RESEARCH ON GOOD PRACTICES TO WATER RESOURCES USE AND MANAGEMENT

MANUAL

TECHNICAL TRAINING BULGARIA

PROJECT OUTLINES

The association Eco Nevrokop, in partnership with the development agency Anatoliki – Thessaloniki (Greece), the Serres Dvelopment Agency Aneser (Greece), the Economic development Agency Bansko (Bulgaria) and the Agency for Economic Development High Western Rhodopes – Devin (Bulgaria), implement a project “Best Water Use” with BestU acronym under contract B2.6 F. 05 dating to 02.10.2017. The project „Best Water Use” has to encourage innovative technology aimed at improvement, conservation of environmental elements and efficient use of water resources. A survey of good practices and traditions in the overall scope of use, management and monitoring of water resources, including rational utilization of available water resources, their conservation and preservation, modern technological solutions and traditions for efficient use, consumption, reuse, recycling, purification, storage, loss minimization and transmission and analysis of the related national legal framework and effective working methods of the regulatory and Monitoring Authorities, as well as the function of public civilian control was carried out.

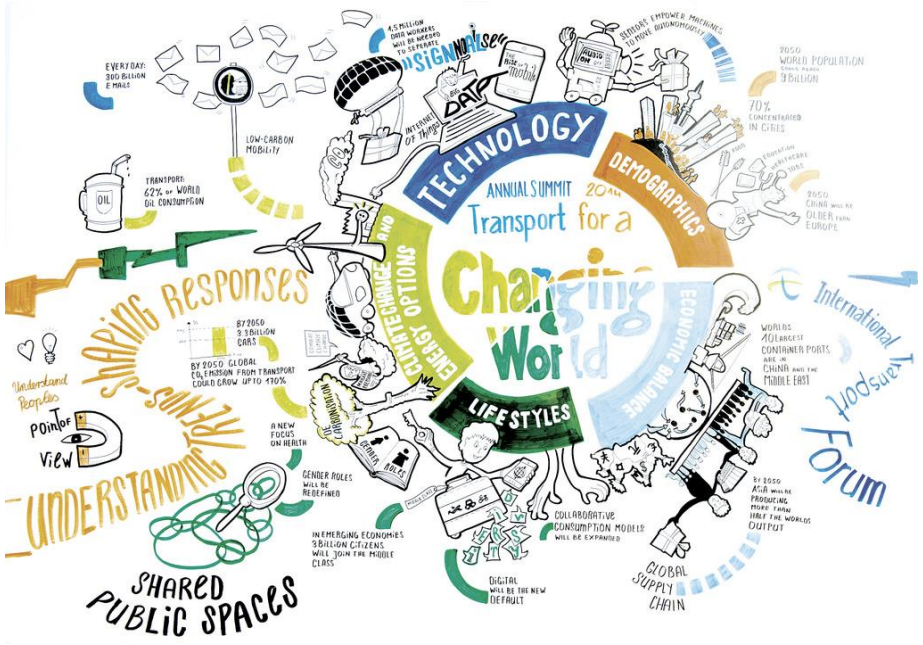
This is a presentation of good practices for the use, management and monitoring of water resources, and promotes integrated sustainable water management, encompassing the use of agricultural waters, and can be used as a tool by regional and interregional farmers, as well as other interested parties.

The project is co-financed by the European Regional Development Fund (ERDF) and by the national funds of the countries participating in the cooperation programme "Greece-Bulgaria 2014-2020" Interreg V-A.

INTRODUCTION

Today we live in an ever-changing world where we are increasingly having to think about the way we use our planet resources. We are increasingly having to consider it not as a land that we have inherited from our ancestors, but one that we have borrowed from our children. Water is one of the main and most important resources necessary for the existence of mankind. The project Best Water Use aims to raise public awareness of the use of water resources and to respond to various questions related to the increased interest in the field.

Most people living in the EU already have very good access to high-quality drinking water, especially in comparison to other regions of the world, thanks also to the existing European drinking water legislation for over 30 years.



