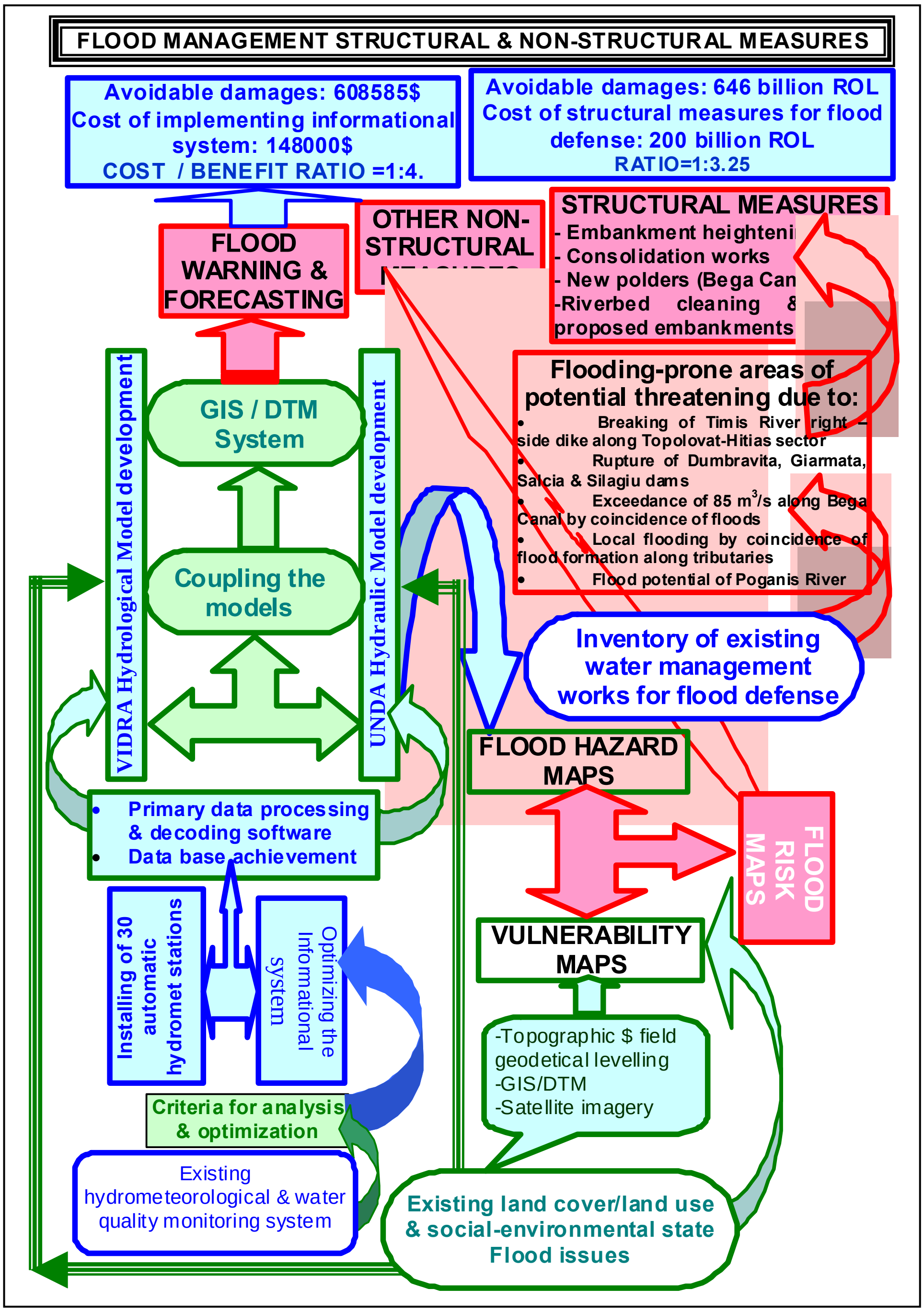
1.Summary of Riverlife Project, scopes and objectives

The philosophy of the project starts from the concept of a sustainable management of the Timis-Bega Basin, including proper flood risk management. To attend the scope of the project a real time informational system was put in place in this demonstrative area, using replication of data at the level of the database in a friendly interface "Dispecer Ape". No data are available in real time both at te regional and national levels and for the bi-lateral and international convention implementation. To this real-time data dissemination integrated monitoring and modelling system was performed and forecasted data are disseminated using the Dispecer Ape interface at all water users at the national level. The 1990's have seen a significant shift in emphasis from development of the water resource to the management of the resources under the guiding principle of ecologically sustainable development and multi-disciplinary nature of the water resources management, the qualitative facets significantly developing and growing in importance. The increased use of floodplains in Banat area, including our demonstrative area for the project: Timis-Bega Basin has also seen an increase in the number of people and properties jeopardised in flood events and therefore it has resulted in an increasing in importance of the flood warning and forecasting needs. At the same time, there has a shift in economic thinking towards a more attentive cost-benefit analysis of the water resources monitoring networks and towards the use of the high techniques in the acquisition, transmission, quality control, processing and dissemination of data.



Considering the growing importance of the sustainable basin management implementation and to reach a further implementation of Water Framework Directive, the Riverlife Project is conceived to build the entire chain of activities to increase water quality and to diminish the pressure due to anthropogenic activities in the basin. Long term planning flood management the flooding risk maps aim to help decision-makers to develop solutions to their specific problems in flood risk preparedness and prevention.

2.Description of the techniques and methodology implemented and the achieved results

The **beneficiary** of the project is Ministry of Water and Environmental Protection (MWEP), Romania. The **partners** are the National Institute of Hydrology and Water Management **(**NIHGA), the Institute for Automatic Systems (SIAT), Centre Foe Environmentally Sustainable Economic Policy (CESEP), Geosystems– Romania, Le Centre National du Department Agricol, du Genie Rural, des Eaux et des Foret (Cemagref)**-** Lyons, France, and the **consultants** in training: SCOT Conseille – Toulouse, France GDTA-France and Danish Hydraulic Institute. The end users of the demonstrative project Riverlife is Banat Water Directorate and the local authorities. The location of the selected pilot river basin is shown bellow.

Demonstrative Basin

For the selected pilot catchments-Timis-Bega- 30 automatic HYDRAROM stations produced by SIAT-Romania were produced using a Romanian prototype for pressure sensors allows for measuring the quantitative parameters (water levels, precipitation) and qualitative ones (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 more timely provide data on the floods and their triggering factors (precipitation), continuous sampling, storage, data transmission and alarming. Data are collected in dispatcher centre of Timisoara, as well as of cities of Lugoj and Resita (creating a dissemination system of data in dangerous cases). Information is sent daily and any time is needed to the river basin authorities, local administration and to the local Commissions for disasters, as part of decision system support for water management and in special cases for preparedness and intervention measures necessary to be taken to mitigating the effects of dangerous phenomena.

A forecasting model (VIDRA) was created and implemented to be able to import data from the newly achieved automatic informational system in Timis-Bega river basin, giving a forecast lead time of dangerous phenomena for Timisoara City of about 12 hours. The hydrological model uses the meteorological forecasting output data and the radar information for the area. The hydrologic model is used together with a hydraulic model (UNDA) for flooding area identification and forecast. Figure 1 shows the actions and achievements in implementing the first task of the project.

