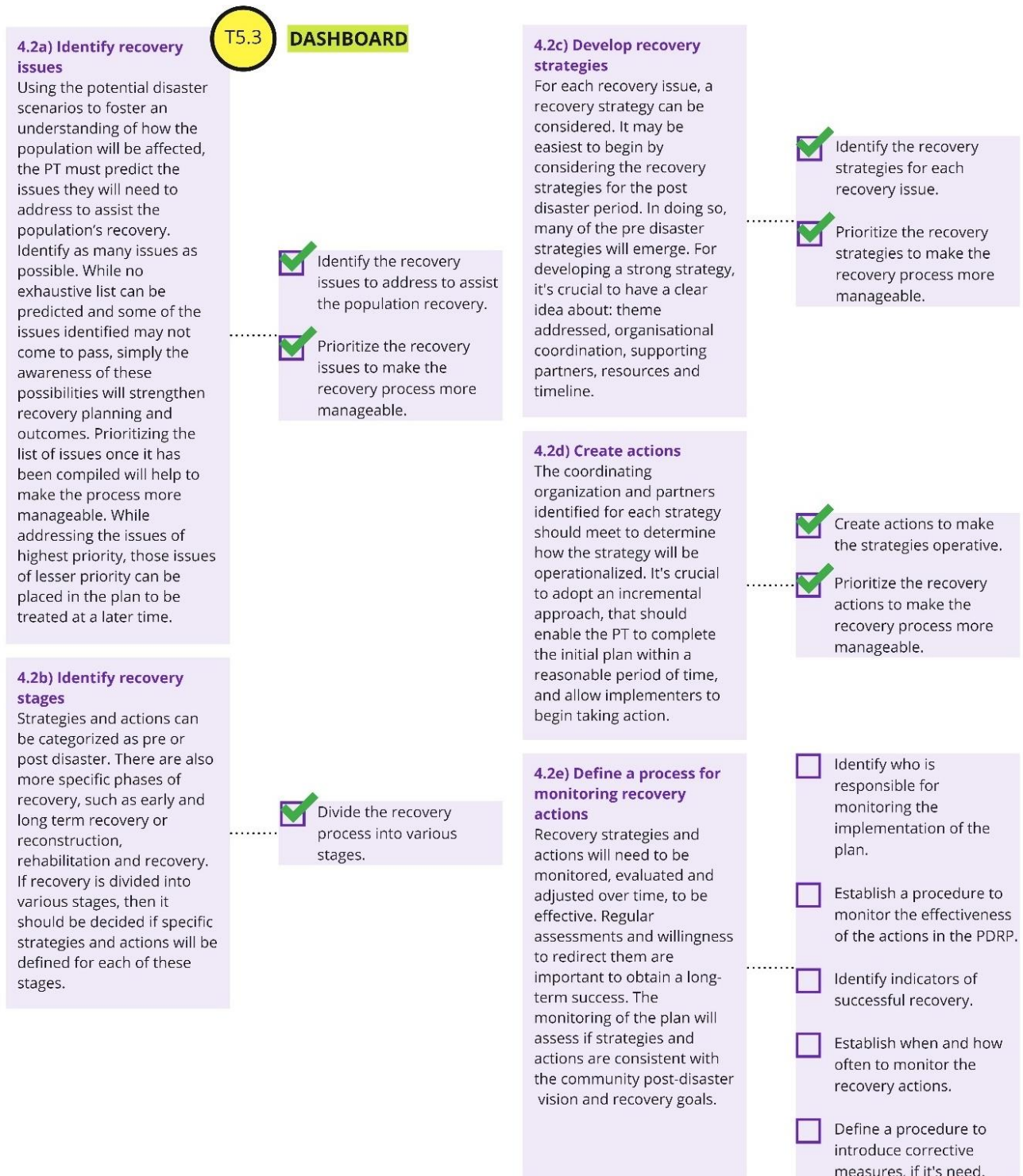
Regarding inputs provided by SHELTER in this phase, it must be pointed out that the Chatbot is not applicable, since in the area there is not a wide internet connection.



Figure 12. Key-activity 4.1 for Galicia OL

**Activity 4.2** – Plan strategies and actions (Figure 84)

Considering the contents of the existing recovery, mitigation and adaptation plans, it is possible to assert that in Galicia OL strategies and actions to address recovery issues, both before and after a disaster, are already defined.



