River restoration in the Iberian Peninsula

Analysis of 2nd River Basin Management Plans in Spain and Portugal

To obtain a complete picture at the Iberian Peninsula scale of river restoration actions proposed and implemented as part of the river basin management planning, Wetlands International Europe and the Iberian Center for River Restoration commissioned an analysis of river restoration measures proposed in selected Spanish and Portuguese River Basin Management Plans (RBMPs) of the second cycle (2015-2021) and the provisional outlines of the significant water management issues to be addressed in the third cycle (2021-2027). [1]

The following brief provides an English language summary of key findings and recommendations from the Spanish language report *Estudio y Análisis de las propuestas de restauración fluvial en los Planes Hisdrológicos del segundo ciclo de la península ibérica*. The full report can be accessed here.

Summary

Many of the rivers of the Iberian Peninsula are impacted by human-made alterations, which have caused variations in their natural conditions, be they morphological, water quality, flow regime, etc. This situation affects biodiversity and several key ecosystem services, such as flood and drought risk mitigation, aquifer recharge, nutrient retention and recreation. In order to reverse this situation, it is necessary to carry out river restoration measure, based on a recovery of hydromorphological processes that allow rivers to return to a more natural state of structure, function, dynamics and territory.

Under the EU's Water Framework Directive (WFD), RBMPs are intended to serve as roadmaps for conserving and restoring freshwater ecosystems across the EU and achieving the target of "good ecological status". WFD (2000/60/EC) Article 4 states that to achieve the objectives established in the RBMPs of each planning cycle, each river basin district will establish a programme of measures (PoMs) which must indicate the cost and the estimated time for achieving these objectives.

The PoMs of the second RBMPs and Flood Risk Management Plans (FRMPs) include measures and actions to reduce the hydromorphological pressures on water bodies, and to improve the structure and function of aquatic ecosystems.

The main objectives of the study were to:

- Identify the possible river restoration measures that have been proposed in the PoMs of the second cycle RBMPs and FRMPs and whether they are measures that will help achieve good ecological status;
- Analyse the degree of implementation and investment in environmental restoration measures.

[1] The analysis was carried out by Fundación Nueva Cultura del Agua who looked at the information contained in the second RBMPs, the second Programme of Measures and the Annual (2016-2019) Monitoring and Assessment reports in each River Basin and other documentation regarding the actual progress of the measures.

The RBMPs of the following river basin districts were assessed in 2020:

Spain:

- Duero
- Júcar
- Ebro
- Segura
- Cantábrico Oriental
- Cantábrico Occidental
- Guadalquivir
- Guadiana
- Miño-Sil
- Tajo
- Distrito de Cuenca Fluvial de Cataluña

Portugal:

- Tejo
- Ribeiras do Algarve
- Sado
- Mira
- Guadiana
- Minho
- Ribeiras do Oeste
- Lima

Findings

The study concludes that the **PoMs are gradually incorporating the concept of river restoration, but the road to the naturalization of rivers is long, since many measures are far from what can be considered as good restoration practices.** In addition, the pace of implementation of measures is not in line with what is stated in the RBMPs and FRMPs. This slow pace of implementation casts doubt on the achievement of the environmental objectives of the WFD for waters to reach good ecological status by the legal deadline of 2027.

The analysis identifies the following gaps and positive developments:

Lack of information

In general, **there is a lack of information on river restoration measures**. The measures and the records are lacking descriptions or the descriptions are too brief. There is also a lack of information on the development of the PoMs, as monitoring reports are short and results are generalised. As a result of this, there is uncertainty about:

1. the situation after each measure has been implemented
2. investments made
3. progress achieved
4. whether there have been modifications in the initial budget.

Due to the lack of collaboration between river basin authorities, it is common to find actions without budgeted costs and monitoring reports with incomplete economic data. Moreover, the monitoring reports of the RBMPs were not up to date at the time of the study. For the river basin districts of Portugal, the latest available monitoring reports date was from 2017. For Spain, the vast majority were updated before 2018.

Due to a number of issues identified in the PoMs and follow-up reports, it is difficult to determine the characteristics of the measures, their degree of execution and also their budgeted costs. These shortcomings also form an obstacle in relation to the required public participation.

