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Republic of Macedonia
Ministry of Environment and Physical Planning

UNDP

RESTORATION OF STRUMICA RIVER BASIN
IMPLEMENTATION OF THE STRUMICA RIVER BASIN MANAGEMENT PLAN

PROGRESS REPORT
for the period 1 July – 31 December 2015

Photo: *The clean-up of regulated riverbeds and the reconstruction of embankments will help ensure better protection of valuable agricultural land from future floods*

Project Number: 00096178

Donor: Swiss Agency for Development and Cooperation (SDC)

Total Budget: 2,940,000 CHF

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Reporting Period: 01 July 2015 – 31 December 2015

National counterparts: Ministry of Environment and Physical Planning, Ministry of Agriculture, Forestry and Water Economy, Basin's municipalities (Strumica, Radovis, Vasilevo, Bosilovo, Novo Selo and Konche), Center for development of Southeast region, Hydrometeorological Institute, Public Health Institute, Water management entities (Water Management Organization, public utility enterprises), Public Forest Enterprise, Crisis Management Center and Directorate for Protection and Rescue, farmers associations and other NGOs.

Jordan Hadzi-Konstantinov Dzinot 23, 1000 Skopje, www.undp.org.mk

PROJECT DESCRIPTION

THE CHALLENGE

The ecosystem of the Strumica River Basin plays an essential role in sustaining the livelihoods and wellbeing of some 124,500 people in the region. It provides a vital source of water for drinking and for agriculture, which is the chief source of income for the majority of the population. Covering almost seven per cent of the country's territory (with a total area of 1,649 km2), this valuable but fragile ecosystem also provides a vital habitat for a large variety of animal and plant species.

The health of the Strumica River Basin ecosystem has been under threat in recent decades from pollution and rising demand for water from farming, industry and growing urban centers. Unsustainable agriculture practices, including excessive use of fertilizers and pesticides to grow vegetables and grapes and wasteful methods of irrigation, has undermined water quality. Demand for water from industry and towns, together with the building of reservoirs, has exacerbated fluctuations in water levels, increasing the risk of droughts and floods.

These accumulated pressures have made the ecosystem especially vulnerable to climate change, which is causing higher temperatures and extreme weather events. These bring the risk of an extreme scarcity of water that could jeopardize the livelihoods of the region's farming families.

OBJECTIVES

The overall objective of the Restoration of the Strumica River Basin project, funded by the Swiss Agency for Development and Cooperation, is to introduce a set of comprehensive measures that will help restore the Strumica River Basin's socio-ecological functions and increase its overall resilience to the complex pressures resulting from human activities and global changes.

To address the point sources of pollution, the project will: a) strengthen the capacities of the basin's municipalities to enforce the environmental permitting system; and b) demonstrate low-cost small-scale decentralized wastewater treatment technologies with replication potential.

A comprehensive programme to introduce more sustainable farming practices will be developed and implemented. Innovative solutions to improve the access to knowledge and information on agro-ecological practices will be co-designed with farmers to bring about important environmental and socio-economic benefits. Direct support to farmers comprising trainings backed by grants programmes will be provided to reduce pollution and introduce more sustainable farming practices.

The principles of Integrated Flood Risk Management as per the EU Floods Directive will be applied for the first time at national level, replacing traditional approaches derived from purely design-based standards and ad-hoc interventions triggered by flooding events. Also, a comprehensive monitoring programme will be implemented to gradually increase the knowledge about basin's water resources, allowing to document and quantify changes as a result of the implemented measures.

New cross-sectoral participatory mechanisms will be applied to democratize the management of water resources in line with the Management Plan for the Strumica River Basin. This approach will transform a highly centralized water management system into a modern system of water governance.

PROGRESS TO DATE:

OUTCOME 1

Output 1.1: Point source pollution to water bodies is reduced

TARGETS FOR 2015:	STATUS:
Launching the programme to improve pollution prevention and control through strengthening permitting and enforcement capacities	Achieved

Output 1.2: Diffuse source pollution from agricultural runoff and erosion processes is reduced

TARGETS FOR 2015:	
Launching the technical assistance framework to introduce agro-ecological farming practices for priority crops in the Basin	Achieved

Output 1.3: Overall resilience of communities to flooding hazard in the river basin is enhanced

TARGETS FOR 2015:	
Launching the development of flood hazard and flood risk maps for the Strumica River Basin	Achieved

OUTCOME 2

Output 2.1: Decentralized and adaptive basin-scale management of water resources is introduced

TARGETS FOR 2015:	
Start of process for identification of most feasible basin-scale wastewater management options	Achieved
Upgrade of the water quality monitoring database for the key water bodies in the Basin	Achieved

Output 2.2: Lessons learnt and best practices are shared and replicated at national and international level

TARGETS FOR 2015:

None

HIGHLIGHTS

- The project was successfully launched in partnership with national and local authorities, receiving a wide and positive media coverage. All key stakeholders demonstrated a high level of commitment from the very beginning.
- The cleaning of the main storm-drain channel in the town of Novo Selo was followed by measures to mitigate the risks of heavy flooding, including the cleaning of riverbeds and drainage canals.
- A number of long-term capacity development programmes have been co-designed and launched in a relatively short period of time.

