
Rios de Mafra
Mafra SPRWL
STRATEGIC PLAN FOR REHABILITATION OF WATER LINES

Iceland Liechtenstein Norway grants

EEA grants **Portugal**

Mecanismo Financeiro do Espaço Económico Europeu

European Economic Area Financial Mechanism

Unidade Nacional de Gestão

National Focal Point

REPÚBLICA PORTUGUESA

PLANEAMENTO E INFRAESTRUTURAS

Small Grants Scheme #3 - Projects to strengthen climate change adaptation at local level

Application from the Municipality of Mafra in partnership with E.Rio

MAIN GOALS
The Local Scale Strategy

Main Vulnerabilities in the municipality of Mafra (EMAAC Mafra)

- High temperatures / heat waves
- Excessive precipitation and strong winds
- Strong swell / sea level rise
- High risk of forest fires
- Coastal erosion

With damaging consequences for vegetation, human health and infrastructure

Promote the development of multiple uses and the minimization of risks, guaranteeing the stabilization of river corridors and the good ecological status of the respective water bodies, by promoting greater heterogeneity of hydraulic conditions and diversity of species and habitats; which, in turn, contribute to the resilience and sustainability of riverside systems and the improvement of the territory's capacity to respond to **climate change**

MAIN GOALS
The Local Scale Strategy

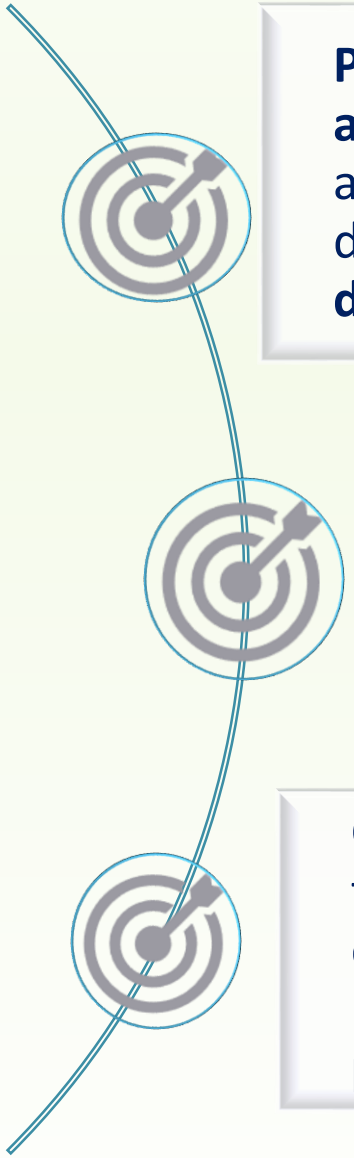
Ensuring the health and safety of people, services and goods, by reducing or minimizing the risks associated with climatic phenomena and increasing the resilience of infrastructure

Characterize all water lines in the territory of the municipality of Mafra: **know to preserve and act!**

Improve public management of water resources: Spatial programming of river rehabilitation measures (cleaning and clearing water lines, stabilizing slopes and banks, improving riverside habitat), by water line, as a **management tool for decision support**

Increase the resilience of riverside ecosystems, species and habitats, through structural solutions of natural base (recovering riparian galleries and promoting the creation of refuges and ecological corridors for vulnerable species)

