
PROJECT OBJECTIVES

Within the framework of the problem and the previous and ongoing main European related projects described above, two general goals are proposed in this project: the development of a dynamic riparian model and its application to the case studies of 3 European countries.

1. Development of a dynamic riparian model

The specific objectives in this first general goal are:

- a) To develop a flexible dynamic model of riparian habitats and vegetation to be easily applied in a wide range of conditions across Europe, from humid regions of Austria to Mediterranean conditions, including rivers with permanent and non-permanent flow regimes. Two important key elements of this model will be the soil-moisture submodel (to consider the effect of low flows or droughts) and the succession submodel (to consider the effect of floods).
- b) To create a software to run such model (it will be called as this project: RIPFLOW), in a user-friendly interface, with easy data input and management, and the clear and necessary outputs to give decision support in the implementation of the WFD by the water managers and also consultancy companies working on environmental flow assessments and river restoration
- c) To implement in the software a tool to assess the ecological status -*sensu* WFD- for alternative flow regimes, based on indexes developed in the 3 partners countries, which will be flexible to incorporate the calculation of another indexes.
- d) To identify and to apply cost-effective methods for the acquisition of biological information needed to calibrate the model in most regions of the European Union

2. Application to project case studies

The specific objectives in this second general goal are:

- i) To calibrate the model in nearly totally undisturbed conditions, and to validate the developed model in sites with altered flow regime
- ii) To help water managers in the learning and the starting point for the practical application of the results in the water management of the case studies (exploitation in national context), to be potentially used in the corresponding River Basins Plans
- iii) To identify scientific based guidelines for assessing the impacts of altered hydrology on riparian vegetation, due to climate change or dam operation rules, considering extreme hydrological events like droughts and floods (trans-national context)

-
- iv) To identify good practices in water management for the natural recovery and the improvement of the ecological status of the riparian vegetation, in the context of the European Union directives

3. Contribution to the ERA-NET IWRM Call

Concerning the objectives of the ERA-NET IWRM Call for proposals, this project will cover three research bids in the topic “**Hydrological and morphological pressures and impacts on ecological status**” (see section 4, page 4 of the Call document “Call for Research Proposals”):

- i) Deliver techniques to understand and manage the impacts of altered hydrology (flow rates and volumes) on biological elements.* In this project proposal, the biological element is the riparian vegetation and anthropogenic impacts and climate change alterations of flow regime will be considered.
- ii) The development of tools/methodologies to assess the “ecological flow regime” of rivers, based on minimum, maximum and other critical seasonal flows – to allow the acceptable level of hydrological changes to be set by river basin managers.* In this project proposal, the development of RIPFLOW model and the associated specific objectives.
- iii) Deliver tools that support decision-making and policy development in extreme events (both floods and droughts) relating to water quality.* In this project proposal, the application to the case studies is looking for these types of results (at national and trans-national scales) for the ecological status in water bodies with permanent and non-permanent flow regime.