Water intended for human consumption is safe and preserves the health of citizens. The main aspects of the policy are:

✓ guarantees that the quality of drinking water is controlled by standards based on the latest scientific evidence;

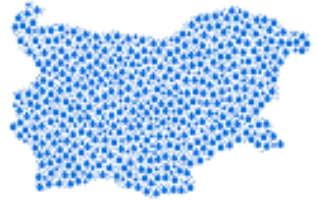
✓ ensures efficient traceability and evaluation of drinking water quality and enforcement of relevant standards;

✓ provides adequate, timely and appropriate information to consumers.

The revision of the Drinking Water Directive 98/83/EC was included in the Commission work programme for 2017, as a direct consequence of the Right2Water European Citizens' initiative. The proposal follows the refit evaluation of the drinking water directive and is accompanied by an impact assessment of the World Health Organisation.

Protection of Water Resources in Bulgaria

The water consumption per inhabitant per day is about 203 L. On this indicator our country ranks among the highly developed countries. In relation to other European countries Bulgaria is characterized by relatively significant fresh water resources, both in absolute volume and per capita. The water resources in Bulgaria are formed mainly by external inflow and are unevenly distributed on the territory of the country. The fresh water resources of Bulgaria are about 14 000 m^3 per year. The average water volume per capita puts the country among the Top10 European countries. Nevertheless, certain regions of the country experience water scarcity due to the uneven territorial distribution of resources.



The amount of waste and cooling water generated by economic activities follows the level of consumption. An annual average of about 79% of the total water used for economic activities (2000-2013) is taken to water tanks or public sanitation. The degree of purification has improved – in 2005, with at least secondary methods, 56% of the removed effluent was treated in water bodies, and in 2013, 66%. The public sewerage system in the country is predominantly mixed and collects both industrial, domestic and stormwater. The highest proportion of the population associated with waste water stations is located in the Black Sea region and the Danube basin district, being predominantly a secondary and a tertiary purification system. During the period 1996-2018 the trend observed in recent years to improve water quality has been maintained. In 2018 the evaluation of the indicative basic physico-chemical indicators shows that a large part of the evaluated aspects fall into the category of very good quality of water. From 1993 to 2018 there has been a gradual improvement in groundwater quality in term of indicators.

Good Practices of Water Use in Households 1

One of the main problems facing access to quality drinking water is the outdated plumbing network in our country. The main uses of water in households are associated with the daily needs – hygiene, cooking, drinking and cleaning of the home, which are obligatory for all households.
Reduction of water bills by system sanitation by 35% or more %.
✓ Usage of only half of the water that would normally be used by a person to shower by mounting aeration shower systems.
✓ Reduction of electricity bills /in case of usage of electric boiler/.
✓ Protecting the environment: unlike fossil fuels, water resources are renewable and via reasonable use, many rivers and natural habitats, where a variety of animals live, can be preserved.
✓ Replacing the appliances with ones from a higher class, a significant positive effect is observed: Washing Machine (22%), Bath (9%), Dishwasher (3%), Hydrants (12%), Showers (21%), Toilet cisterns (28%), Toilet leakage (5%).

In Bulgaria there is practice using tap water for watering yards and gardens. But:
✓ You can choose plant species that consume comparatively less water. If you plan to have a yard with grass, e.g. such a variety may be chosen, which has lower requirements for irrigation;

Good Practices of Water Use in Households 2

Rainwater can be collected in containers and used for irrigation; Rainwater is "soft" – i.e. half-distilled, although this quality disappears while rolling on the roof. It is perfect for watering as any rain. The Rainwater collection system is a very useful facility for the yard, wherever located.

✓ As an example, a house with 150 m2 roof area, in a region that gets at least 50 cm. rain a year, could potentially collect about 15 000 liters of water in a year. This water can be used for any needs and you could even make your own rain collection system and a purification system with which you can use this drinking water. Unfortunately, this variant in Bulgaria is allowed individually for each owner.

✓ Collection of “soap water”/water from baths, showers, sinks and washing machines/, also called "Grey Water" and use it for irrigation, washing vehicles and machines or for toilet cistern. The system includes a tank, filters, pipes. It is estimated that a savings of ca. 30% is quite possible after the introduction of this system in the household.

✓ The safest way to use the grey water is to bring it directly into the biologically active topsoil, where soil bacteria can quickly process it, producing nutrients that are necessary for the plants. This way of biological water treatment is much more effective than any other mechanized treatment, thus preserving and guaranteeing the quality of groundwater and surface water. One square metre of soil as a whole can absorb half a gallon of grey water each week. So, if you have a garden area of 10 m2 size, you can recycle up to 50 gallons of greywater every week.