MAIN GOALS
The Local Scale Strategy

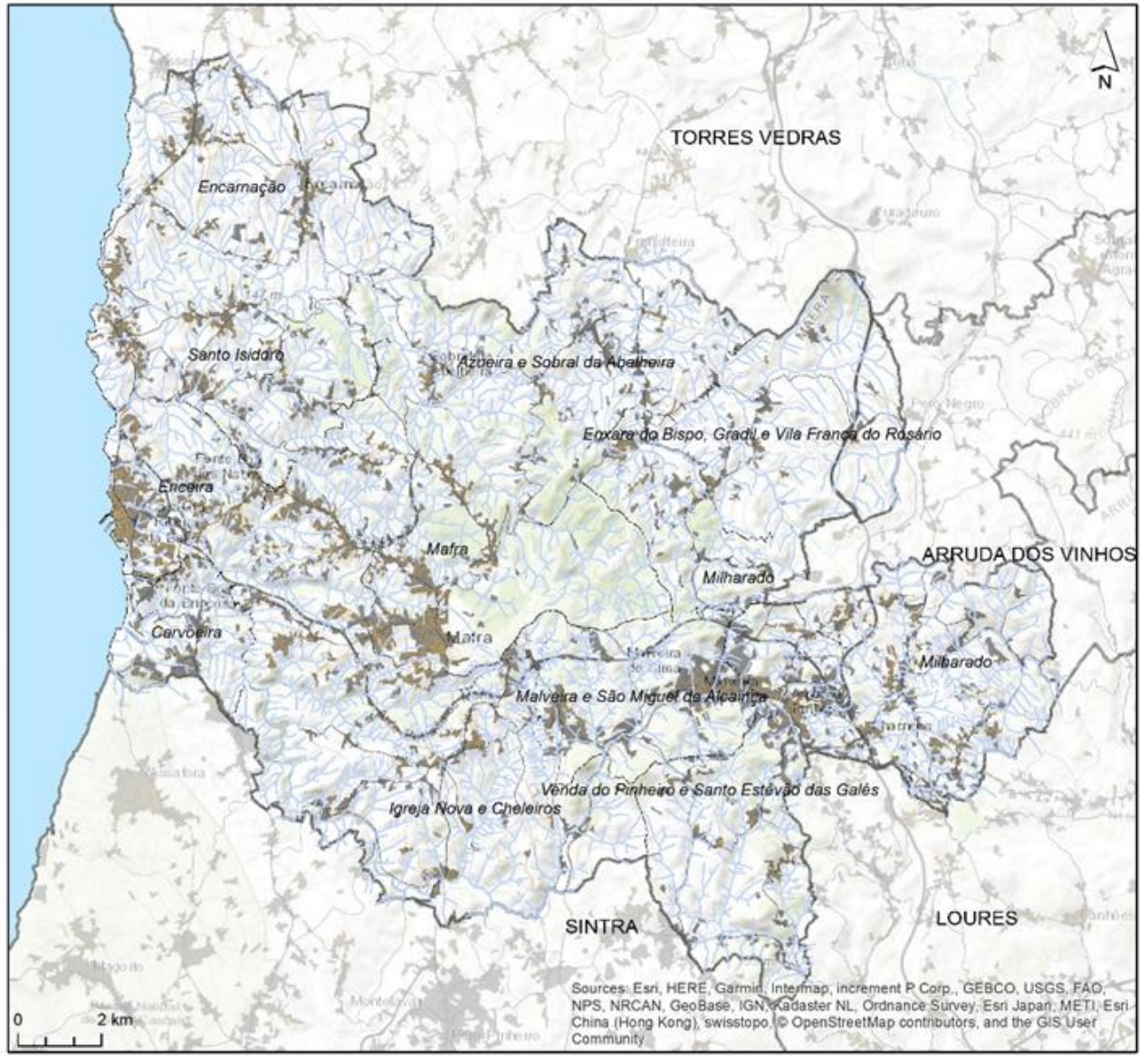


Promote and develop projects that integrate adaptation measures and actions into municipal and inter-municipal territorial management plans and sectoral policy instruments at the local scale, as well as the development of good practices for adapting to climate change, with **a demonstrative and replicable character**

Develop a Guide to Technical Guidelines for River Rehabilitation, identifying technical solutions for **natural engineering** and planting and live cuttings of native riparian vegetation, which benefit the **Riverine Habitat**

Create a replicating effect, through the experimentation phase with the formalization of a **river laboratory space - LabRios +** - that is a demonstration of good practices, that involves the community, and that makes information accessible to the population (promoting **public participation**)

FRAMEWORK
The Local Scale Strategy



municipality of Mafra

FRAMEWORK
The Local Scale Strategy

Alignment with ENNAC 2020 climate change adaptation objectives

I. Improving the level of knowledge about climate change
II. Implement adaptation measures
III. Promote the integration of adaptation in sectoral policies

Alignment with EMAAC Mafra's climate change adaptation measures

I. Rehabilitation of coastal and riverside areas, with the strengthening of dune systems and riparian galleries

II. Incorporation of climatic risks in territorial management planning instruments with specific regulations

III. Urban planning to improve its capacity to respond to climatic events: implementation of retention basins and green structures

