



ERS 2021 Session 2
Adaptation to climate change: the
interest of basin management
planning



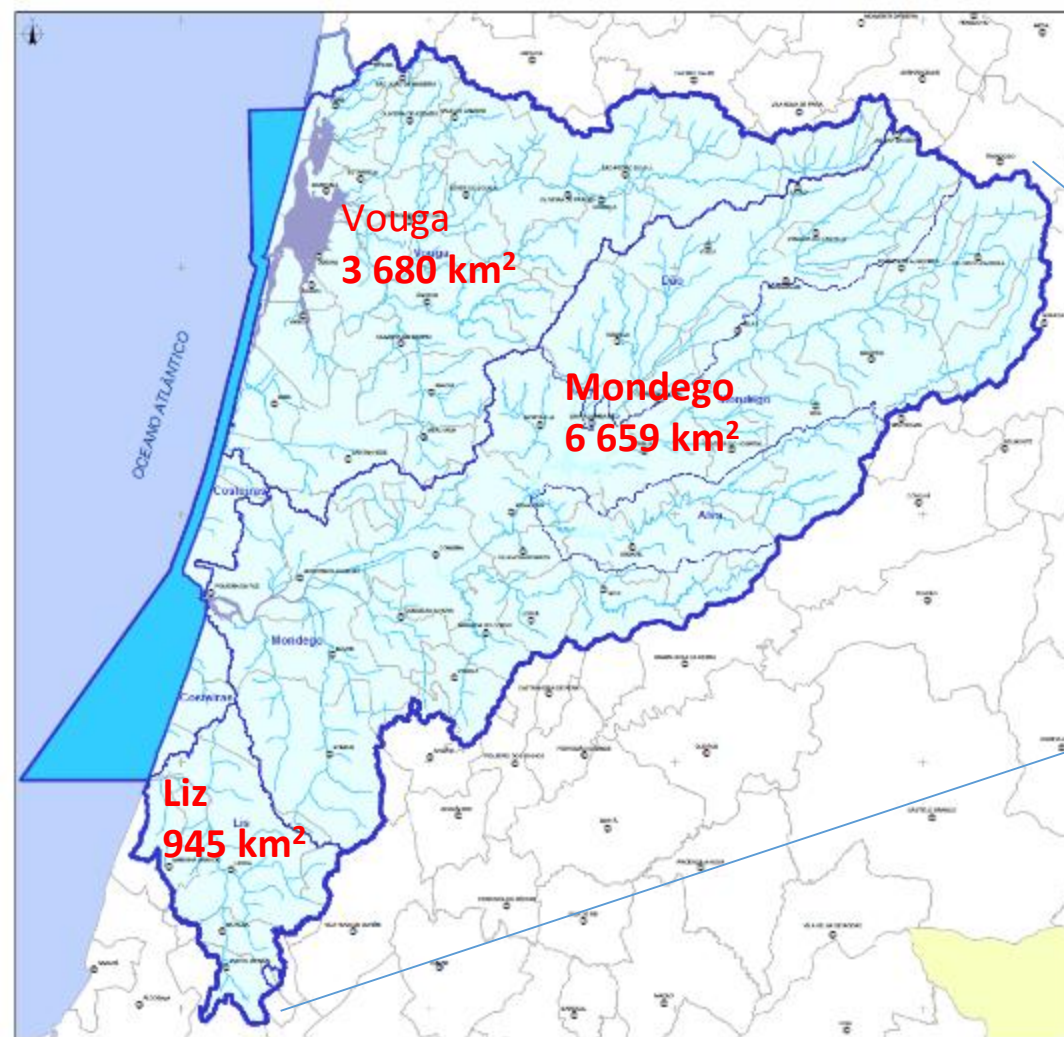
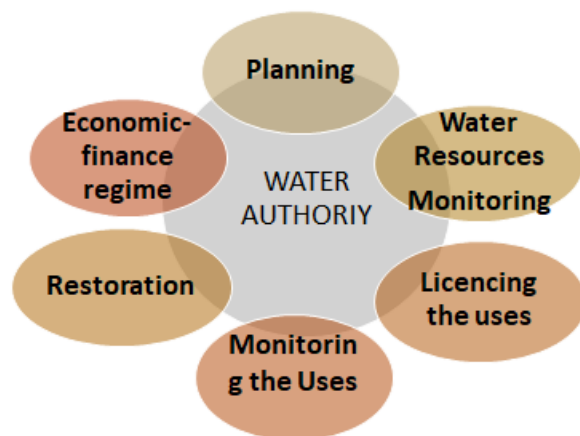
STRATEGY FOR THE RESTORATION OF THE WATER COURSES IN THE CENTER RIVER BASINS DISTRICT