TASK 1: project of the automatic informational system

CRITICAL ANALYSIS OF ACTUAL INFORMATIONAL SYSTEM AND PROPOOSALS FOR DEVELOPMENT

Shortcomings of hydrometeorological and water quality station network

- Off-line information
- No real time
- Gaps in data transmission

NEEDS FOR AUTOMATIZATION OF STATION NETWORK

- Identifying the variable parameters of interest for the decision factors and end-users
- Identification of priorities in automating the sections
- Identification of needed observing program & priorities for warning on floods and water pollution

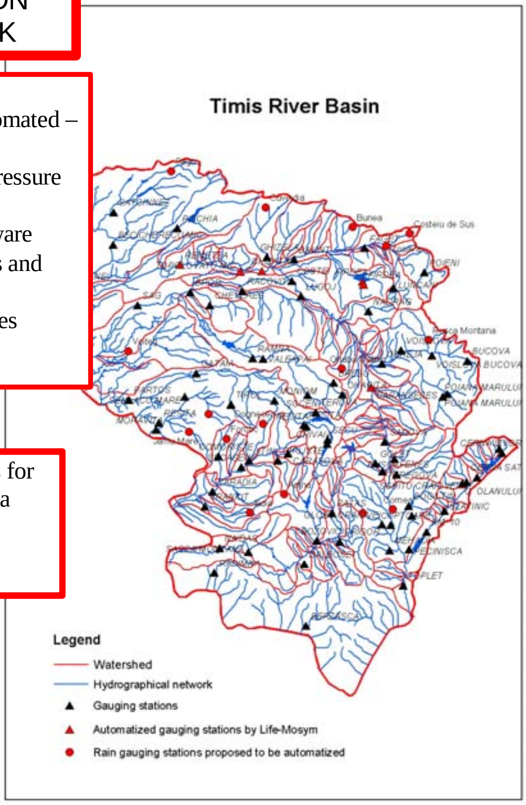
ACHIEVEMENTS

- Proposals on stations to be automated – see map bellow
- Project and building – up the pressure sensors – see photos bellow
- Building – up data logger software
- Installing the automatic sensors and data loggers
- Testing & calibration the devices
- Building – up data processing HYDROL software

- Developing performable methodologies for flood modelling
- Establishing the most adequate continuous coupled hydrologic-hydraulic model for flood forecasting

Achieving the programmes for hydrometeorological data transmission (WMO recommendations)

Figure 1



No.	Name of Automatic Gauging Station	River	Device type
1	Teregova	Timis	HPT
2	Fenes	Raul Alb	HPT
3	Sadova	Timis	HPT
4	Turnu Ruieni	Sebes	HPT
5	Bucova	Bistra	HPT
6	Voislova	Rusca	HPT
7	Voislova	Bistra	HPT
8	Obreja	Bistra	HPT
9	Nadrag	Nadrag	HPT
10	Lugoj	Timis	HPTC
11	Brod	Timis	HPT
12	Sag	Timis	HPT
13	Graniceri	Timis	HPTC
4	Luncani	Bega	HPT
15	Faget	Bega	HPT
16	Balint	Bega	HPT
17	Ujvar	Bega	HPT
18	Otelec	Bega	HPTC
19	Crivaia	Barzava	HPT
20	Resita	Barzava	HPT
21	Resita	V. Mare	HPT
22	Moniom	Barzava	HPT
23	Ramna	Vorosnic	HPT
24	Gataia	Barzava	HPT
25	Partos	Barzava	HPTC
26	Munte Mic	Pluvio	PT
27	Secas	Pluvio	PT
28	Caprioru	Pluvio	PT
29	Golet	Golet	HPT
30	Cenei	Bega Veche	HPTC

The table with the HYDRAROM – automatic stations installed on Timis - Bega basin is seen below (H-water level, P-precipitation, T temperature, Q-quality) is presented in the table.

The data supplied by the newly equipped informational system are processed by the VIDRA - Model in view of issuing the flood warnings and forecasts. The VIDRA model is a semi-distributed rainfall-runoff model based on the in-line reservoirs philosophy that is filled up and empty according to the laws based upon the physical process similarities. The flow chart of the VIDRA algorithm is presented in the Figure 2.

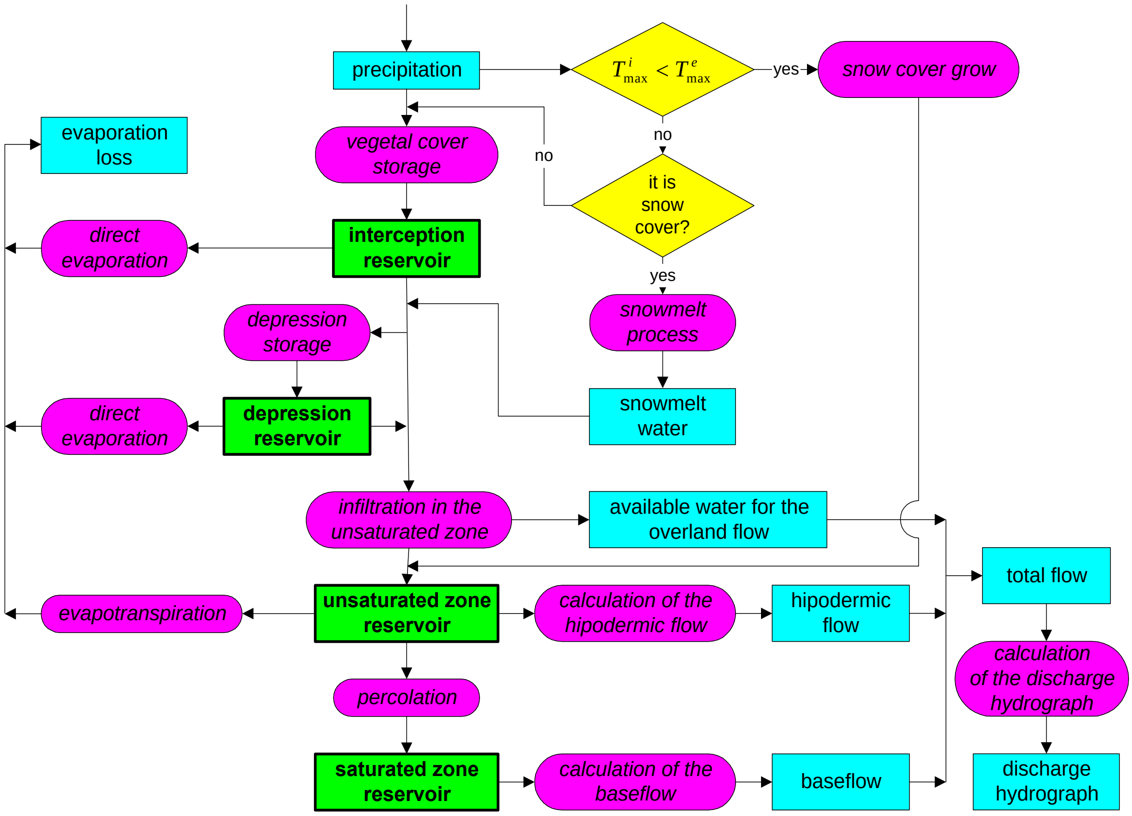


Figure 2. VIDRA Model algorithm flow chart

The model is calibrated according to the operations presented in the Figure 3.

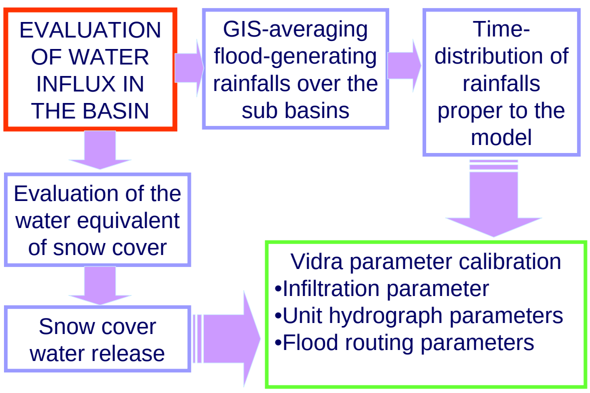


Figure 3.Model calibration operations

The research objective has been that the hydraulic UNDA model would automatically takes over as data input the flood hydrographs determined by the use of VIDRA Model.
The cross sections at the bridges have measured in order to be used for the hydraulic UNDA Model.
In the Figure 4 a summary of activities developed to get site environmental data is shown.