FRAMEWORK
The Local Scale Strategy

ALIGNMENT WITH THE LINES OF ACTION OF P-3AC

Direct Contribution

- 2. Implementation of techniques for the **conservation and improvement of soil fertility**
- 4. Increased resilience of **ecosystems, species and habitats** to the effects of climate change
- 6. **Prevention of the introduction and expansion of invasive alien species,** vector-borne diseases and agricultural and forestry diseases and pests
- 7. Reduction or minimization of **risks associated with floods**
- 8. Increased **resilience and coastal protection** in areas at high risk of erosion and overtopping and flooding
- 9. Development of **decision support tools,** training and awareness actions

Indirect Contribution

- 1. **Prevention of rural fires**
- 3. Implementation of **good water management practices** in agriculture, industry and the urban sector to prevent impacts resulting from drought and scarcity
- 5. **Reducing the vulnerability of urban areas t**o heat waves and increasing the maximum temperature.

10 PRINCIPLES OF RIVER REHABILITATION

CONSERVATION AND REHABILITATION MEASURES FOR THE HYDROGRAPHIC NETWORK AND RIBEIRIN AREAS THAT INTEGRATE THIS STRATEGY IMPLEMENTED IN THE LIGHT OF THE FOLLOWING BASIC PRINCIPLES:

P1. Promote ecological integrity and preserve water quality

P2. Increase the degree of freedom of the river corridor

P3. Provide space and time for riverine functions and activities according to the framework

P4. Know the problems, prevent degradation, determine the degree of vulnerability and mitigate the impacts of the rehabilitation process

P5. Promote the function of ecological corridor and biodiversity, with native species of rivers and streams

P6. Develop projects with clear, achievable and measurable objectives and with a sustainable design

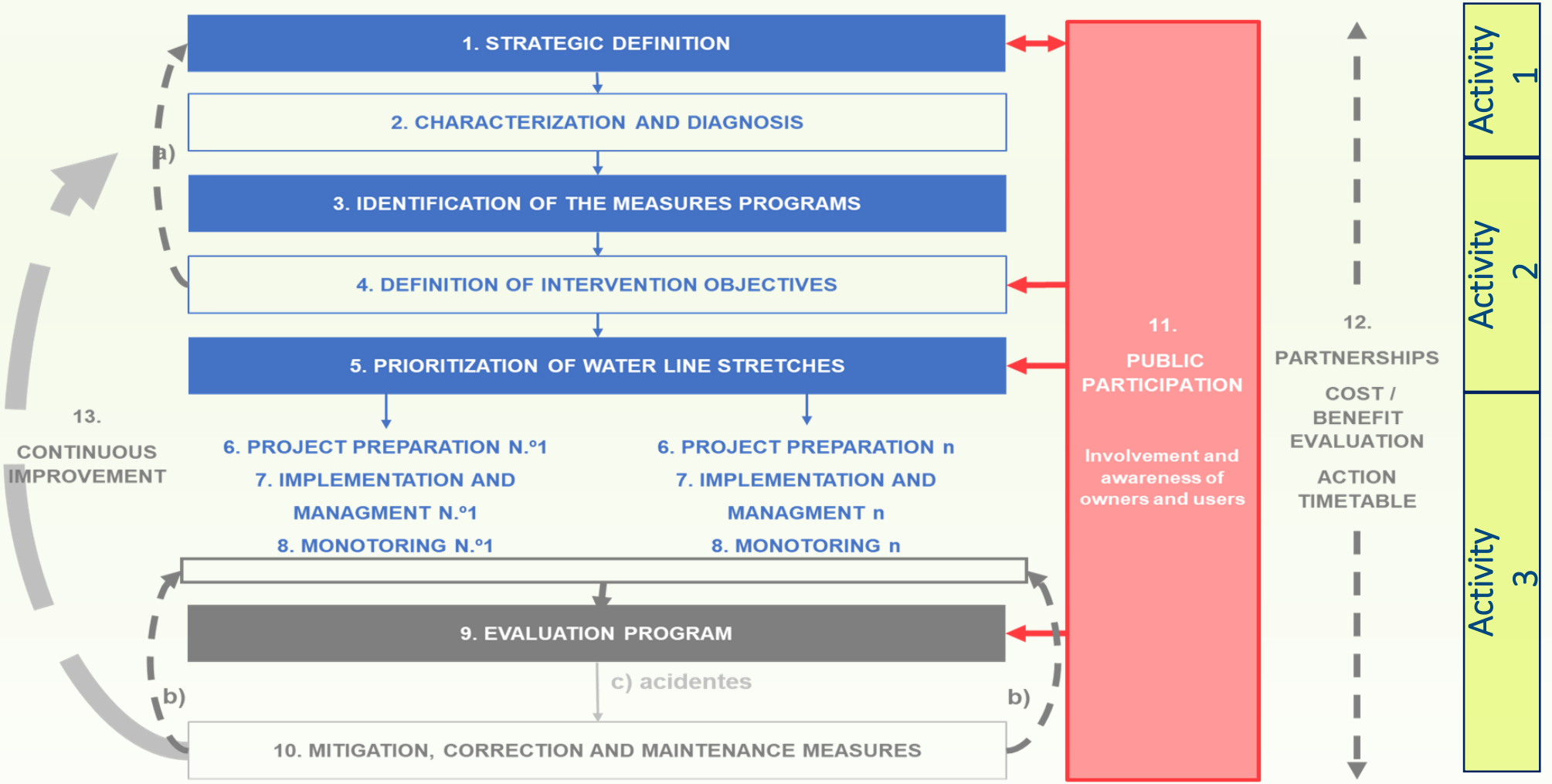
P7. To act in favor of Nature, through the application of natural engineering techniques, and to carry out a maintenance oriented