**Figure 13. Key-activity 4.2 for Galicia OL**

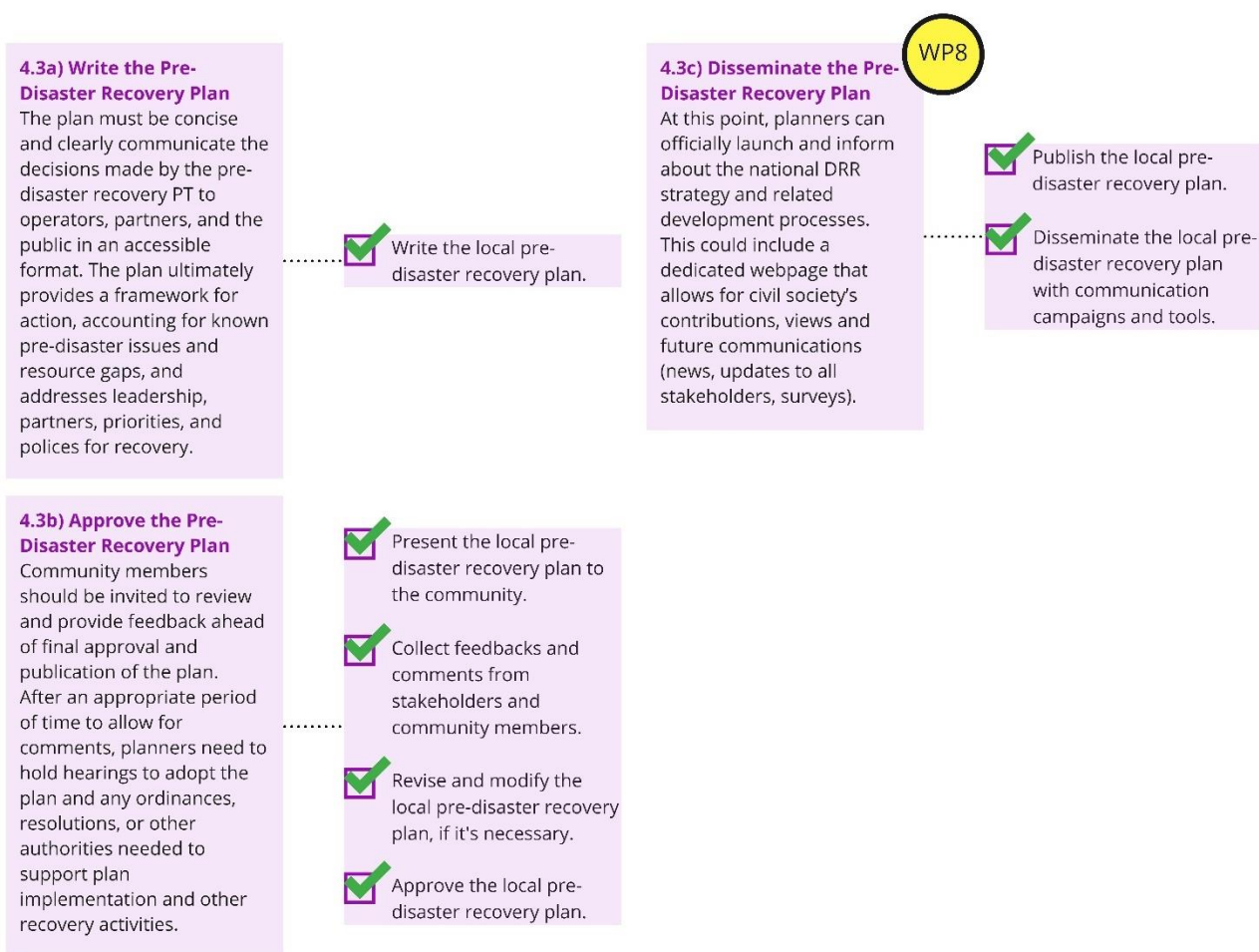
In Pre-Disaster stage, there is a general strategy for the actions to be taken after a wildfire. After some events happened, the Recovery Plans are defined with more operative and customized actions.

**Activity 4.3** – Write and adopt the recovery plan (Figure 85)

If the community needs to develop a new PDRP, all information, documentations and decisions made in the previous phases have to be gathered to form a new written plan.

When the plan is adopted, the whole community is invited to review and provide feedback before the final approval of the document. After an appropriate period of time to allow feedback, planners need to hold hearings to assess all observations from the community and modify the PDRP, if necessary. Once the plan has been corrected, there is the final approval phase of the planning process and the consequently release.

As mentioned above, the public participatory of documents is mandatory, even if the community does not participate in co-design processes.



**Figure 14. Key-activity 4.3 for Galicia OL**

Regarding the fourth phase, it is possible to say that in Galicia OL the existing *Prevention and defense plan against forest fires in Galicia (PLADIGA)* can be recognized as a PDRP,

which means that Galicia OL is already provided with an effective post-disaster operational process. The OL does not have the need to write and approve a new planning tool.

