The protection of the Timis-Bega river basin by mitigation of flood damage - RO

1. Policy Objective & Theme

- ADAPTATION TO RISK: Integrating coherent strategies covering the risk-dimension (prevention to response) into planning and investment

2. Key Approaches

- Knowledge-based

3. Experiences that can be exchanged

The development of a river basin management plan that takes into account flood risk analysis for appropriate mitigation measures.

4. Overview of the case

The river Timis – Bega river basin is susceptible to occasional, but severe, flooding. Mathematical models to predict floods were developed alongside water monitoring systems to be able to present information in a comprehensible form for municipalities.

5. Context and Objectives

a) Context

The Timis-Bega River Basin is a large and ramified trans-boundary river system, with a population of over one million people. The drainage area is 13,085 km2 in Romania and 8,085 km2 in Ukraine. The river Timis is 241 km long and drains into the Black Sea. The worst floods in 2005 caused loss of human life and substantial damage when the river reached a height of 844 cm. In 2007, elevation works of the embankments took place on both sides of the river along a length of almost 25 km raising the height to an overall 8.5 m. The impact of the floods had been heightened by the lack of real-time water level monitoring and forecasting, as well as a failure to take flood risks and the interests of different water users into account in urban zoning policy. In the absence of accurate and sound flood forecasting, the elaboration and implementation of any flood damage mitigation programme is also less effective. There was therefore a need for realistic and integrated strategies to deal with flooding.

b) Objectives

The objective was to support local authorities' flood risk management at the river basin level. A River Management Plan would be elaborated for the Timis-Bega River Basin, as the demonstration area. The overall approach was to be based on scientific knowledge of structural and non-structural measures, in line with the Water Framework Directive. The project would specifically focus on the development of a water monitoring system and mathematical models for predicting floods. A system of public consultation and information was also to be set-up. It aimed to present information in a comprehensible form: tradable water volumes, and/or land uses, between the different communities and owners all living along the rivers.

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

a) Management

The Ministry of Water and Environmental Protection is the national authority responsible for water and environmental policy in Romania, including the development of the legal framework for environmental protection.

b) ICZM tools

For the selected pilot catchments of Timis-Bega, 30 automatic HYDRAROM stations produced by SIAT-Romania were produced using a Romanian prototype for pressure sensors which allow for measuring the quantitative and qualitative parameters (water levels, precipitation, conductivity, oxygen content, pH, redox potential, water temperature). These stations together with the classic ones form a semi-automatic hydro-meteorological system that is able to provide more timely data on the floods and their triggering factors (precipitation), continuous sampling, storage, data transmission and alarms. Data are collected in a dispatcher centre in Timisoara, as well as in the cities of Lugoj and Resita (creating a dissemination system of data in dangerous cases). Information is sent daily and at any time as needed to the river basin authorities, local administration and the local Commissions for disasters, as part of a decision-support system for water management and, in special cases, for preparedness and intervention measures that would be necessary to mitigate the effects of dangerous flooding situations. A forecasting model (VIDRA) was created and implemented to be able to import data from the automatic informational system of the Timis-Bega river basin, giving a forecast lead time of dangerous situations for Timisoara City of about 12 hours. The hydrological model uses the meteorological forecasting output data and the radar information for the area. The hydrological model is used together with a hydraulic model (UNDA) for flooding area identification and forecast.

7. Cost and resources

The total budget was €716,396.

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

The initiative brought two main environmental benefits: first designing a warning system for flood defence and second, coming with different scenarios to increase the water quality in the basin, as well as finding solutions to assure good quality drinking water for the population in the basin. The methodology applied in the demonstration basin of the Timis-Bega offered solutions for an improved flood management. The analysis provided offered a better understanding about the strategy of water disaster protection in the basin and particularly Timisoara.

9. Success and Fail factors

The GIS application that was used offered a wide application in the fields of operational hydrology and water-resources assessment. Many aspects of data collection and regionalisation of the hydrological parameters were facilitated by means of micro-computer GIS. Network maps, showing basins and hydrological stations selected according to record quality and operational characteristics were used in different informational plans. The experience gained in the demonstration, as well as the concept of the design of the meta-database (numerical and cartographical database) will be useful for all the sub-basins of the Danube catchments of Romania for data reporting and analysis. On a larger scale, in terms of an effective and sustainable water resources management, it was essential to view all impacts and pressures in the context of the whole river basin and to know the peculiarities in order to find the most effective remediation measures and to propose solutions for increasing water qualit

10. Unforeseen outcomes

The pilot basin will allow the transferability of the standard methods in similar water regime basins, giving an example for building a modern informational system for integrated water management. The proposed informational system and warning system, as well as recommendation for rapid intervention measures assisted by a decision support system in which specific rules are defined for each water works for both flood management, as well as for spills as defined in the initiative, will be further implemented in Romania,

11. Prepared by

A H Pickaver, Coastal & Marine Union (EUCC)

12. Verified by

It has not been possible to verify this case.

13. Sources

- LIFE00 ENV/RO/000986 – Riverlife Project. (undated) Layman’s Report

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The protection of RIVER LIFE by mitigation of flood damages (RIVERLIFE) - laymans text (2.7 MB)