P8. Study and monitor projects, with indicators and multidisciplinary technical competence

P9. Involve owners, decision makers, operators and all interested parties, with values socially just

P10. Integrate actions into strategies and programs or territorial plans

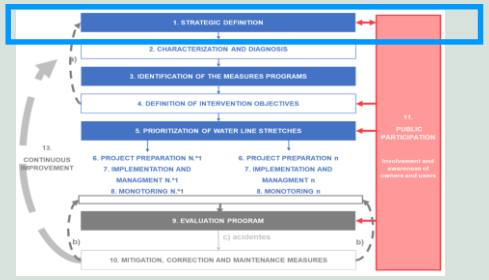
WORK METHODOLOGY
General Scheme



Adapted from Teiga (2011)

WORK METHODOLOGY

Activity 1 – Characterization and Diagnosis



CLIMATE CHANGE

Mitigation PNAC

Adaptation
ENAAC
EMAAC

TERRITORIAL MANAGEMENT INSTRUMENTS

PGRH Hydrographic Region Management Plan

PGRI Flood Risk Management Plan

PSRN2000 Sectorial Plan of the Natura 2000 Network

National Programs
Other Sector Programs
Regional Programs
Intercity programs
Intercity and municipal plans

SRUP

DPH
ZA
REN
RAN
Alb. de AP
R. Florestal
...

PUBLIC PARTICIPATION

Technical
Proprietary
Operators
Dealerships
Population
Politician

INSTITUTIONAL COOPERATION

APA
DGT
ANPC
SEPNA
INCF
DGADR
CCDR
ANMP
CM
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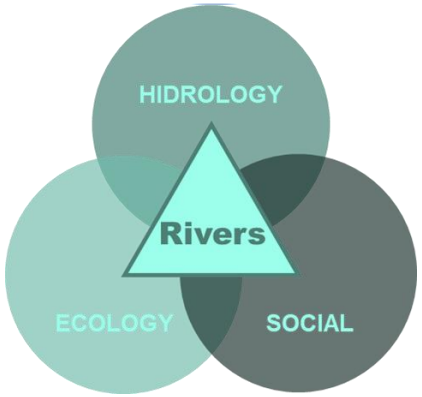

MUNICIPAL STRATEGY FOR THE REHABILITATION OF RIVERS

PROBLEMS

GOALS

MATERIAL MEASURES
Cleaning of water lines
Cleaning of waste and debris
Margins stabilization
Containment of invasive species
Improving habitat and water quality
Rivers + Routes
Heritage Rehabilitation
Fishing Trails
Definition of Preferential Flood Spaces (PFS)