River restoration measures

The right steps are being taken for improving the longitudinal connectivity of rivers through the removal or permeabilization of dams. Inventories of all existing transversal structures are being carried out in order to improve the available information for the next RBMPs.

A good example of measures consistent with river restoration found in the RBMPs is floodplain recovery. Examples are the removal of the dikes from the Luna River and the restoration project of the Nava area. Dike relocation is a less preferable option for river restoration compared to the complete removal of dikes. However, given the anthropogenic pressure suffered by rivers with frequent occupations of the fluvial space, relocation is often considered a more viable option.

Another good practice that is being introduced is the **removal of breakwaters**, which allows the erosion of banks and restores the lateral mobility of rivers and streams. However, no measures have been identified aimed at de-channelling.

Counterproductive measures

An important finding is that where information on PoMs is available, not all actions are river restoration measures aimed at reducing morphological pressures (improving longitudinal connectivity, restoration and improvement of riparian vegetation). For example: the idea that river bank erosion is a problem to be solved, instead of an intrinsic process of the river, is an inadequate perception. This motivates actions to stabilise river banks. There is a **general trend from conventional "hard" infrastructure to more "soft" infrastructure to stabilise banks**, that despite the allowance of ecosystem development, achieves the same negative results on the hydromorphology of the riverbed.

Furthermore, the analysis found that environmental restoration measures in urban environments often have a counterproductive effect on river restoration, because they involve transversal structures for water retention, the stabilization of river banks or an increase in hydraulic capacity by dredging. Some measures are camouflaged as environmental restoration and have a negative effect on natural recovery. The "recuperación ambiental riberas en Aldeamayor de San Martín" project is an example of this, where other interests prevail such as slope stability and/or landscape measures.

Absent measures

One of the most important practices of river restoration is the restoration of natural sediment flows, which is not included in any of the programmes of measures of the RBMPs and FRMPs.

Moreover, the contribution of sediments is a residual measure that does not occur in almost any of the demarcations.

The general state of implementation of river restoration measures is low, especially in river basins in Portugal, with ratios of 0% in some cases.

Investments in river restoration

Despite limitations, including a lack of detailed information about the budgets or the degree of execution of measures, figures 1 (for Spain) and 2 (for Portugal) show the percentage of investment budgeted for measures that are clearly river restoration (green) and for measures that are clearly not (red), compared to total budget for each river basin. This gives an indication of how each river basin engages in actual river restoration. For example, in the Guadalquivir river basin, typical "green" or "red" measures included:

- “green” measures: removal of obsolete infrastructure, installation of fish passages and the removal of non-native species;
- “red” measures: the installation of breakwaters and dikes and the replacement of other grey infrastructure.