However, a potential way of implementing this tool is the customization of recovery strategies and actions for a specific event, immediately related to the characteristic of the disaster and the community that has to address it. Furthermore, the OL has identified as a gap that a well-defined monitoring part is missing, in terms of operative ways and procedures.



**1.1.5 PHASE 5 –ASSESSING AND MAINTAINING THE PLAN: review and update**

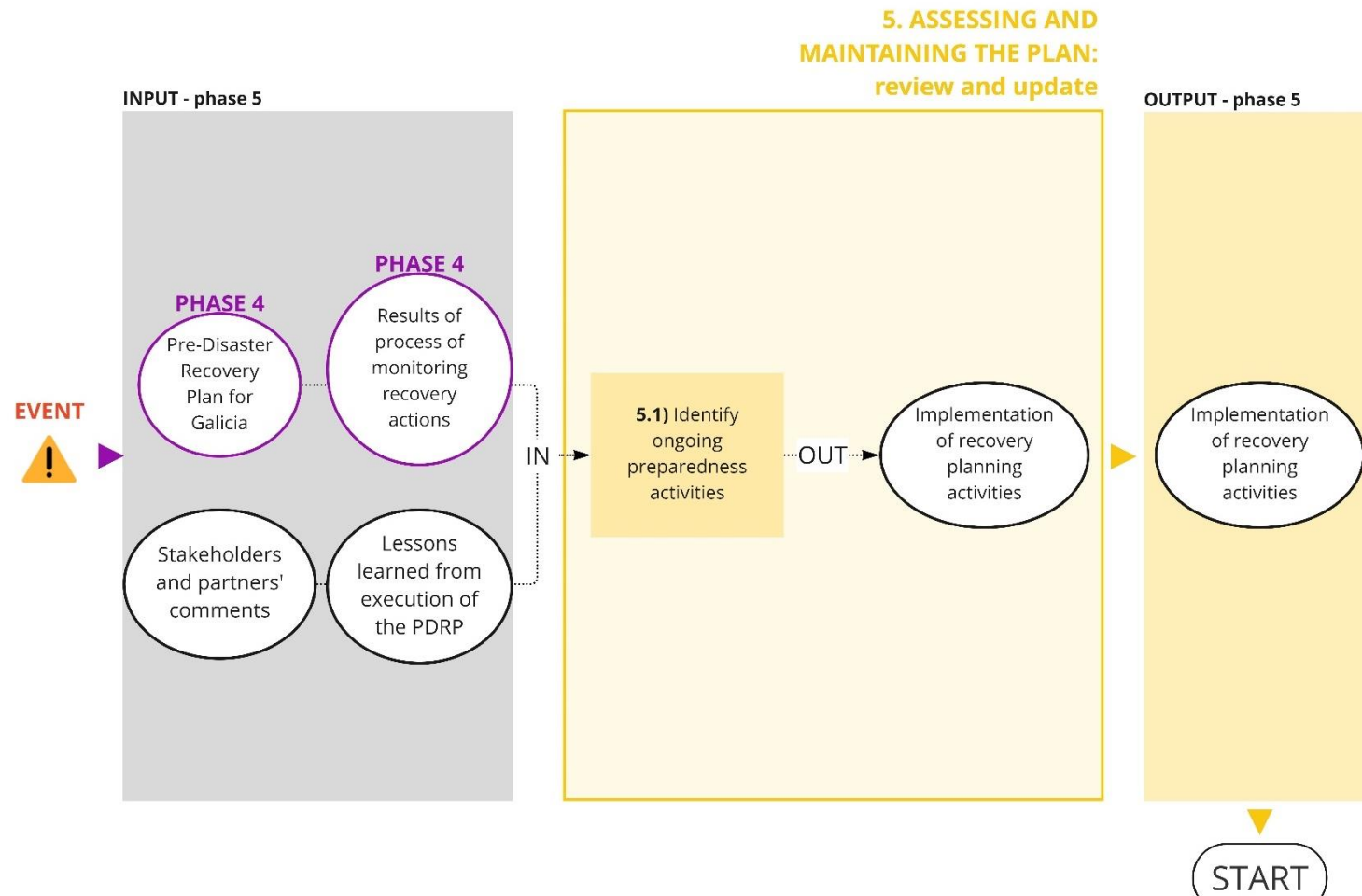


Figure 15. Phase 5 for Galicia OL

**Activity 5.1** – Identify ongoing preparedness activities

Phase 5 is made to encourage planners to identify training and exercise opportunities, and to establish a schedule for revision and review of plans. Reviews and revisions of PDRPs are based on real world events, such as wildfires, exercise experiences or lessons learned by other jurisdictions.

