

On June 14th 2012 the European Commission approved the project LIFE11 ENV/IT/243 “RII” (Integrated hydraulic-environmental restoration of the creeks over the piedmont of Emilia-Romagna Region). The project involves Emilia-Romagna Region as coordinating beneficiary, the municipalities of Albinea, Bibbiano, Quattro Castella and San Polo d’Enza as project co-financiers. The Emilia Centrale land reclamation and drainage Authority will contribute to carry out the project.

The total amount is 1.200.000 €, 50% of which charged to EU.

The duration goes from September 3rd 2012 to March 31th 2016.

The specific goals of the project are to introduce and test the usefulness of innovative management strategies for the territory, which provide for experimental intervention techniques on water courses, in order to increase the ecological quality of the minor drainage network, and for innovative economic-legal management tools, in order to involve farmers in reducing flood risk.

For the application form of the project visit:

<http://ambiente.regione.emilia-romagna.it/life-rii>

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The general aim of the project RII is to demonstrate that the Directive 2000/60/EC, establishing a framework for Community action in the field of water policy (“WFD”), and the Directive 2007/60/EC on the assessment and management of flood risks (“Floods Directive”) key concepts, about the opportunity and necessity of reducing flood risk and improving water bodies ecological status at the same time, can be applied also to minor drainage network, not directly involved by the two Directives, and along the borders between hilly-mountainous territory and the plain, which are particularly exposed to pollution caused by nitrates from agricultural sources; more, minor drainage network is typically heavily modified and receives sewers and industry discharges; these zones are typically characterized in the Emilia-Romagna Region.

Due to the dimensional characteristics of these water bodies, it’s difficult to literally apply the Directives key concepts, which identify the widening of natural expansion areas as a powerful strategy to reduce flood risk and better the ecological status by means

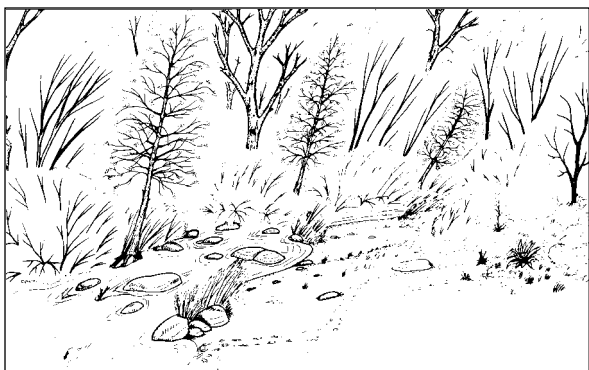
of, e.g., “habitat restoration and reconnection of alluvial floodplains” or “increasing water retention by re-establishing floodplains”. Therefore, this project takes its cue from the WFD and Flood Directive in order to tune up innovative management strategies and new course of action for minor drainage network in hilly or mountainous territories.



Rio Quaresimo creek, with three branches underpassing the Quattro Castella built-up area

The piedmont creeks draining water from the hilly and mountainous territories are often characterized by small watersheds and narrow streambeds with torrential regime: as a natural consequence of their nature, they have steep slopes and small, sporadic floodplains. Urbanized belts cross these water bodies close to the hillside and reduce the availability of level lands (areas) to reconnect with the creeks, which often flow through built-up areas into culverts. All these characteristics limits decision-making actions and reasonable technical solutions.

The strategy for giving more space to streams and rivers for hydraulic and environmental purposes can be successfully applied, if possible, to level lands upstream and along the water body but especially over the plains downstream the built-up areas, where the water courses flow frequently confined by levees and have perched riverbeds. This project will demonstrate the usefulness of strategies already used for similar situations in Europe, e.g. cross-section enlargement by moving the levees back and banks excavation; moreover it will identify and set innovative economic and legal management tools to permit the use of cultivated lands as flood control areas, in order to protect built-up areas. The general strategy of the project consists of combining hydraulic and environmental purposes, with partial or differentiated ecological restoration actions, in order to reach a compromise between land-protection policies, agricultural and environmental uses and fruition aspects.



Proof of concept of restoration (from the project)

Furthermore, this project is planning to approach and demonstrate that the suggested methods for water bodies management are also effective for solid transport management: minor channels and streams deliver sediments to rivers with sediments imbalance criticalities, as lack of

solid transport - which causes riverbed and banks erosion - or, at the opposite, solid transport surplus that could generate a higher flood risk when the river flows into a culvert or through heavy deposition branches.