TASK 2: Operational experimentation and data analysis

TOPOGRAFICAL MEASUREMENTS IN TIMIS BEGA RIVER BASIN

Topographical measurements consists in terrain representation by cross-sections in flood plain, localization of automatic gauging stations, bridges and other objectives of hydrological interest.

GPS Pathfinder PRO-XRS was used to determine the geographical coordinates of different emplacements. The measurement method was static and the accuracy - centimetrers

Coordinates of profiles extremities was determined with Sokkia Stratus GPS through kinematic measurement method with an accuracy of centimeters

Also were measured some important bridges along the Timis river using the Sokkia total station

Chain of operations performed in order to obtain thematic products

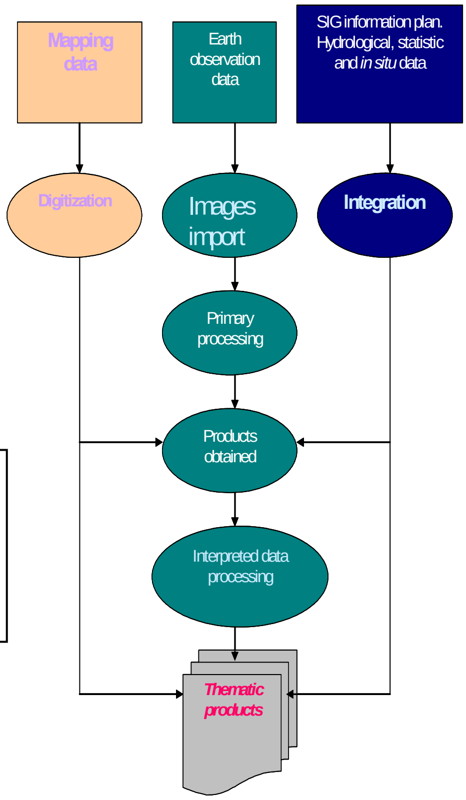


Figure 5. Generating EOD products for the Timis-Bega basin

Figure 4. Sites measurements in Timis River (Lugoj station)

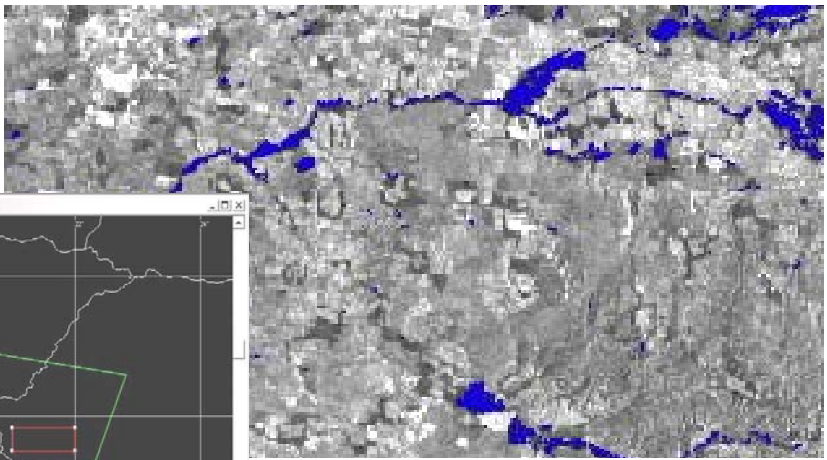
Taking the advantage of the capabilities of automatically measuring the hydrological and land cover/land use of the Timis River catchment as well as the available procedures of GIS - database and Earth Observing Data (EOD) the next phase in developing the project has been the analysis of steps in data processing and synthesis.

In the Figure 5 the chain of the operations, which have been performed, is presented.

The RADSAT image allowed establishing and mapping the flooded areas starting with the moment in which the rivers have been swollen and flooded.

The satellite images of the flooded areas during the April 2000 flood are presented in Figure 6.

Figure 6. Flooded areas, April 2000.



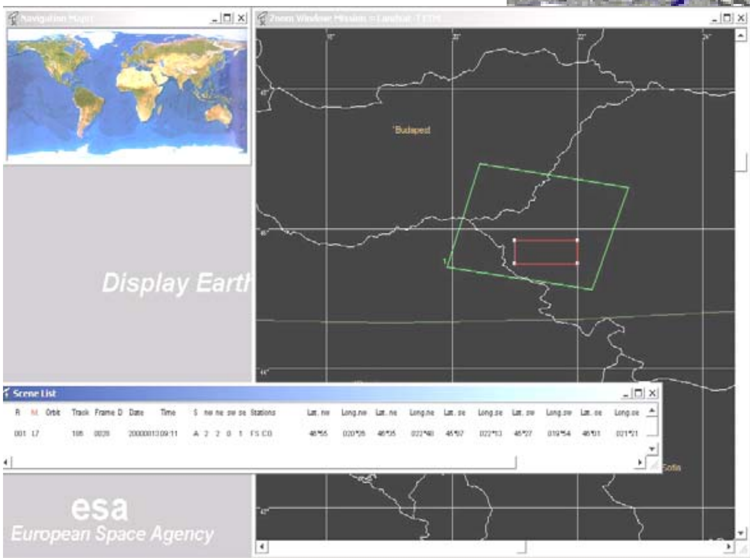
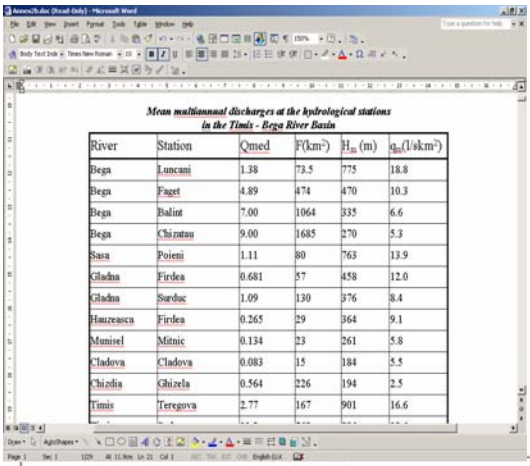


Figure 7. Filtered and classified

RADSAT image The “flooded area” plan can be practically used as it allows for establishing the main crowded areas, the economic objectives and the streets affected by floods in April in the studied area.

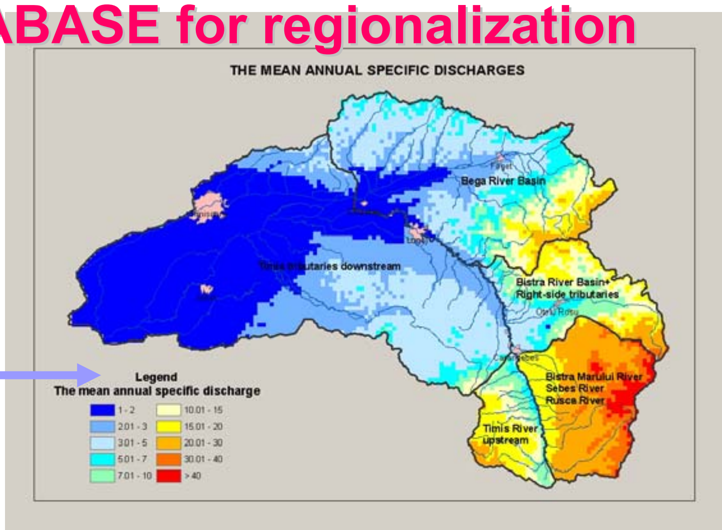
TASK 2 products:

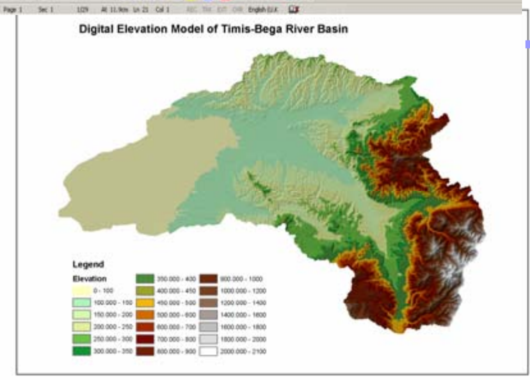
GIS DATABASE for regionalization



Mean multiannual discharges at the hydrological stations in the Timis - Bega River Basin

River	Station	Qmed	F(km²)	H_m (m)	q_m(l/skm²)
Bega	Luncani	1.38	73.5	775	18.8
Bega	Faget	4.89	474	470	10.3
Bega	Balint	7.00	1064	335	6.6
Bega	Chizatau	9.00	1685	270	5.3
Sasa	Poieni	1.11	80	763	13.9
Gladna	Firdea	0.681	57	458	12.0
Gladna	Surduc	1.09	130	376	8.4
Hauzeasca	Firdea	0.265	29	364	9.1
Munisel	Mitnic	0.134	23	261	5.8
Cladova	Cladova	0.083	15	184	5.5
Chizdia	Ghizela	0.564	226	194	2.5
Timis	Teregova	2.77	167	901	16.6

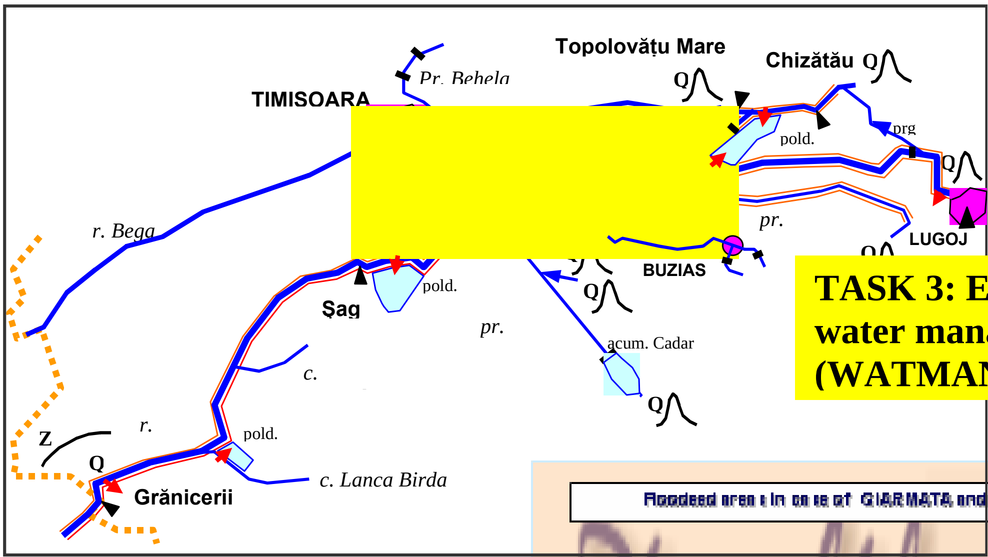




In order to obtain the map of the specific discharges, it has been used the following elements:

- the monthly data (mean and ecological discharges) at a number of 49 gauging stations, for the assessment of the mean runoff
- the altitude as the most important morphometric element (using the DTM for the basin).

The syntheses in a GIS environment provided in Timis-Bega Basin, using field campaigns of measurements and collecting information from the local administration, were used to identify vulnerable areas for flooding. The hazard analysis was provided for flooding. Using the superposition of both informational plans, the risk map was generated for the demonstrative basin. This is one of the products used for long term flood management and was used to adopt adequate measures for the *River Management Plan* In order to protect life, the prevision and evaluation of the design floods constitute the indispensable premise and the rational basis of the measure program for mitigating the flood damages. Another analysis was provided using hydraulic modelling of different designed water works or dam/embankment break (Figures 7).



TASK 3: Elaboration of the water management plan (WATMAN)

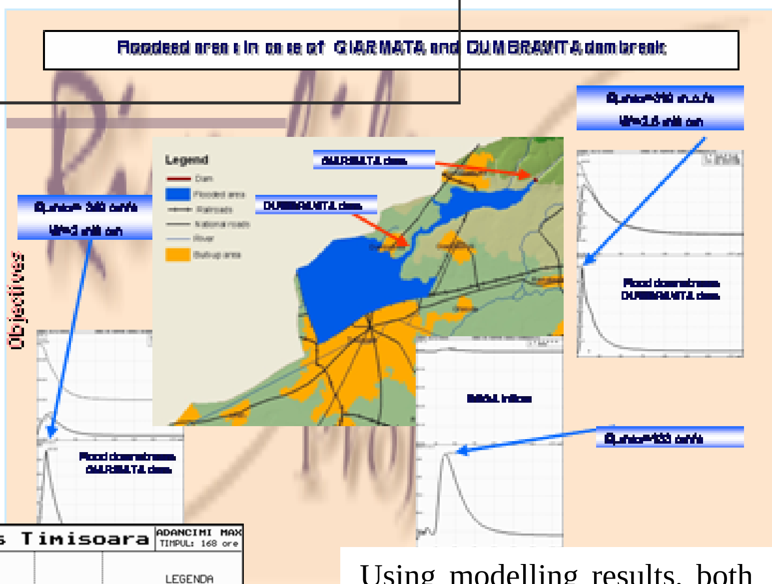
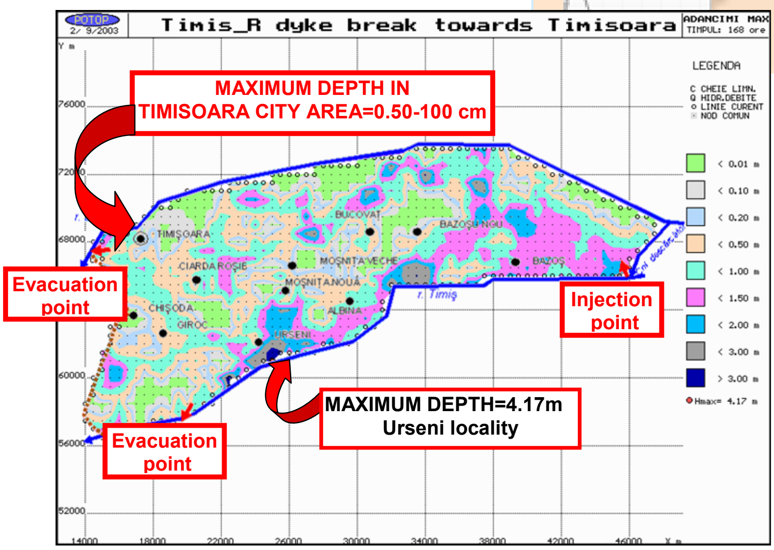


Figure 7. Hydraulic modeling of the existing



Using modelling results, both for floods and for water resources development, different scenarios were provided for water management master plan for Timis-Bega Basin, looking for solutions for sustainable management. These scenarios help in up-grading the exploitation rules during floods and to make pertinent proposals for rehabilitation of water works – Figure 8.