NARRATIVE REPORT

PROGRESS UPDATE AND KEY ACHIEVEMENTS

OUTCOME 1: CITIZENS AND FARMERS REDUCE PRESSURES ON WATER BODIES AND ENHANCE STRUMICA RIVER BASIN'S RESILIENCE TO FLOODING HAZARDS

Efforts were focused on securing the necessary expertise to initiate important transformative processes in the key sectors contributing to the ecological status of the basin's water bodies. Complex interdisciplinary expertise has been deployed to: a) advance the integrated pollution prevention and control system at local level; b) identify optimal wastewater management strategy and approach at basin-scale; c) initiate the agro-ecological farming programme; d) further elaborate the flood risk management documentation that will produce proposals for future specific measures.

Given the complexity of these processes, special attention was dedicated to the development of coordination mechanisms and the creation of synergies between expert teams and the many partners and beneficiaries.

By building upon the Preliminary Flood Risk Assessment conducted in the preparatory stage of the project, as well as the needs articulated by local stakeholders, several priority flood risk mitigation measures were identified and implemented during the reporting period. These included the clean-up of priority riverbeds and drainage canals, as well as the reconstruction of damaged embankments of regulated riverbeds.

1.1. REDUCING POINT SOURCE POLLUTION

Integrated Pollution Prevention and Control

After studying carefully the current status of industrial pollution in the basin and the reasons behind the limited effectiveness of emissions control efforts, expert support has been provided to the administration of the six partner municipalities to help operationalize the EU-based integrated pollution prevention and control system (IPPC) at local level.

This technical assistance framework has been launched to: a) provide on-the-job training on the environmental permitting procedures, b) propose local institutional/organisational set-up that favours IPPC implementation and c) provide specific GIS data about the main industrial facilities on the Strumica River Basin territory. The programme has been designed to help identify localised solutions and build capacities for accelerated and cost-effective implementation of the IPPC requirements.

The entire programme is designed as an interactive capacity development exercise with the ultimate goal of creating sustainable local capacities for environmental protection, with a potential for scaling-up and replication at national level.

During the reporting period, a comprehensive capacity and needs assessment process of all six municipalities related to IPPC procedures has been substantially completed. The findings are being used to design the training programme which will be delivered to the responsible municipal personnel (including environmental/communal inspectors) in the coming months.

In addition, an assessment of the ways in which each municipality practices IPPC procedures (e.g., keeping registers, communication with operators) has been carried out, to identify opportunities for improving the overall administrative efficiency. All of these results provide the basis for organizing the necessary capacity development support in the upcoming stages of the project.

Next Steps

- Development and start of delivery of a training programme on IPPC for the local administration
- Selection of pilot industrial facilities as case studies for the training programme
- Design of a data collection form on Basin's industrial facilities to be filled out by the local administration (trainees) for the needs of the geo-spatial analysis of point source pollution and design of IPPC enforcement tracking tool

Wastewater Management Systems

Considering the adverse environmental impacts of untreated wastewaters in the basin, a comprehensive set of measures to introduce more sustainable wastewater collection and treatment needs to be developed and implemented by the municipalities. While the cities of Strumica and Radovis are about to start overcoming the wastewater management problems with EU-IPA funding, there has been no progress on this issue in any of the other basin's municipalities. Also, part of the rural communities of Strumica and Radovis municipalities are not included in the agglomerations to be provided with wastewater treatment systems.

The support of the project will therefore focus on the rural municipalities of the Basin (Novo Selo, Vasilevo, Bosilovo and Konce) and the rural communities around Strumica and Radovis that will not be connected to the large wastewater treatment facilities.

Expertise has been provided to help strengthen capacities of the basin's municipalities to introduce low-cost small-scale decentralised wastewater treatment technologies with replication potential. A comprehensive feasibility study on wastewater management options has been commissioned to help identify potential small-scale wastewater treatment pilot projects to be implemented at a later stage. This feasibility assessment project stage aims to create a strong base for the gradual reduction of wastewater pollution from rural areas and it will help the authorities to identify the most feasible localised wastewater management systems.

In coordination with the key stakeholders (municipalities and public enterprises in charge of wastewater management), a baseline data collection and analysis process has been completed along with a preliminary analysis of possible grouping of different communities into one system.