IMMATERIAL MEASURES
River intervention guide
Hydraulic studies
. Public participation plan
Formation plan
. Emergency plan
. Monitoring plan
. Maintenance plan
. Evaluation plan with success indicators

INTERVENTION AND CONTINUOUS IMPROVEMENT

REPORT I
Characterization and Diagnosis

REPORT II
Intervention Proposal

GUIDE
Technical Guidelines

REPORT III
Results of the Evaluation Program

WORK METHODOLOGY

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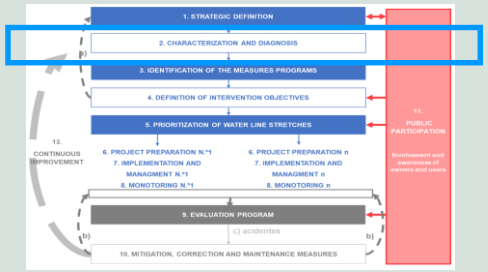


Assignment 1.1

- **Bibliographic review and general framework of the hydrographic network,** identifying its main hydrogeomorphological and biological characteristics and the objectives and measures provided for in the territorial management instruments in force, and other municipal and intermunicipal strategies

Assignment 1.2

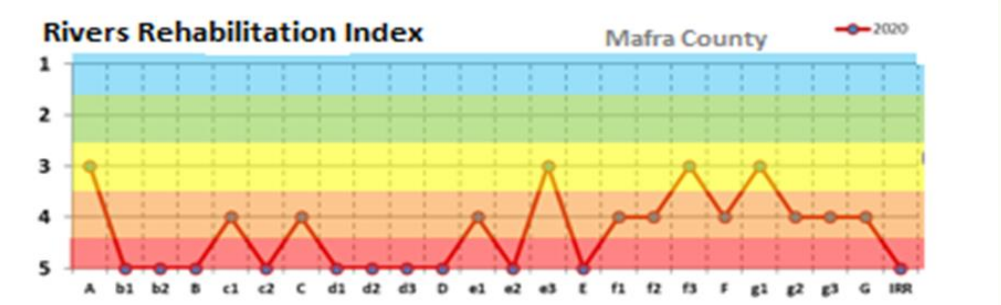
- **Identification and validation of sampling points,** through the survey of field data, with photographic records, and determination of the River Rehabilitation Index, by a multidisciplinary team

Assignment 1.3

- **Definition of types of water lines,** in order to group sections of water lines with common specificities and systematize their main problems and added value

Assignment 1.4

- **Production of an interim report**, with presentation of the work methodology and the respective results



WORK METHODOLOGY

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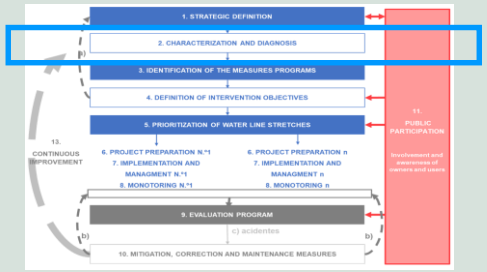


Indigenous Fauna

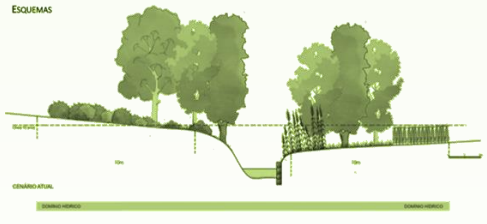
Continuous improvement

- STAGE 1 - Characterization of the watercourse with biogeographic framework
- STAGE 2 - *Habitat* diagnosis
- STAGE 3 - Selection of potential target species
- STAGE 4 - *Habitat* requirements of the target species, available and necessary conditions
- STAGE 5 - Elaboration of rehabilitation projects
- STAGE 6 - Implementation and monitoring
- STAGE 7 - Assessment, measurement and maintenance of conditions for selected target species