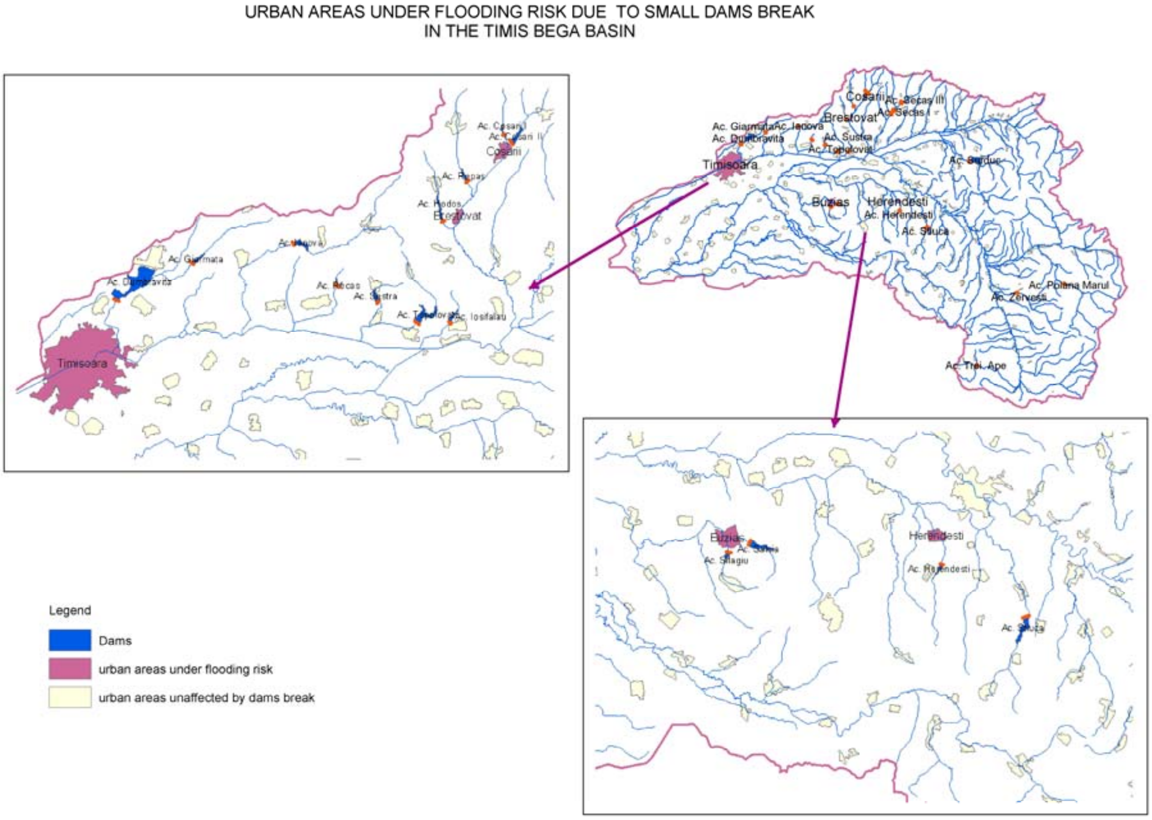


Figure 8.Vulnerable areas in case of an accident to the dams in the demonstrative basin

Taking into account the implementation of different proposed structural measures some variants were modeled, to take into account different polders, flooded area, reservoirs and dams.
Map of vulnerable areas were identified – Figure 9.

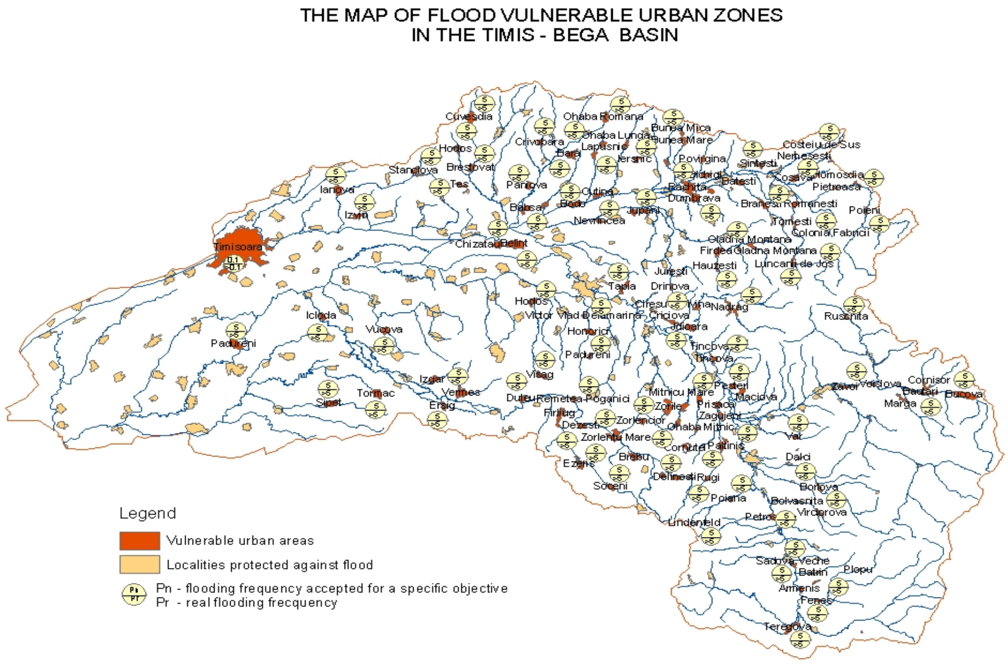


Figure 9.Flooding vulnerable urban areas

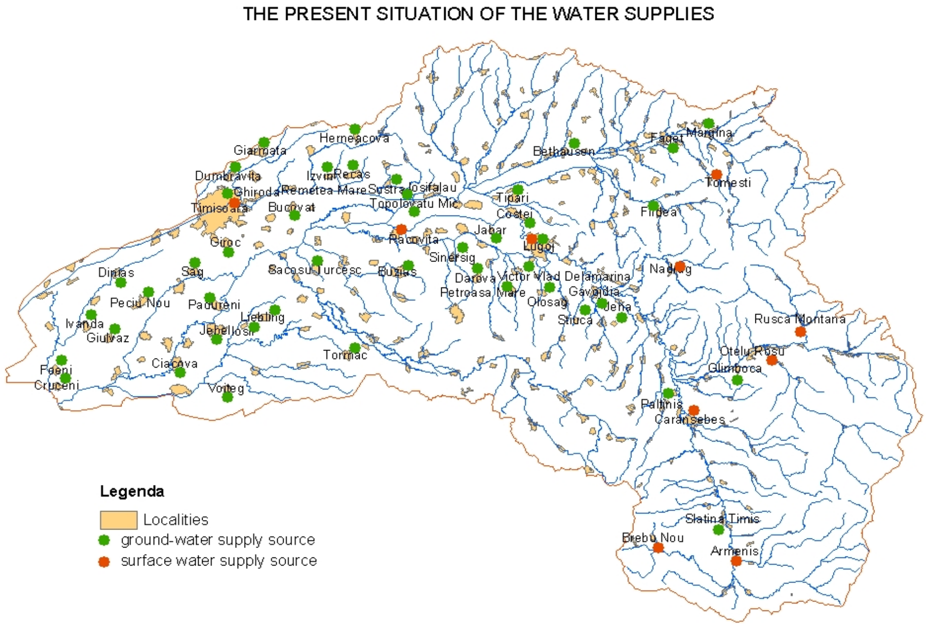


Figure 10. Water supply system in the demonstrative basin

Also, structural measures for extending the water supply – Figure 10 - and sewerage networks as well as the rehabilitation and development of purification and water treatment plants have been stipulated. The water quality monitoring was analyzed to estimate the water quality classes – Figure 11.