Good Practices of Water Use in Households 3

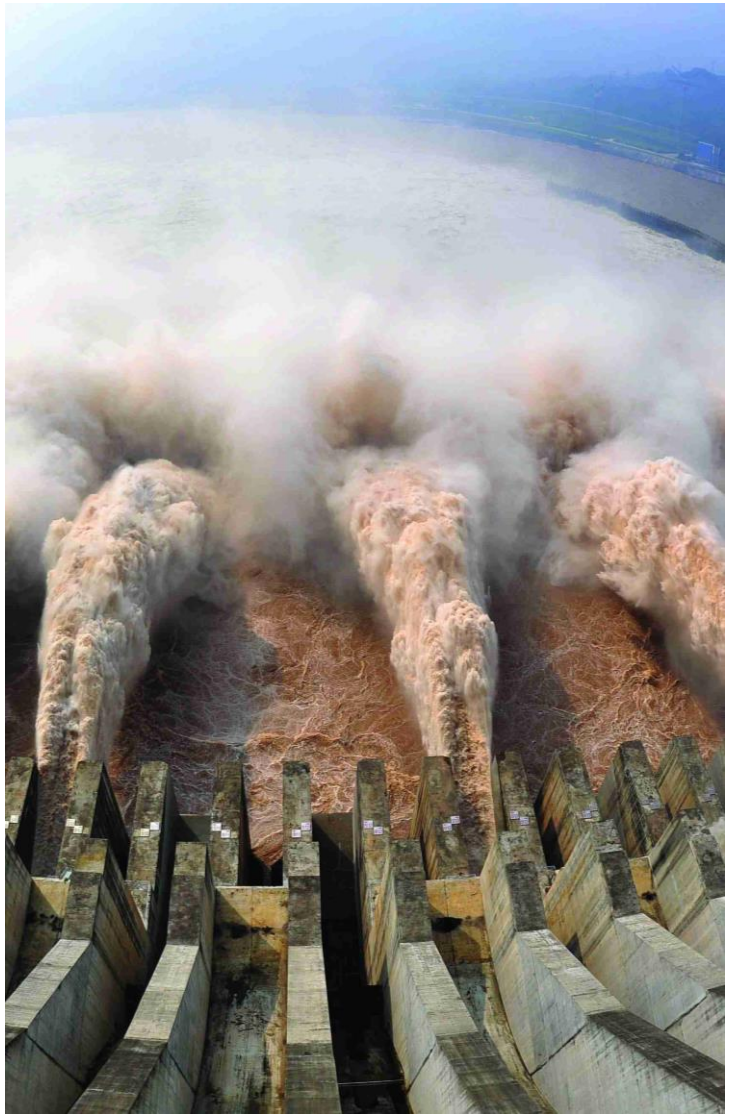
✓ Use the water from the sink to flush the toilet. According to the Center for Alternative Technology – a European environmental organization dedicated to the development of clean technologies for the earth, in developed countries each person uses ca. 13 000 liters of water per year for only flushing the toilet! To make water use more efficient, the water used can be used for two purposes before leaving home. Since the toilet does not need to be washed off with clean water, the plumbing pipes can be regrouped, so that the "gray water" from the sink in the bathroom fills the toilet tank.

✓ You can dig searching for water and then use the well, without wasting drinking water to meet your needs.

✓ You can increase the effectiveness of watering if you use the early morning hours or water in the evening when evaporation is less.

✓ You can increase the ability of the soil in your yard to retain water by adding organic ingredients – e.g. compost.

Bulgaria ranks last in a survey that studied the water resources among the Balkan States. Water is a valuable resource, and we use much more than our fair share of it – the average water consumption per person daily amounts to ca. 140 L, mainly for household use.



Good Practices in Agriculture 1

✓ Getting Started with efficient irrigation

In Greece, Italy, Portugal, Cyprus, Spain and the south of France, dry or semi-arid climates require the use of irrigation. Currently, in these areas, nearly 80% of water resources used in agriculture are spent on irrigation.