Next steps

- Finalization of the feasibility study on wastewater management options for the Strumica River Basin

- Development of preliminary / conceptual designs for the selected wastewater treatment pilot projects
- Development of Terms of Reference for detailed engineering designs for the sewerage networks and identified wastewater treatment options

1.2. REDUCING DIFFUSE SOURCE POLLUTION FROM AGRICULTURAL RUNOFF AND EROSION PROCESSES

A comprehensive programme has been launched to support the farmers to adopt better practices in line with the innovative concepts of smart and precision agriculture. The focus of the programme is on farmland in ecologically sensitive areas (near rivers and other water bodies, wetlands, within protected areas and similar), as well as on high water demand crops (e.g., vineyards and orchards) and agrochemicals-intensive crops (e.g., green house farming). The use of cutting-edge technology for soil analysis will be promoted to ensure more efficient use of fertilizers and better understanding of the current status of nutrients and other elements in soils.

In order to reach as many farmers as possible, the programme includes the design of innovative solutions for sharing technical information and knowledge on sustainable agricultural practices (e.g., self-paced online courses, video lectures, mobile/computer applications for decision support in fertilizer application and irrigation practices management).

The entire programme is designed to be an interactive capacity development exercise with the ultimate goal of creating sustainable local capacities for the future agricultural development in the basin with a scaling-up and replication potential on a national and regional level.

For the needs of the project, a specific survey was designed that will be conducted to collect data on farmers and farmland profiles, current farming practices in terms of use of agrochemicals and irrigation water, level of knowledge and information on good agricultural practices. Once completed, the survey will identify the capacity development needs that will be addressed by the programme in the upcoming period.

A subsequent training programme will focus on all main aspects of farming (e.g., irrigation, plant nutrition, plant protection, production methods). The implementation of new modern approaches to farming will be piloted through direct grants for farmers.

Ranking against multiple environmental, social and economic criteria suggested that the project focuses on the production of tomatoes, paprika, plums (and possibly other fruits), and grapes as crops with a greatest transformation potential.

Next steps

- Call for selection of trainees (potential grantees) for involvement in the agro-ecological farming programme
- Development of training material on agro-ecological farming for the selected crops
- Conceptualization of innovative solutions for decision-support tools on the key aspects of farming

1.3. ENHANCING RESILIENCE OF COMMUNITIES AGAINST FLOODS

By building upon the Preliminary Flood Risk Assessment conducted in the course of the preparatory stage of the project, additional expertise has been engaged to complete all other stages of the flood risk management planning cycle in line with the requirements of the EU Floods Directive (Flood Hazard Map, Flood Risk Map and Flood Risk Management Plan). Moreover, optimization models for managing the largest dams in the Basin (Turija and Vodoca) will be produced in order to enhance their role in reducing flooding risks.

This national pilot application of the EU principle for flood management is expected to build a model with a great replication potential. Therefore, in addition to addressing the specific needs of the Basin, the project will provide capacity development support to the relevant national authorities and other stakeholders on issues related to flooding risk management.

Once completed, the Flood Risk Management Plan (FRMP) will provide the necessary basis for prioritizing future flood risk mitigation measure to be supported by the SDC project and/or other complementary projects or programmes. For instance, UNDP has secured additional parallel funding of approximately 800,000 EUR from the EU for complementary flood control measures under the EU Floods Recovery Programme that will also be based on the FRMP.

In order to assist the local communities to better prepare for future flooding, the project has supported priority flood risk mitigation measures that were readily derivable from the earlier flood risk analyses. These included cleaning of riverbeds and drainage canals in the total length of approximately 1 km, as well as the reconstruction of damaged embankments on three sections of the regulated riverbed, in the total length of 200 m. These measures significantly improve the discharge capacities of flood control structures, securing good protection of the adjacent agricultural land that has been prone to frequent flooding. The successful completion of these measures created a positive image for the project among local stakeholders that is expected to result in even greater support in future.

Next steps

- Finalization of Flood Hazard and Flood Risk Maps
- Preparation of draft Flood Risk Management Plan and identification of priority flood risk mitigation interventions for funding under SDC project and/or other sources of financing (e.g., EU)

OUTCOME 2: MUNICIPALITIES AND THE CENTRAL LEVEL AUTHORITIES EFFICIENTLY APPLY INTEGRATED WATER RESOURCE MANAGEMENT IN THE STRUMICA RIVER BASIN

The project aims at strengthening capacity for restoring the Strumica River Basin and reducing the risk of extreme hydrological events by applying the principles of integrated river basin and flood risk management. The authorities are being supported to introduce adequate monitoring and management capacities that are required for the needs of managing adaptively a particularly complex system such as the Strumica River Basin.