Ongoing activities ensure that recovery stakeholders are able to effectively manage post-disaster recovery activities (FEMA, 2016).



**Figure 16. Key-activity 5.1 for Galicia OL**

Another important ongoing preparedness activity is the regular evaluation and review of the PDRP, policy documents and ordinances, because capabilities, threats, hazards, and vulnerabilities of the community may gradually change over time and a plan update can be necessary. Changes in the PDRP may also be done to comply with new governments regulations and laws. Furthermore, lessons learned from execution of the plan in a post-disaster phase should be documented to guide future revisions of the plan.

In Galicia OL, it would be useful to follow these steps in the specific area in which a disaster has happened. In fact, the recovery plans, that consider all these elements, are done in an operative way, but not for each wildfire.

### **1.1.6 Summary of the Early Recovery Roadmap for Galicia OL**

Figure 88 shows the progress of Galicia OL for each phase of the PDRR, through a qualitative indicator in the form of a loading bar.

In addition, the list in Table 24 is helpful to identify which activities are already done and which not, to highlight the complete aspects and the pending ones in the process of PDRP for Galicia OL.

To summarise, the application of the early recovery Roadmap to the Galicia OL has shown that the majority of steps, activities and sub-activities have been already taken into account by national, regional, local policy and planning instruments, although the PDRP as such, as conceived by this methodology, has not been developed yet. Nevertheless, Galicia OL is provided with an effective post-disaster operational process described in the existing *Prevention and defense plan against forest fires in Galicia (PLADIGA)*. The OL does not need to write and approve a new planning tool, as long as the existing plan will be revised to take into account the activities and sub-activities that this methodology proposed, and that have not been completed yet. In particular, the monitoring part is missing in terms of operative ways and procedures, and the revision of the existing plan in light of the main findings from this methodology might start from there.