Vouga, Mondego and Lis rivers

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Strategy of APA/ARHC for the river network restoration



64 municipalities
2.7 million inhabitants

RH4
12 144 km²



Strategy of APA/ARHC for the river network restoration

River Basin Management Plan



Ministério da Agricultura,
Mar, Ambiente e
Ordenamento do Território

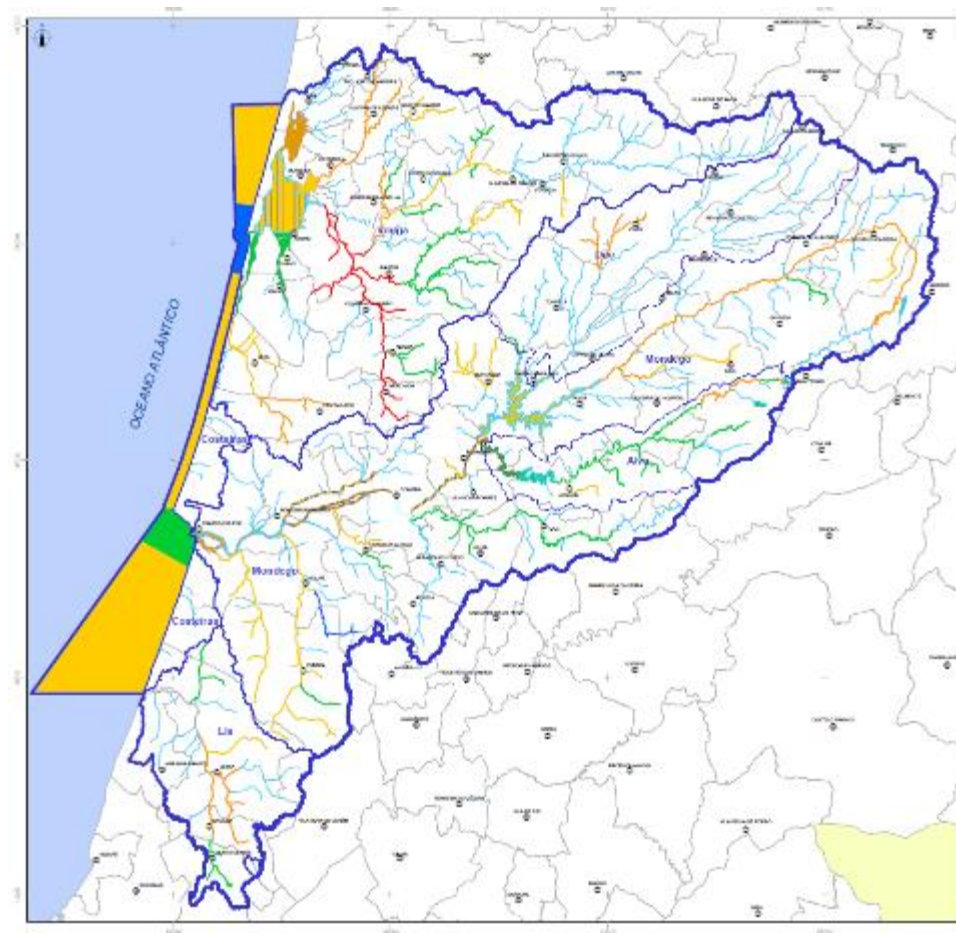
PLANO DE GESTÃO DAS BACIAS HIDROGRÁFICAS DOS RIOS VOUGA, MONDEGO E LIS INTEGRADAS NA REGIÃO HIDROGRÁFICA 4



6 years cycle



Water body status



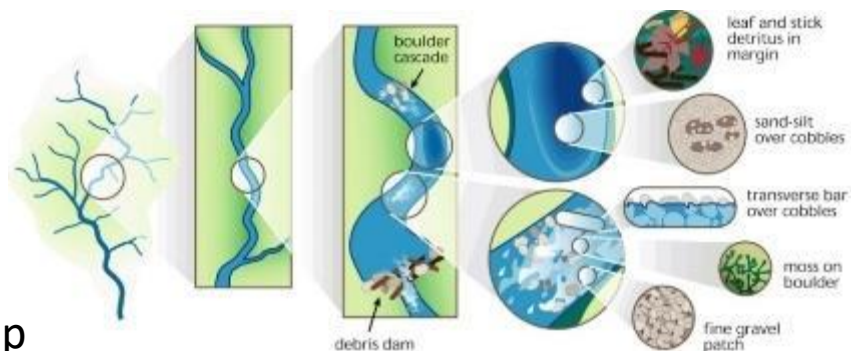
73 % of the water
bodies “rivers” are
in good status or
above good status