Strengthening the legal and regulatory enabling environment for integrated flood risk management by supporting the harmonization with the EU Floods Directive is also part of the project.

2.1 INTRODUCING DECENTRALIZED AND ADAPTIVE BASIN-SCALE MANAGEMENT OF WATER RESOURCES

Monitoring programme

In the course of the preparatory stage of the project, a targeted monitoring programme that includes the main parameters of the ecological status of water bodies (hydrological, hydro-morphological, physico-chemical and biological) has been piloted in line with the requirements of the EU Water Framework Directive. Following a stage of comprehensive assessment of available capacities, as well as sustainability prospects of the future monitoring system (basin-scale and national), the project will launch a targeted monitoring programme that will extend throughout the project lifespan.

Based on a thorough understanding of the available capacities, as well as the sustainability prospects of the future monitoring system for the Strumica River Basin, the project intends to support its gradual

introduction by engaging with the State Hydrometeorological Service of Macedonia (HMS). A comprehensive monitoring programme has been developed for this purpose defining in detail the monitoring needs, sampling stations/points, monitoring parameters, frequency of sampling and monitoring methods.

Engaging HMS for the project-supported monitoring would have multiple potential beneficial effects such as: a) access to all available historical monitoring data in possession of HMS that can be used for various project needs (e.g., modeling of floods and introducing early warning system for floods, documenting the effects of the project by comparing future with past monitoring data); b) better sustainability of project-backed investments in the monitoring network for the Basin that HMS is in charge of by law; c) a unique opportunity for the project to directly contribute to the improvement of the state water monitoring system (the new knowledge and skills gained during the project can be applied by HMS in all other Basins across the country).

The ongoing negotiations with HMS are expected to result in an agreement for the monitoring programme whose implementation is scheduled to begin in the second quarter of 2016.

The entire programme will help greatly enhance capacity of HMS personnel in charge of hydrology and water quality monitoring. Special attention will be paid to the methods for biological monitoring (phytoplankton, benthic invertebrate fauna, macrophytes) that have been recently introduced to the work of HMS, as per the EU-WFD requirements.

Next steps

- Initiation of the monitoring programme
- Identification and prioritization of specific support to upgrade the monitoring system

Organizational/Institutional model for river basin management

The process of instituting a suitable organizational/institutional structure for integrated management of the Basin is considered as one of the most delicate tasks in the project, as it's closely linked to the national reforms of the water sector. The analysis of possible options is underway that take into account legal, financial, institutional and other aspects.

Next steps

- Preliminary proposals for organizational/institutional model for the management of the Strumica River Basin

Democratizing water resources management

The project intends to support the operationalization of the Strumica River Basin Management Council as the main mechanism for stakeholder participation in the river basin management. This mechanism is expected to greatly decentralize water management-related decisions, creating a system of local self-regulation. This body will help balance the interests of various water-stakeholders and optimizing the benefits of water management decisions both for the local economy and environment.

Since the process of establishment of the River Basin Management Councils is significantly delayed at national level, the project intends to convene a special Working Group on River Basin Management that will have the same composition of the Council. The group of about 35 representatives of all key sectors will receive capacity development assistance. The project already has the necessary expertise to initiate this work, once the conditions for the establishment of the group are in place.

Next steps

- Convening the Working Group on River Basin Management and initiating the capacity development assistance on integrated river basin management

LESSONS LEARNT

The intensive initial 6-moths stage of the project resulted in a number of lessons learnt that will be applied to enhance implementation efficiency. Some of the key general lessons include:

- Early involvement of key stakeholders by project components helps integrate important knowledge into the implementation strategy, and also builds ownership and secure the necessary commitment;
- Although additional analyses have to be made (feasibility studies and design documentation), still opportunities need to be sought for early implementation of activities with tangible results that motivates stakeholders and creates a positive image for the project among stakeholders (e.g., cleaning of canals in critical areas in terms of flooding);
- The strong local presence and building upon existing structures (e.g., the Center for Development of the Southeast Planning Region) is of critical importance in building stakeholder networks, accessing existing information and helping balance different interest and expectations from the project;
- The time spent on careful planning and coordination of project interventions secures the basis for a more efficient project implementation in the next stages.

CONCLUSION

By building upon previous achievements and partnerships, the project had a powerful kick-off and started delivering the first tangible results. The complex work completed in the course of the reporting period has provided sound basis for equally powerful continuation of the activities toward the achievement of the overall project objectives.

While the focus in the initial stages of project implementation has been on completing numerous procedures for setting up the grounds for future project implementation, the upcoming months are expected to bring growing successes and results beneficial for the environment and people of the Strumica River Basin.