Efficiency of water use is already being implemented in Europe, both through water efficiency (the share of water taken to the field) and by the efficiency of use within the field (the water actually used by crops for the total quantity of supplied water).

In Greece, there is an increase in water efficiency by 95% compared to previously used irrigation methods.

✓ Change the way you work

Training and knowledge-sharing programmes for more efficient water use. In Crete, for example, water savings of ca. 10% have been achieved through the use of irrigation consultancy services. The advisory services inform farmers on the phone when and how to irrigate crops on the basis of daily evaluations of the conditions affecting the crop.

✓ Waste water use in agriculture

Purified wastewater can provide an effective alternative to satisfying the water needs of agriculture. Purification of industrial wastewater can be close to the place of their use, which facilitates the return of the extracted valuable substances back into the production process, as well as the use of purified water within the plant.

In this case, treated water may contain known impurities which do not affect the reuse.

Good Practices in Agriculture 2

✓ Choosing the right policies

The EU Water Framework Directive (WFD) has contributed to this objective by encouraging changes in agricultural practices that can improve both the quantity and quality of water in Europe, but it is still necessary further development of the common agricultural policy and of the national structures for water prices to ensure that they also support the objectives of the WFD. The plan for the protection of Europe water resources, to be published by the Commission by the end of this year, will focus on opportunities to increase the efficiency of water resources and the relevant policy options. Water management in agriculture will certainly benefit from the stronger emphasis of the common agricultural policy on resource efficiency and ecosystem services.

More efficient use of water in agriculture is just one of the steps we need to take to reduce our impact on the environment to build a sustainable future.

It is widely known what large quantities of water are used in different manufacturing processes. As an example, we can give: the manufacture of one tonne of cast iron, for which 100 m3 of water is used, for one tonne of sugar - 15 m3 of water, for one tonne of synthetic fibres - 500 cubic meters of water. Thus, mankind, on one hand, constantly increases its water needs, and on the other - this water due to its pollution is already unsuitable for use and hides a serious danger to the flora and fauna of water basins and human beings.