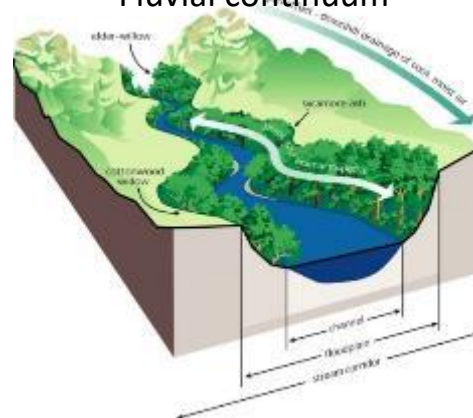
Strategy of APA/ARHC for the river network restoration

PRINCIPLES:

Ecosystems protection



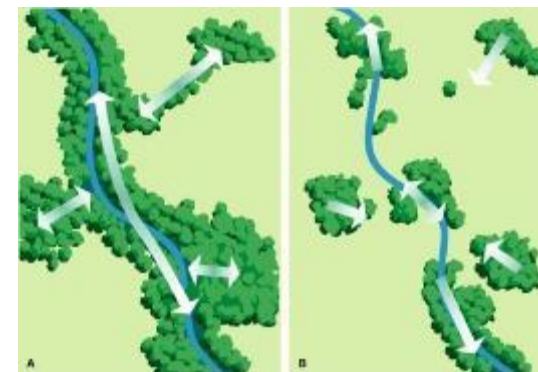
Fluvial continuum



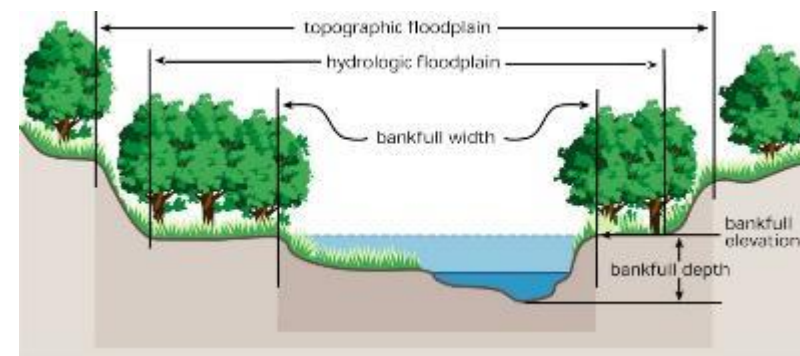
Public participation



Ecological corridor



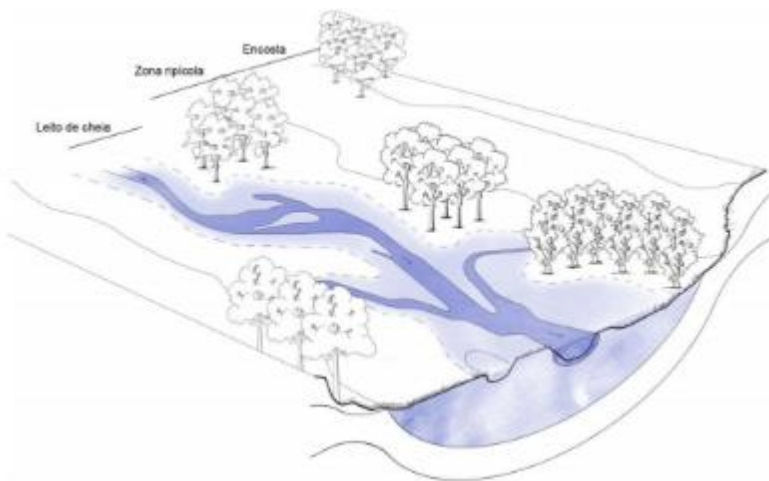
Appropriate planning of the riparian gallery