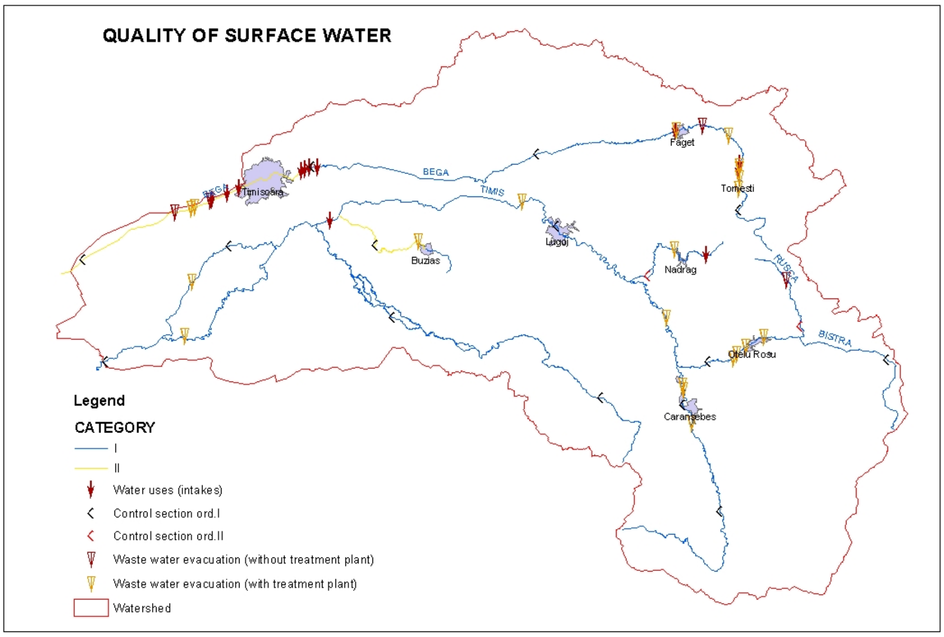


Figure 11. Water quality of the surface resources

From the surface water quality point of view, in the Timis Bega basin have been monitored 662km of watercourses and were established 16 control sections.

Water quality analysis revealed the fact that 97% of this river sectors length is embedded in the first category of quality and 3% in the second category. The water use is intensive – Figure 11.

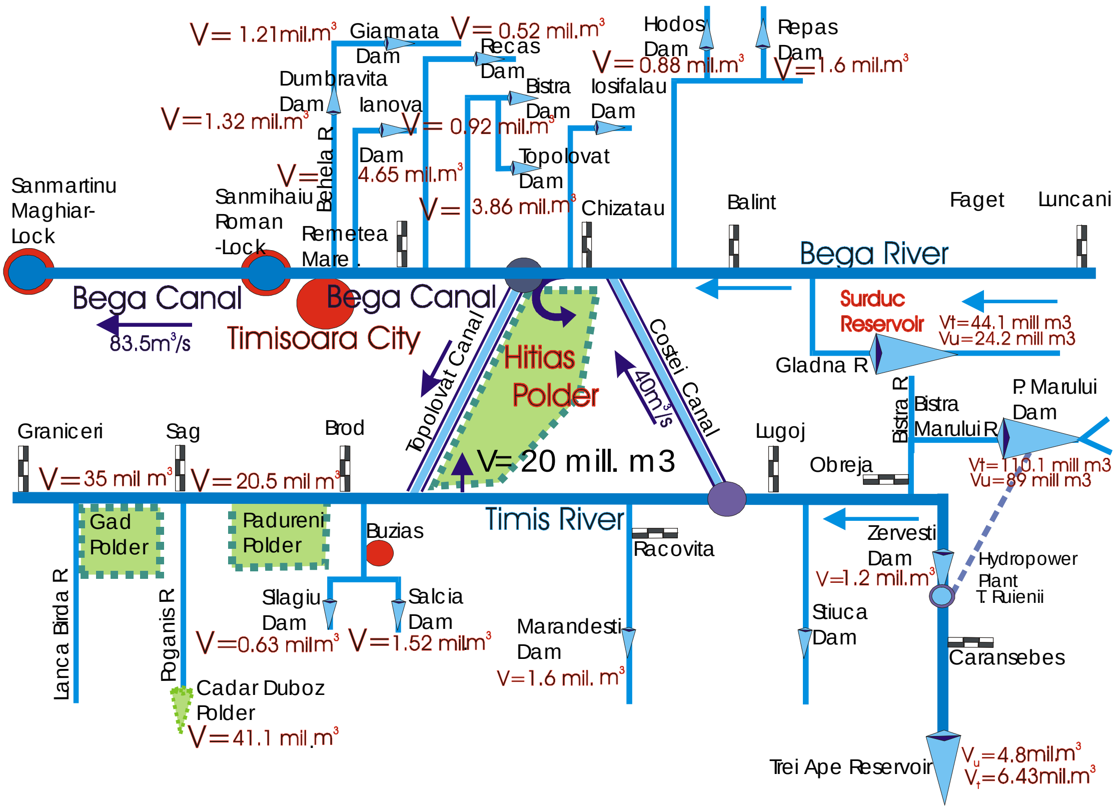


Figure 11. The scheme with the water works in Timis-Bega River Basin

Different scenarios of water use (water use, sewerage network, waste water treatment plants) were provided, but three of them were retained for the final economical analysis. First were taking into account the water balance indicators for long term planning and second, the recommendations referred to risk areas.

In the last part of the project several scenarios for the water management master plan and identification of ecological influences have been tested considering the following issues:

- Flood defence, particularly for the most frequent flood prone areas;
- Water management of the water resources at the time horizon 2015 in view of satisfying the water demands of different water uses ;
- Water resources (surface water and groundwater) quality
- Management the works and needed measures to guarantee the qualification of the water masses as “state of good water” in 2015.

Special brochures were elaborated for data dissemination, to get reaction of the local administration and the specialist of the local water authority.