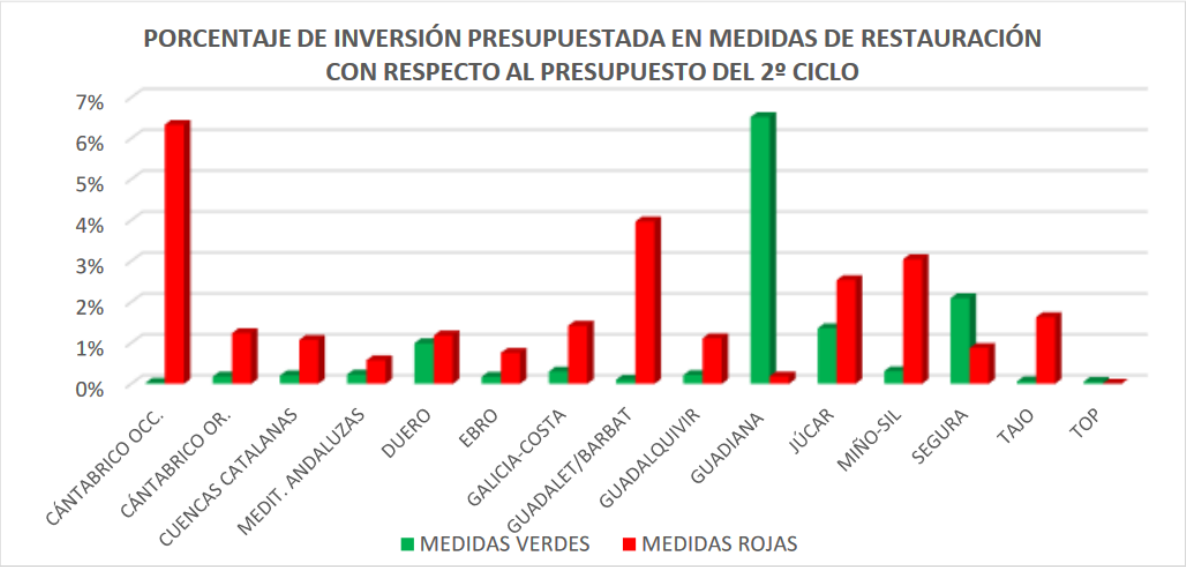

Figure 1

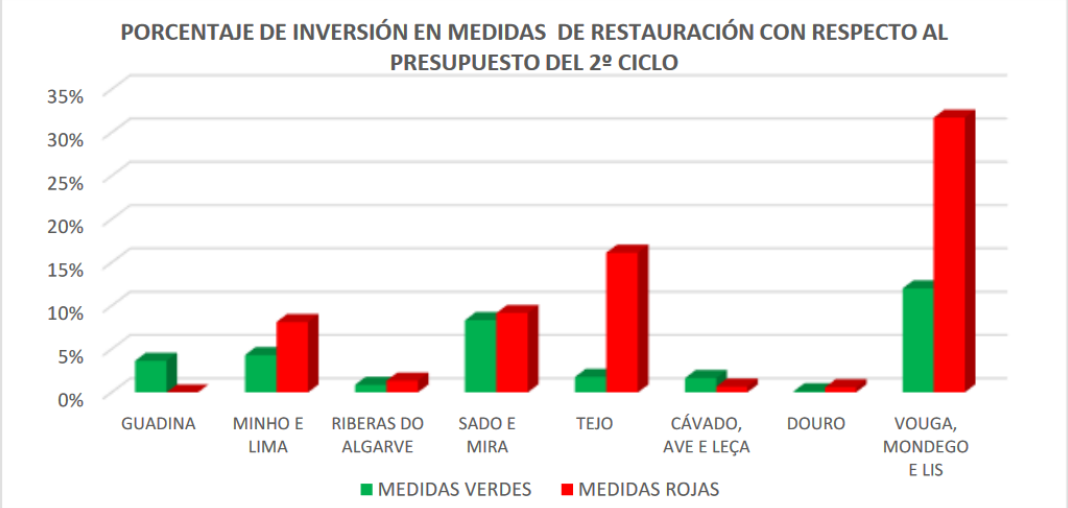

Figure 2

Recommendations for the third RBMPs

River restoration measures are essential for compliance with the WFD. So in general a significant shift in water policy is needed, specifically a firm commitment to achieve the goal of returning rivers to good ecological status and as close to their natural state as possible, for which there is still a long way to go.

To ensure good river restoration practices, the report recommends the following for the 3rd RBMPs that are being drafted in 2021:

- Taking the adequate **management of sediments** into account (continuity in transport, supply and extraction);
- In the face of alterations and pressures it is necessary to **increase the rate of removal or permeabilization of transversal obstacles**;
- **Natural Water Retention Measures (NWRM)** should have a greater presence in the design of RBMPs and FRMPs and begin to replace grey infrastructure;
- **Efforts made against invasive species should address the reasons for their proliferation** and aim for elimination, rather than avoiding their expansion through control measures, the latter option being necessary but insufficient;
- With regard to ecological flows, **it is important to establish minimum waterflows, as well as maxima and exchange rates**. Equally important is to guarantee their full compliance. The existence of frequent breaches should be noted. Furthermore, it is necessary to point out the reluctance to adapt water withdrawals to values required for ecological flows. There is a risk that ecological flows, instead of being used to improve resilience to climate change, may be even reduced following inadequate interpretation by the river basin authorities of the relationship between climate change and ecological flows;
- Regarding the gauging stations for the control of circulating flows, it is possible to use other continuous and less intrusive measurement methodologies;
- Public participation is a key aspect of the development of the WFD. Article 14 WFD establishes the promotion of the active participation of interested parties in the preparation, revision and updating of RBMPs and therefore PoMs. The **transparency, accessibility and level of detail of the information is a fundamental aspect** that must be taken into account by the different river basin authorities for the third and subsequent planning cycles.