IDENTIFICATION BY TYPOLOGY

Potential Native Vegetation

- STAGE 1 - Identification of the type of watercourse
- STAGE 2 - Biogeographical framework
- STAGE 3 - Recognition of riverside habitats and assessment of ecological status
- STAGE 4 - Selection of plant species to be installed
- STAGE 5 - Analysis of phytotechnical attributes of selected species
- STAGE 6 - Monitoring and maintenance of plant species after installation



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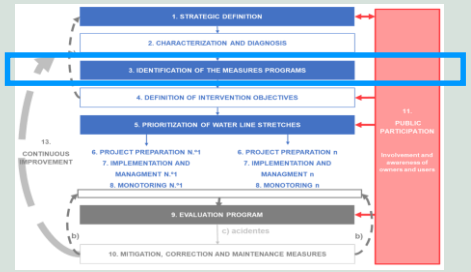
WORK METHODOLOGY

Activity 2 – Intervention Program



IDENTIFICATION OF THE PROGRAM OF MEASURES

DEFINITION OF INTERVENTION OBJECTIVES

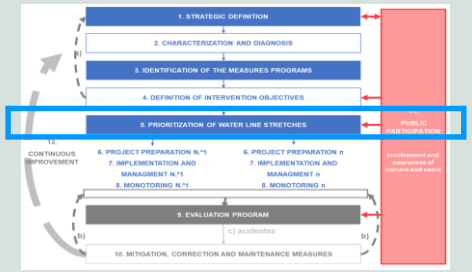
Assignment 2.1- Development of the action plan proposal, with:

- **T2.1.1 Proposal for the program of material and immaterial measures,** to resolve or minimize the main problems of the hydrographic network and to protect or maximize the present or potential natural values
- **T2.1.2 Definition of intervention objectives** and study of their applicability to each type of waterline

APA ICNF → PGRH, PGRI, PSRN2000, PROF → **Identification of Measures / Type of Problem Grouping of Measures / Intervention Objective** → EMAAC Mafra …

WORK METHODOLOGY

Activity 2 – Intervention Program



PRIORITIZATION OF SECTIONS OF WATER LINES

through the definition and application of specific parameters

Assignment 2.1- Development of the action plan proposal, with:

- **T2.1.3** Development and application of the **prioritization methodology for sections of water lines** for physical programming of the action plan, showing its **temporal articulation with the revision cycles of the water resources planning instruments**, in force

Assignment 2.2

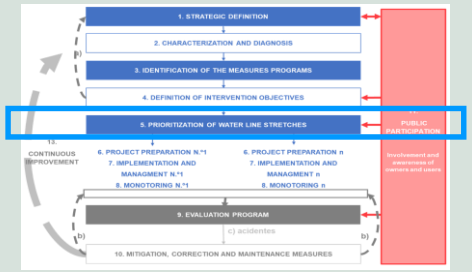
- **Elaboration of Development Programs to the action plan**, at the level of **Maintenance, Monitoring** (with proposed monitoring network), **Public Participation** and **Technical Training**, River Emergency (if applicable) and **Intermunicipal Cooperation**

Assignment 2.3

- Production of F**inal Eeport**, with presentation of results and availability of a **management tool to support decision making** (database in geographic information system)