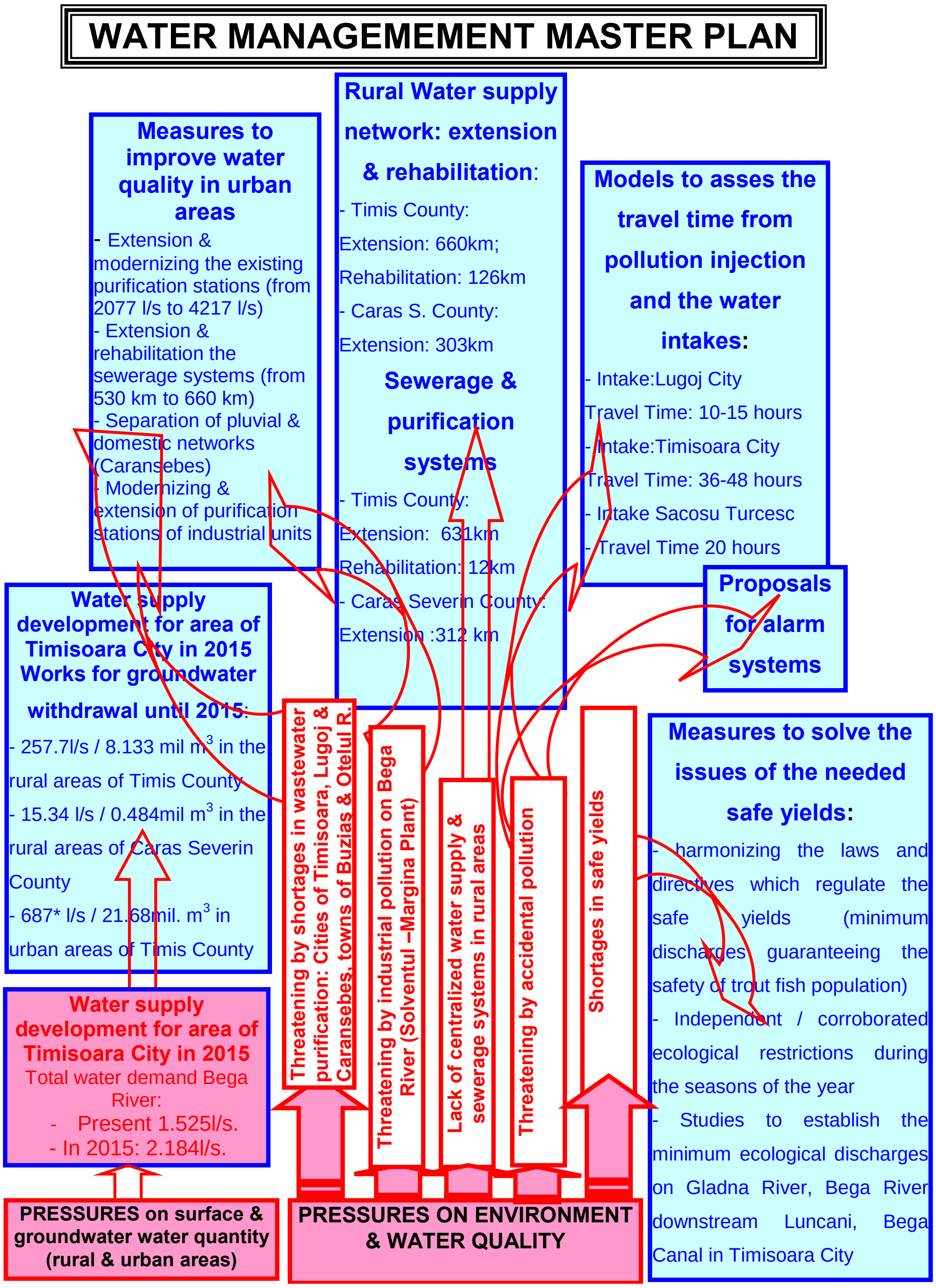


Figure 12. Scenarios for Water Management Master Plan

TASK 4: Estimation of the economical aspects

The elaborated scenarios for water management plan were analyzed for determining the optimum from economical point of view – Figure 12.

Estimating the economical aspects, calculus of the cost-benefits was elaborated for the proposed non-structural measures (the hydrological informational system and the forecasting procedures).**In total, in the Scenario 1 an investment of 132million Euro is needed**, out of which 67 millions Euro in urban area and 65,million Euro in the rural areas. **In total, in the 2nd scenario an investment of 180 million Euro is necessary.**

The **third scenario** represents an amplification of scenario 2 but only as regard to the development of sewerage and purification of waste waters systems in rural areas of Timis County. **The supplementary investment as compared with the scenario 2 is estimated at 2.3291.763 million Euros.**

Some possible scenarios of **improving the environmental conditions of areas impacted by accidental pollution which may affect the measures for water quality protection are considered.** Thus, scenarios concerning the quality protection on Bega river at the water intake of Timsoara City, and Lugoj City considering the travel time of the pollutants are presented. Also, in order to protect the population from Otelul Rosu, that is supplied with water from Bistra Marului River to be not contaminated with hydric diseases, it is necessary to complete the purification station of the worker COLONY of the Poiana Marului reservoir. The last scenario refers to Timis River downstream Costei reach, at Jabar, where any accident in functioning of the purification station Jabar or of the purification station of Buzias Town, which discharges water in Surgani Creek during low flows, can affect the quality of water of Timis River. A control section of first order for **water quality at Brod is compulsory**. Possible scenarios referred to the achievement of **the protection zones and to the independent or corroborated ecological restrictions** during the seasons of the year complete this project. Final stipulations for water supply and sewerage works (networks and purification plants) of Timis-Bega Basin are considered and the scenarios adopted for the stage 2015 and the investments are presented.

Am important activity of this task was determining cost-benefit analysis of the porposed scenarios.

Timis-Bega falls in the broad type of cost-benefit approaches known as *cost of avoiding damages* or *cost per life saved* (human beings, livestock, horses, poultry and other goods at stake. An early warning system (EWS) is a non-structural measure.

A case study on which the cost of avoiding damages due to non-structural measures was developed on the data describing the damages brought about by floods occurred at the end of 1999, and in April, 2000, respectively

Reported damages for livestock in localities affected by floods, livestock loss and damages in households. Finally, avoidable damages in social facilities and enterprises the damages avoided in households and avoidable damages the in livestock are determined. Total assessment of avoidable damages amounts $608,585.

The cost implementing the automat informational system was of 148.000€ for the basin.

IT RESULTS A BENEFIT/COST RATIO OF 1:4.

Measures proposed for Timis and Caras Severin counties with respect to the rehabilitation of the water piping systems and for the improvement and extension of the sewage systems, which belong to the water quality protection works, are presented as well.

For Timis county rural areas, as already has been suggested, two scenarios have been deemed, the second one considering two times more population connected, other things being equal. It is obvious that recouping the investments made in rural areas only by taxes or charges would be extremely difficult in both counties. The main ***structural measures*** for flood defence of Timisoara City have been also considered in cost-benefit analysis. This is considered bellow:

STRUCTURAL MEASURES FOR FLOOD DEFENCE OF TIMISOARA CITY

Overtopping and rupture of the right-side dike of Ţimis River around the sector Hitias -Brod	Occurrence of 1000 year - flood in the catchment of Bega Canal downstrem Topolovat	Succesive ruptures of the on the Behela dams (Giarmata and Dumbravita)
STRUCTURAL MEASURES FOR FLOOD DEFENCE OF TIMISOARA CITY		
Heightening the dike along the right-side bank of Timis river in order to protect the city of Timisoara and its surroundings from flooding from the Timis river.	Non-permanent storage on Bega Canal between Tiganului Creek and Gherteamos Creek (10 million m^3, 630 hectars)	Consolidation works at Giarmata and Dumbravita dams (spillways and energy dissipater), concrete beam 0.75 m height on the top of Dumbravita dam
P H I S I C A L D A M A G E S		
Affected area =30% of south-eastern City area Water depth=0.5m	About 40% of the city area will be flooded by a blade of water 1 m height on both sides. Removing mud needed The lack of drinking water+lack of production(indirect damage)	About 10 to 15 % of the area would be flooded, especially the northern part of Timisoara City, due to the rupture of the dams lying on Behela rivulet
C OST OF THE H Y D R A U L I C W O R K S (C)		
C=ROL 100 billion	C= ROL 100 billion	C= ROL 4 billion
C O S T O F D A M A G E S		
408.8 billion ROL	408billion ROL 28.8 billion ROL (mud cleanining) 6billionl ROL (lack of drinking water cost)	450 billion ROL- companies 2.3 billions ROL public and private assets
Assuming the total cost equally distributed across 1000 years period of time, and checking the appropriate discount rate for having a zero present value of the project, the estimated value of IRR might characterize the economic efficiency		
E C O N O M I C E F F I C I E N C Y		
IRR=17%	IRR=12%	IRR=6%

Figure 12. Cost –benefit analysis of structural measures for flood defence of Timisoara City

Measures proposed for Timis and Caras Severin counties with respect to the rehabilitation of the water piping systems and for the improvement and extension of the sewage systems in the two counties, which belong to the water quality protection works, data are presented as well – see the following tables.

Predicted outcomes of extending the water piping system in rural areas of both counties

County	Population connected in 2002	Losses in 2002	Water consumption (Mill m^3)	Population connected in 2015	Losses in 2015	Water consumption Mill m^3	Water price increment
Timis	31627	15.4 (25%)	1.452	63899	23.6 (20%)	2.973	0.58 €/m^3
Timis	31627	15.4 (25%)	1.452	146814	54.1 (20%)	6.836	0.53 €/m^3
Caras	6067	1.2 (25%)	0.110	49464	11.5 (20%)	1.452	29,28 €/m^3 not reliable

Predicted outcomes of extending the sewage network in rural areas in both counties

County	Population connected in 2002	Restituted flow Mill m^3	Mechanical cleaned flow Mill m^3	Mechanical and biological cleaned flow mill m^3	Population connected in 2015	Restituted flow Mill m^3	Cleaned flow Mill m^3	Neces-sary increment of tax
Caras	2880	0.144	0.012	0.012	47710	1.452	1.452	4.52 €/m^3
Timis	2509	1.452	0.240	0.240	63899	2.973	2.973	9.8 €/m^3
Timis	2509	1.452	0.240	0.240	117450	5.826	5.826	5.01€/m^3

All figures referring to the impact of extending the sewage system in rural areas are presented for both counties in the Table above. For Timis county rural areas, as already has been suggested, two scenarios have been deemed, the second one considering two times more population connected, other things being equal. It is obvious that recouping the investments made in rural areas only by taxes or charges would be extremely difficult in both counties considering the figures presented in the last column of table above.