Projeto PerRIOS

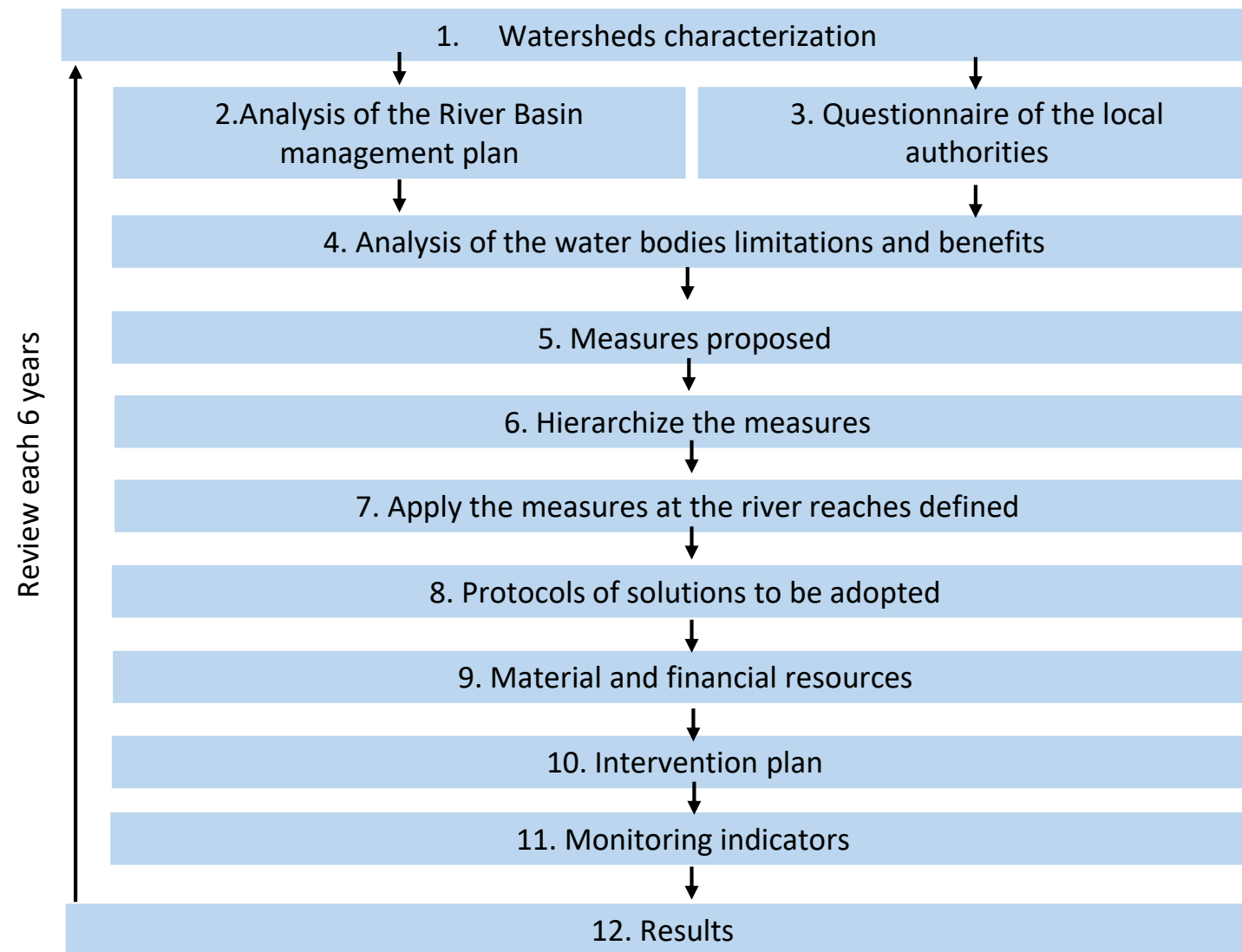
Strategic study for river restoration

Project developed through a partnership between ARHC and the Faculty of Engineering of the University of Porto.