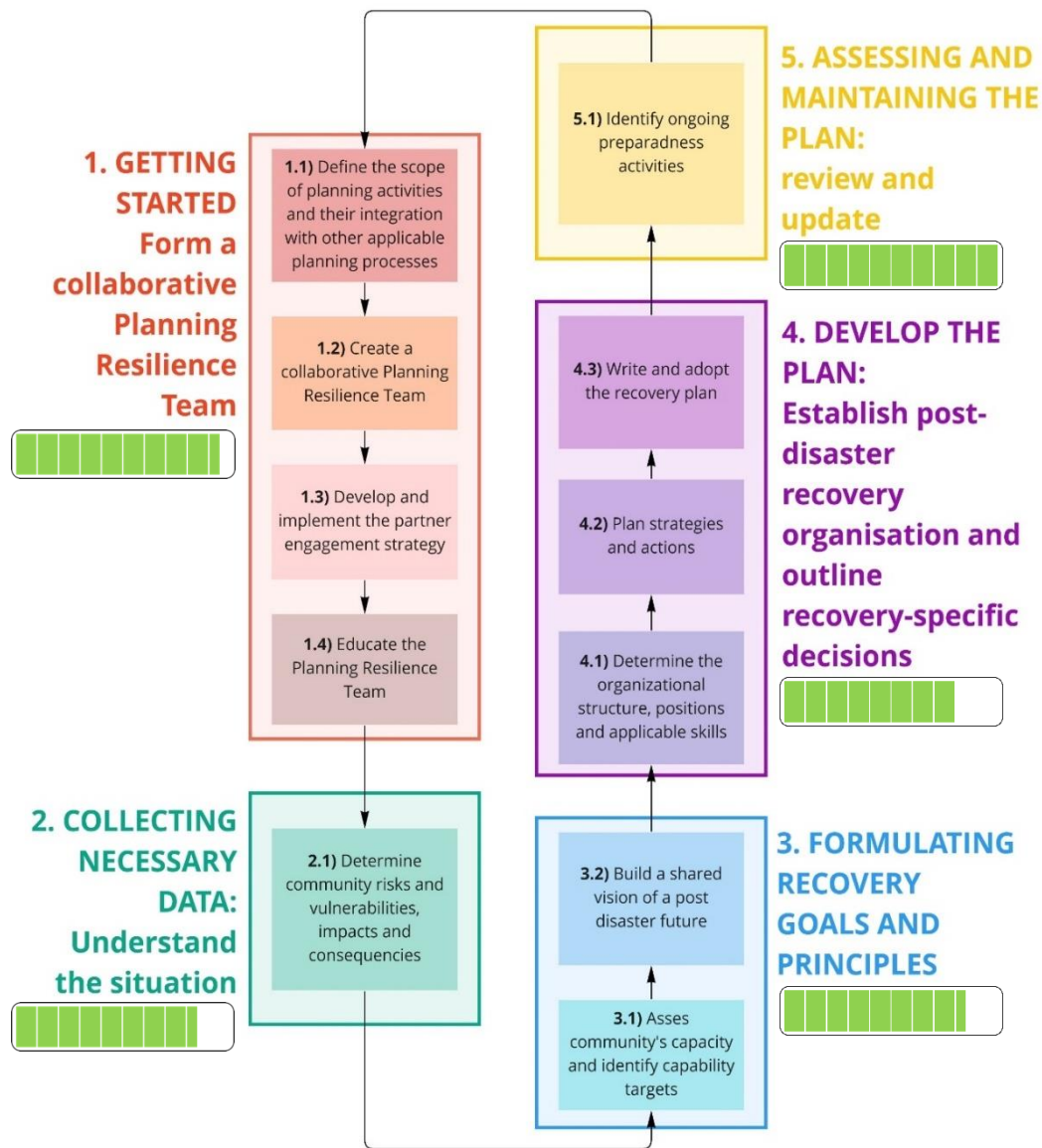


Figure 17. Progress in the PDRR for Galicia OL

PHASE 1	
complete sub-activities	1.1a) Define the scope and timing of recovery planning activities 1.1b) Determine whether existing community planning documents can be leveraged or 1.2a) Build political support 1.2b) Ensure broad stakeholder representation 1.2c) Enable strong community/public participation 1.3a) Define the scope of stakeholder engagement 1.3b) Establish recovery activity support roles for all governance level 1.3c) Establish external partnerships 1.4a) Begin with shared understanding of Pre-Disaster Recovery Planning 1.4b) Define a recognizable structures and terminology
pending sub-activity	1.3d) Review the core group of stakeholders
PHASE 2	

complete sub-activities	<p>2.1a) Gather and analyse existing data on all relevant hazards and on know and potential vulnerabilities</p> <p>2.1b) Analyse existing disaster and community planning products</p> <p>2.1c) Identify community direct/indirect impacts</p>
pending sub-activity	Evaluate impacts and consequences for vulnerable individuals in sub-activity 2.1c
<b>PHASE 3</b>	
complete sub-activities	<p>3.1a) Evaluate planning and regulatory strengths and weaknesses</p> <p>3.1b) Evaluate local organizational and staff resources available</p> <p>3.1c) Evaluate financial strenghts and weaknesses</p> <p>3.1d) Evaluate communication and outreach strengths and weaknesses</p> <p>3.2a) Define recovery and objectives goals</p> <p>3.2b) Identify principles to guide recovery</p> <p>3.2c) Ensure a partecipatory and iterative process</p>
pending sub-activity	<p>Consider real experiences and lessons learned from past local disaster in sub-activity 3.2c</p> <p>Ensure a periodic evaluation of established goals, objectives and principles in sub-activity 3.2c</p>
<b>PHASE 4</b>	
complete sub-activities	<p>4.1a) Establish an organizational structure</p> <p>4.1b) Ensure recovery resource identification, management and coordination</p> <p>4.1c) Develop a process for notifying and engaging recovery partners in preparation for or immediately after a disaster</p> <p>4.1d) Prepare a process for gathering damage information and assessing impacts to evaluate and support recovery activities through the long-term</p> <p>4.1e) Develop guidelines for recovery-related public communications</p> <p>4.2a) Identify recovery issues</p> <p>4.2b) Identify recovery stages</p> <p>4.2c) Develop recovery strategies</p> <p>4.2d) Create actions</p> <p>4.3a) Write the Pre-Disaster Recovery Plan</p> <p>4.3b) Approve the Pre-Disaster Recovery Plan</p> <p>4.3c) Disseminate the Pre-Disaster Recovery Plan</p>
pending sub-activity	<p>Identify the LDRM in sub-activity 4.1a</p> <p>4.2e) Define a process for monitoring recovery actions</p>
<b>PHASE 5</b>	
complete sub-activities	<p>5.1a) Undertake regular activities to increase preparedness</p> <p>5.1b) Evaluate new vulnerabilities</p> <p>5.1c) Conduct regular reviews of the Pre-Disaster Recovery Plan</p> <p>5.1d) Document best practices and lessons learned</p>
pending sub-activity	-

**Table 5. Completed/pending activities for Galicia OL**