Lastly, the project is planning to show that the restoration techniques applied to the creeks



Examples of piped sections in the intervention area

have good potentialities to enhance superficial waters and groundwater, thanks to the improvement of the self-purifying capability of the creeks. This approach will contribute to reach the objectives of the Directive 91/676/EC concerning the protection of waters against pollution caused by nitrates from agricultural sources (the area of interest is entirely included in a “vulnerable zone”, designated according to Article 3 of the “Nitrates Directive”).

Considering these elements, the project defines the following specific goals, in order of relevance:

- (1) to introduce, test and demonstrate the usefulness of:
 - (a) innovative territory management strategies and intervention techniques on water courses, based on WFD and Flood Directive key concepts, in order to deal with hydraulic criticalities and ecological quality of the minor drainage network, excluded from the field of interest of these Directives;
 - (b) innovative economic-legal management tools supporting the flood risk management and ecological restoration of the territory;
- (2) to concur in increasing of the ecological quality of the minor drainage network in a heavily urbanized strip close to the hillside, decreasing local and downriver inundation risk and approaching to waters pollution caused by nitrates from agricultural sources at the same time;

(3) to increase the awareness of Italian and European Authorities competent on the river management and territory government, of municipalities and citizens in general, about the chances given by these strategies and techniques to environmental protection and restoration and to flood risk management.

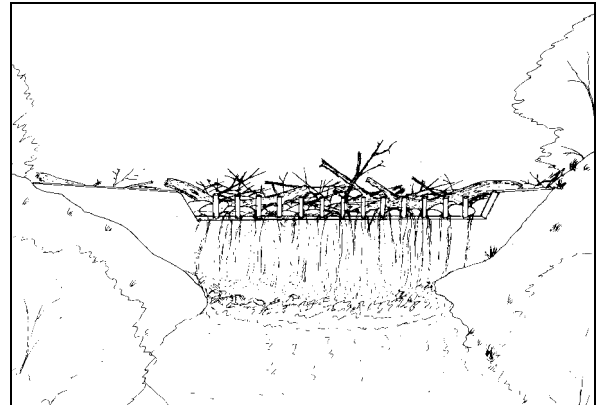
The cases of study (pilot creeks) were selected on the basis of specific scenarios, representative for the key concepts of the project RII, such as water bodies characteristics and their placement relative to urbanized belts: (1) enclosed bed and steep slope in the stretch upstream a urbanized area; (2) enclosed bed along and downstream the urbanized area; (3) embanked bed along and downstream the urbanized area.

The program of material and immaterial measures will be carried out by a public participation process supporting the project, involving local, national and international stakeholders. The process will adopt participation methods inspired to the river agreement (“contratti di fiume”) experience.



Left: the local roads directly affects the streambed of the Rio Lavezza creek; right: stretch erosion on Rio Enzola creek

The program will give indications to enhance historical, cultural and landscape elements of the territory and will be strictly connected with demonstrative actions on pilot-creeks, which results will be used to calibrate the plan for the hydraulic-environmental restoration: so the plan becomes an “alive” tool, which can be updated during the project progress.



Hypothesis of a flexible and permeable embankment

The project reserves particular attention to public awareness and dissemination of its contents and results at local, national and European scale: a web-page of the project will be developed, where web communities will allow stakeholders and public Authorities to confront each other, to share documents and data related to the project and to follow the project progress. Is also provided to realize explicative documents, a report for the general public, issues, brochures, material for information and communication, meetings, workshops and conferences, the whole behind the coordination of a general communication plan.

The monitoring of the project results will carried out checking the effects of the provided restoration works on environmental quality and hydraulic regime of the involved pilot-creek. The monitoring action will be carried out through a “Monitoring of chemical and physical elements, of the vegetation, of the fauna and of hydraulic-geomorphological parameters”.

Is also provided to carry out the monitoring of the project impacts on the various stakeholders in relation with the above mentioned material actions, the involvement events along the public participation process, the elaboration of the general action plan, the consultation stage needed to identify and apply the innovative legal management tools and, more in general, with the effectiveness of the provided communication and dissemination actions.