Strategy of APA/ARHC for the river network restoration

Project **PerRIOS** - Methods



Strategy of APA/ARHC for the river network restoration

Intervention plan



Basic studies



Monitoring of the interventions



Guide for intervention



Guide for intervention



River basin characterization



River courses characterization



Biologic characterization



Technical measures sheets



Glossary



Strategy of APA/ARHC for the river network restoration

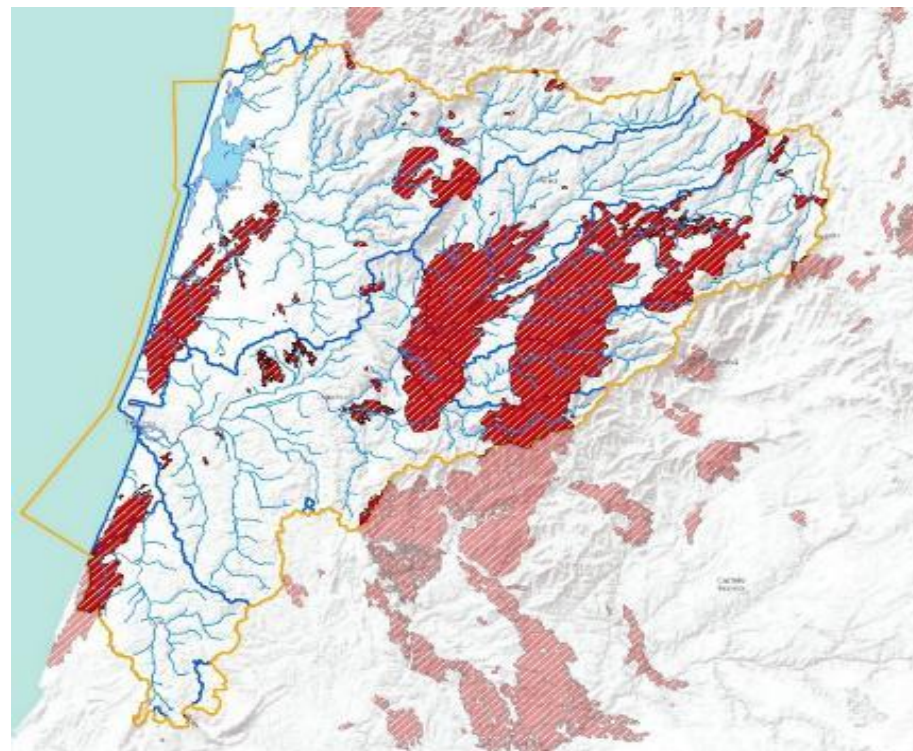
From June to October 2017

Forest fires at the
Center RB Districts
affected
 $\pm 2\,280\text{ km}^2$

116 death

The government took action, financing urgent river restoration interventions, with an amount up to 16 M €

Our region became responsible for the management of 5 M €



ARH: Evaluation of the state of the water bodies
Interventions to

- Increase the resilience of water bodies
- Rebalance River Ecosystems
- Plan the Riparian Gallery
- Remove exotic species

Strategy of APA/ARHC for the river network restoration



Forest fire



Destruction of the riparian gallery



Soil erosion



River water quality affected



Forest residues were taken by the river to the coast

The fieldwork (carried out by municipalities and ARH) identified sections of river reaches in urgent need, in order to:

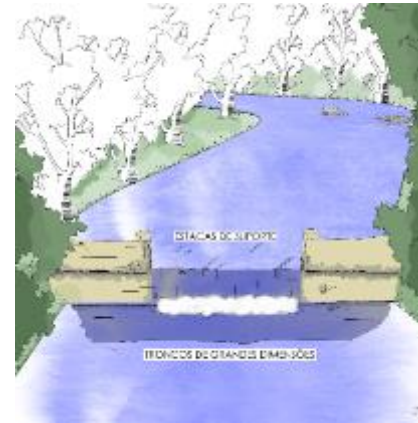
1. Ensure the natural flow in the water lines
2. Minimize soil erosion
3. Minimize flood and flooding effect
4. Ensure bathing uses

Strategy of APA/ARHC for the river network restoration

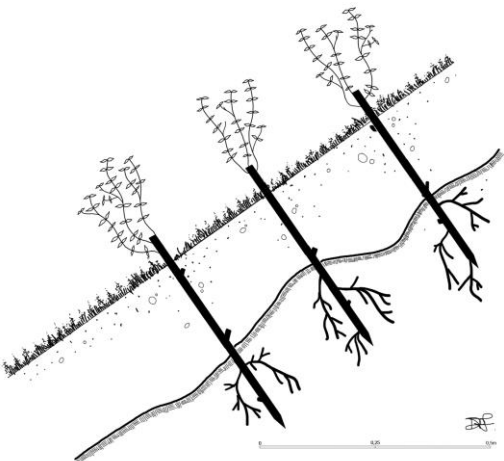
Nature-based solutions Pruning



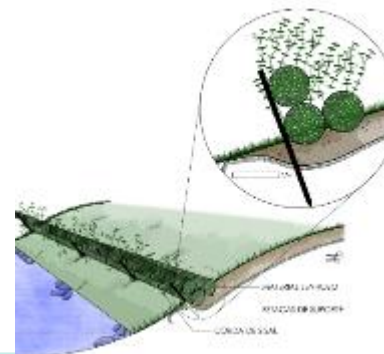
Micro weir



Live staking



Live fascine



Strategy of APA/ARHC for the river network restoration

Through strategic partnerships,
we have been accomplishing our goals:

- 01 To protect, recover and promote ecosystems ✓
- 02 To increase the protection of the populations facing risk ✓
- 03 To increase the resilience to water lines ✓
- 04 To guarantee the quality of water ✓