WORK METHODOLOGY

Activity 2 – Intervention Program



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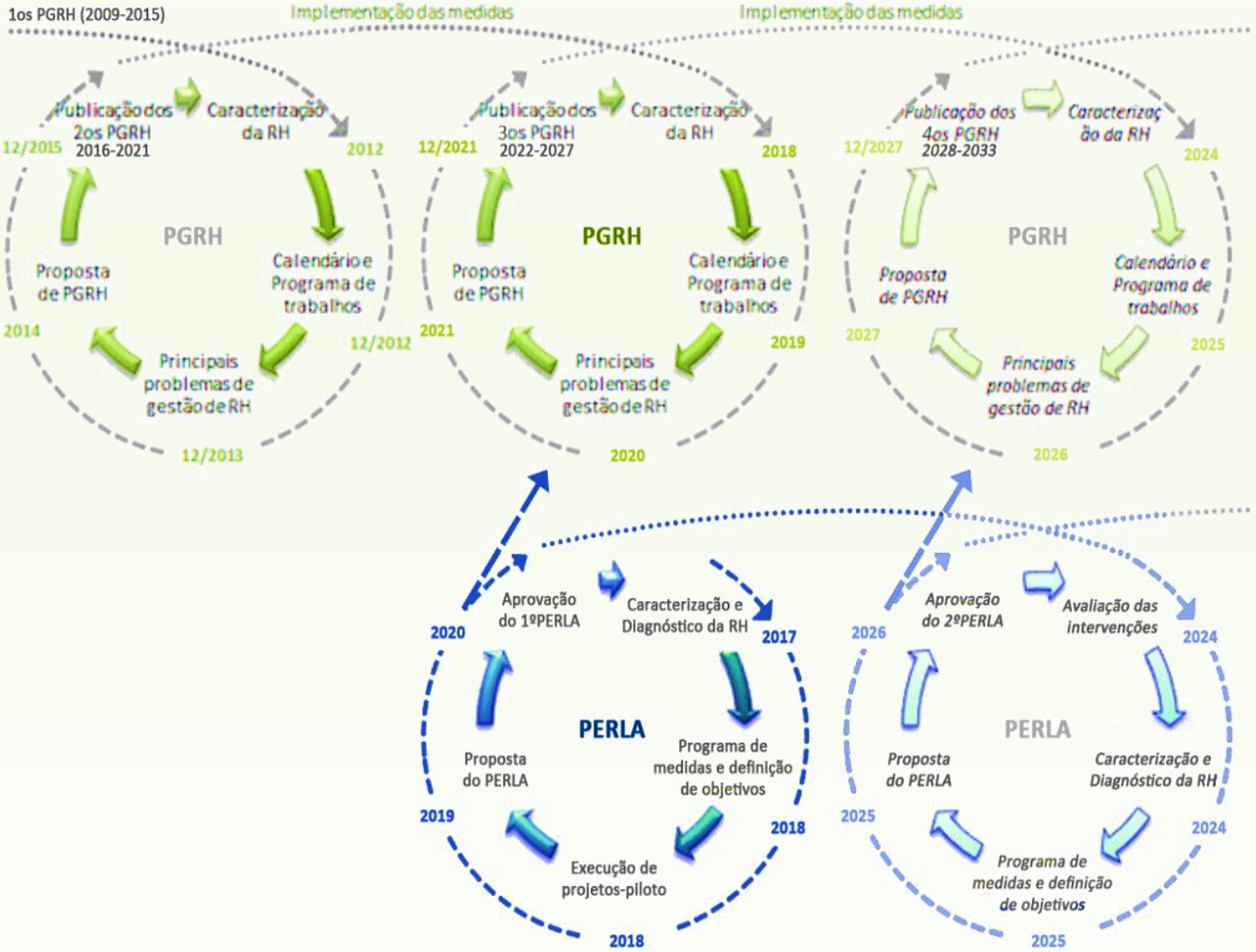
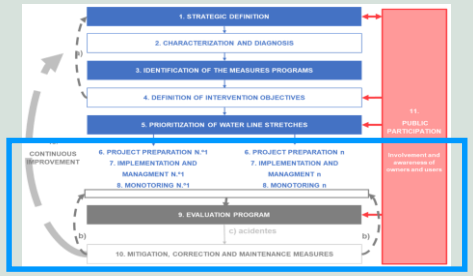


WORK METHODOLOGY

Activity 3 – Experimentation and Learning



PILOT PROJECTS

Descriptive memory - Bill of quantities - Budget estimate - Drawn parts - Contract documents

Assignment 3.1

- **Selection of sections, by type of water line, for intervention** as potential pilot cases and development of the respective execution projects

Assignment 3.2

- **Production of a Fluvial Rehabilitation Technical Guidance Document,** with identification of the main technical solutions and respective performance procedures, to guide interventions

Assignment 3.3

- **Operationalization of pilot projects and launch of the Public Participation and Technical Training Program,** through the development of environmental awareness and technical training sessions

Assignment 3.4

- **Formalization of a Rios + Laboratory,** as a space-demonstration of the main technical solutions for river rehabilitation to be applied in future interventions, in the context of adaptation to climate change, considering the water resources

Mafra SPRWL

STRATEGIC PLAN FOR REHABILITATION OF WATER LINES


Thank You