Another activity was to identify economical measures to decrease pollution at sources. A classical economical mechanism such as combined tradable permits and revolving bonds to control water pollution method was analyzed – Figure 13.

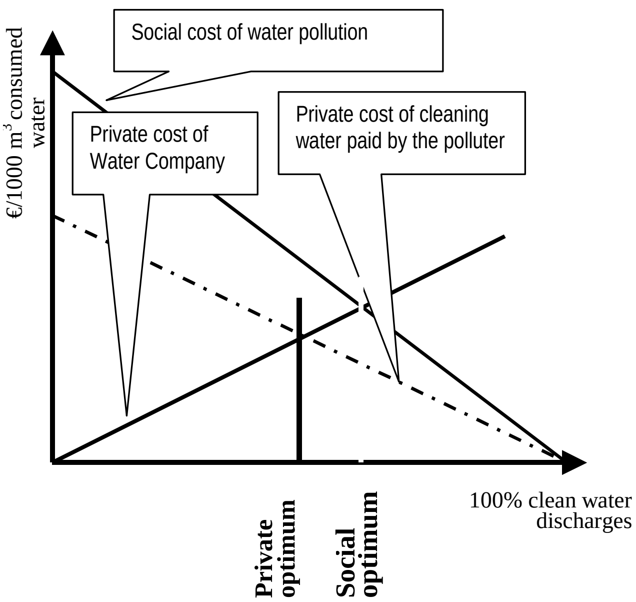


Figure 13. Private optimum vs. social optimum level of water pollution

According to the amount of pollutants released by each polluter, the public authority recalculates the number of saved permits. Using such mechanism, the expected outcomes are:

- All companies are motivated either to pollute less or to consume less water or to adopt a cleaner technology
- The benchmark company (BC) is being reimbursed for investing in cleaner technology – the system easies technological transfer regardless the size of the company
- Saved bonds can be transferred to the next year and companies ranked on the second and the third position would pay less for the next year bonds – they can easily invest in cleaner technologies
- All companies are encouraged to produce cleaner products – cleaner industries are promoted within the water basin wherein the system has been used.

Public authority tasks can be synthesized as:

- Appropriate bond that allows enough income for the BC to apply cleaner technology or to pay it off;
- Appropriate weights for pollutants, taking into account the extent to which they affect the environment and the risk of accidental spillovers;
- Enough permits to rank clearly all the companies operating within a water basin (the market for tradable permits) – only one company should be designated as BC in a year.

SWOT Analysis presents lots of advantage in obtaining cleaner water in the basin, but some disadvantages are:

- On a long run, some industries will disappear in a water basin due to the lack of competitiveness with much cleaner industries;
- The system may slack without updating from time to time both the number of permits and the bond – the lower the range of saved permits is, the less money goes to the BC.

3.Assessment of the environmental impact of the project, describing the environmental benefits

General awareness about the Danube Basin as a priceless regional asset has been growing. Since the environment is increasingly recognized as the vital link between the quality of human life and sustainable development, there is also a growing awareness among national governments, industrial and large agricultural plants managers of the need to consider the interests of all stakeholders when making decision about the environment. The management of water resources and protection of the environment must be planned for the long term to ensure a sustainable, wise use of the resources, as well as in real time to protect population during floods and accidental pollution. For both aspects, a continuous registration of data (historical database) as well a good hydrological informational system is the base for the decision – the water body

knowledge. This is the reason of Riverlife demonstrative project: to organize a monitoring system, as well as a numerical database in a GIS environment. With this information, a land use planner is then able to make appropriate decisions, taking into account possibilities of flooding, erosion, nutrient export, and non-point source pollution. Analysis of watershed behavior depends on ability to combine multiattribute data. This capability is a fundamental feature of GIS and is the reason why GIS become an essential tool for the professional watershed manager today, as well as for the decision makers. This application makes easier Water Framework Directive implementation. The demonstrative basin coincides with a sub-basin in the Danube catchment area designed in the framework of the UNDP "Danube Pollution Reduction Program". Defining a system for flood surveying and delimitation of affected areas offers a rapid replication at the country level. A watershed database allows the application of perspective tools and management models. Dispatch Application of ANAR, included at the demonstrative basin assure a rapid data dissemination and an automate warning system – at a certain registered level a Call Center is calling all the interested water users or intervention team leader to provide the needed assistance in the disaster area.

4.Economical and environmental benefits

The Riverlife project brought two main environmental benefits: first designing a warning system for flood defense and second, coming with different scenarios to increase the water quality in the basin, as well as finding solution to assure good quality drinking water for the population in the basin.

The Warning Thresholds Methodology could become the first step (hydrologic) of the more general Decision-Making Support System for integrated water management. The determination of the critical water stages (tiger levels), mapped in the hydrological informational system is helping in awareness procedures. For such an informational system the **cost-effective analysis shows** that an improving situation of losses is obtained, **decreasing 5:1**. And the most precious, increasing the capacity of awareness and forecasts can be saved lives. The created informational system for this automatic system, together with the classical informational system is presented in the following picture and the system is the base of the dissemination data to protect population and goods. The next step in DSS is to establish rules for operating different water works. Dam safety analysis presented in the project is important from this point of view.

Economic solution for diminishing point pollution is important for further implementation of the project results.

The Riverlife project applied in the demonstrative basin – Timis-Bega offered solutions for a better flood management. The provided analysis offered a better understanding about the ***strategy of water disaster protection in the basin*** and with special orientation for Timisoara.

Regarding the structural measures for increasing the water quality in the basin and defining solution for drinking water for the local population for the medium and small localities, three scenarios were built, the third one bringing a real benefit of increasing water quality till 25%, all rivers becoming of the first class of quality. The second large benefit would be the possibility to assure a distributed system for drinking water, with treatment plants with minimum costs for the process (because of the good quality of the water). The used water treatment plants will become a "must" rule for any water user, if the scenarios of the proposed investments will be really transpose in life. The new WATFRAME Project in Romania will benefit of 1.6 milliards of Euros to cover investment in water services sector in the next three years in Romania. The Government policy give us the right to think this project will be of a really benefit for the Timis-Bega Basins, offering solutions and opening opportunities for new investments.

5.Transferability of project results

The pilot basin will permit the transferability of the standard projects in similar water regime basins, offering an example for building an 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 DSS in which specific rules are defined for each water works for both flood management, as well as for spills as defined in Riverlife demonstrative project will be implemented in Romania, taking advantage of a new project financed by Romanian Government, at the national scale: WATMAN– Informational System for Integrated Water Management, beginning with 2006. First the Feasibility Study will be provided estimating the full investment costs and beginning with 2007 will be the implementation phase. The initial estimation of the WATMAN Project is of 100 billions Euro.

GIS application were developed under the Riverlife Project offered a wide application in the fields of operational hydrology and water-resources assessment. Many aspects of data collection and regionalization of the hydrological parameters were facilitated by means of microcomputer 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 Riverlife demonstrative project, as well as the concept of designing 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 large 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 its peculiarities in order to find the most effective remediation measures and to propose solutions for increasing water quality.