A network for optimised water management, rehabilitation and protection of aquatic ecosystems - FI

1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space

2. Key Approaches

- Integration
- Participation
- Socio-economic
- Technical

3. Experiences that can be exchanged

The ecological status of water in the Karjaanjoki river basin has suffered in recent years as a result of hydro-morphological alterations. A power station in the downstream area and several other human interventions have affected the flora and fauna and contributed to sedimentation. This study examines the rehabilitation and sustainable management of the river.

4. Overview of the case

This case provides a multi-faceted approach to various factors and their effects on the watercourse covering the whole river system across administrative boundaries.

5. Context and Objectives

a) Context

The Karjaanjoki river basin in southern Finland is the largest river basin in the Uusimaa region, having an area of over 2000 km². It consists of numerous lakes, rivers and waterways of various types and sizes, which cover a total of 12% of the river basin area. Eight municipalities of Uusimaa share this biologically rich area. Over a long period of time this river basin has undergone progressive changes away from its natural state. The area under cultivation and farming has been extended in the past by turning lakes into arable land. The water ways have been altered, for example by lake lowering, water level regulations, log floating and by dredging for flood protection. Rivers and streams flowing through farmland have been altered to improve drainage. The state of the surface waters has also been altered by point pollution, produced by industrial activity, urban centers and cities. The main sources of non-point pollution are agriculture and scattered settlements. In addition, several weirs and regulated lakes affect the flora and fauna in the waters of the area. The quality of surface waters is good in the headwater region. However, the water quality decreases towards the lower course. Dams have had a significant influence on the migratory fish stock disappearance. Nonetheless, the waterways still attract rare birds and trout can still be fished.

b) Objectives

The aim of the project was to ensure the fulfilment of the requirements of the Water Framework Directive (WFD). This meant developing a cost-effective and flexible action plan for water management, monitoring and protection and applying it in practice.. The main objectives were (1) preserving and improving the good ecological status of the watercourse and acknowledging the biodiversity, (2) restoring the aquatic ecosystem and (3) ensuring a sustainable use of the whole river system.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

The city of Lohja was responsible for the initiative. It involved 32 partners and financiers, including among others, nearly all municipalities of the river basin, non-point and point polluters, such as representatives from agriculture, forestry, industry, sewage treatment plants, waterworks and producers from the field of hydro-power. This meant developing efficient methods for the management of the Karjaanjoki watercourse.

b) ICZM tools

Cost-efficient methodologies were formulated for restoration, rehabilitation and maintenance of the watercourse or parts of it e.g. combining mathematical models, remote sensing and volunteer monitoring. Problems in the Karjaanjoki river system for which the project developed solutions were lack of management and understanding of the status of the river system; numerous sources of pollution in the area decreasing the water quality in running waters and in lakes (nutrients, suspended solids, non-point and point-pollution); changes in the morphology of running waters, e.g. channelisation and harmful constructions; and lack of information flow.

Ecological restoration of running waters: The status of streams was studied and novel methods were applied to sample site restoration. The information gained from this was used for developing a restoration plan covering the whole Karjaanjoki river system. Restorations were accomplished at 22 demonstration sites

Improving the functional value of Lake Lohjanjärvi: In the Lake Lohjanjärvi area, effective and cost-efficient methods for watercourse management based on volunteer observations were developed. Mathematical water models, surveys on fish stocks, remote sensing, and volunteer lake monitoring was utilised and developed. Innovative methods were applied to combining these with the existing data on water quality and measurements.

Master plan for Mustionjokilaakso: Solutions for decreased loading were sought by assessing the ways in which the information gathered could be implemented in the development of land use management. Possibilities for using recommendations and regulations in land use management in water protection were assessed.

Water pollution control methods in agriculture: The project aimed at decreasing loading by reducing the use of fertilisers. This was done by nutrient balance calculations. In addition, a novel model for an environmental management, self-surveillance system was developed in co-operation with farmers.

Water pollution control methods in forestry: Forest management plans were improved so that the adverse effects caused by forest cutting and drainage ditching on small water bodies could be predicted and prevented. A catchment area model was developed. The methods of water protection were advanced by developing tools and methods for forestry planning, e.g. a map programme, soil surveys and mapping of areas sensitive to erosion.

Planning of sustainable recreational use of the Karjaanjoki river basin: Planning of sustainable recreational use of nature was developed. Nature and recreational values and possible conflict sites of a target area were identified more easily using the method. The development of an evaluating method for estimating the carrying capacity of the recreational sites will protect the area’s environmental and recreational values.

Development of river basin monitoring systems: The watercourse monitoring system was improved so that the requirements of the WFD and regional needs could be met in the future; the main focus being on the surveillance monitoring of the water body. The EU Habitats Directive’s monitoring requirements were taken into account. The monitoring result’s utilisation and co-operation between citizens, authorities and associates was enhanced. The national criteria for typology and classification definitions of the WFD were also tested and some development needs were proposed.

7. Cost and resources

The total costs were €2.3million of which the LIFE fund contributed €1.1million.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

Although improvements of ecological status of surface waters need to be judged over the long term, positive tendencies have been seen already.

9. Success and Fail factors

Locals were involved in the project since the beginning, in order to guarantee the future continuity and success of water management in the area. Volunteers also played great importance in the success of the work. A novel monitoring method based on remote sensing was trialled but did not prove as useful as hoped. The municipalities will continue the water protection activities initiated.

10. Unforeseen outcomes

Communication with so many partners was a major challenge.

11. Prepared by

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12. Verified by

It has not been possible to verify this case.

13. Sources

- Karjaanjoki LIFE 2001-2005 Exploring new dimensions in water protection. City of Lohja, LIFE Environment.
- Life Env/Fin/000668 (2005) Final Report
- www.lohja.fi/karjaanjokilife

Karjaanjoki - Exploring new dimensions (121.15 KB)

Karjaanjoki - final report (412.47 KB)