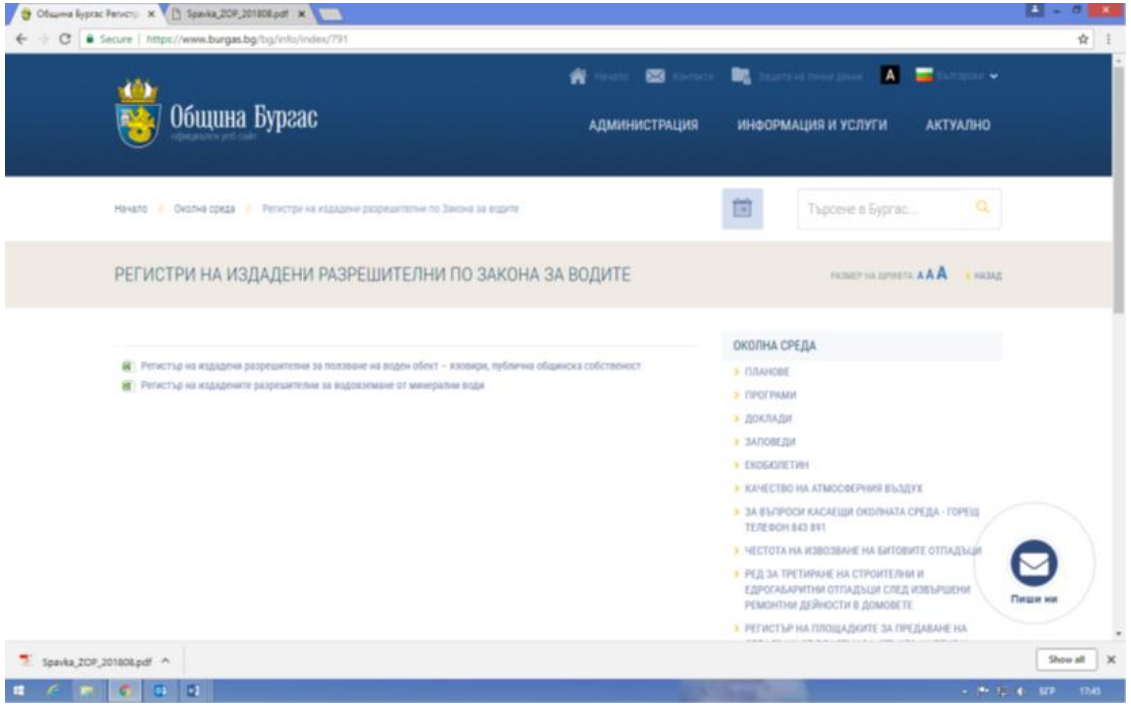
DETERGENTS & METALS

Water pollution is also due to detergents. In the last 30-40 years, they accounted for more than 2/3 of the sought washing substances. Upon receipt of chlorine from the synthesis of detergents of oil and a number of other products, mercury is used or released, which is applied in the water basins and settles at the bottom. There, under the action of some bacteria, mercury is converted into soluble mercury compounds, which the food chain reaches the fish and poisons them. The harm caused by detergents is large because they pass through the treatment facilities without modification. Their molecules do not succumb to the effects of enzymes. Detergents also contain phosphates, therefore, when they fall into the water basins, they stimulate the growth of the algae. Following the depletion of algae, aquatic ecosystems are saturated by organic substances and their oxygen balance is disrupted.

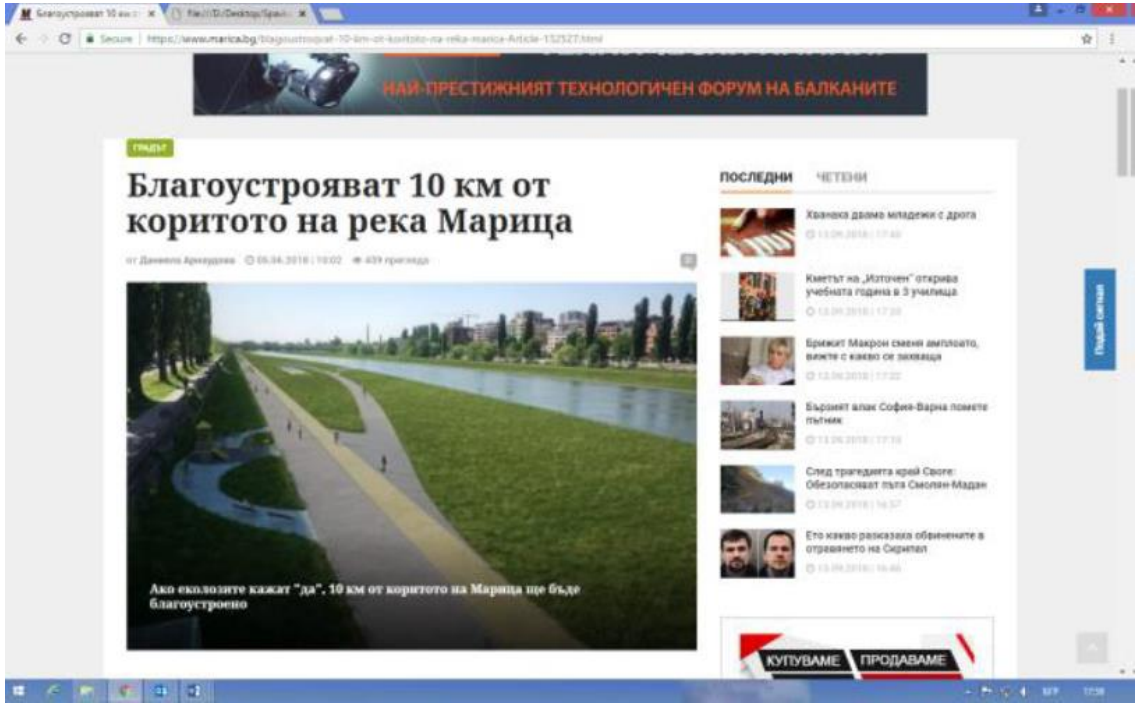
The main sewerage of contaminated waste water from industry are rivers and lakes. Rivers cause pollution of the seas and the world ocean. Polluted by industry there is a toxic impact on living organisms. Life in such waters decreases strongly, and in some cases it is completely destroyed due to oxygen disturbance. Irrigated areas and forests near the poisoned ponds are threatened by the harmful effects of contaminated waters. Established are irreversible disturbances in the genetic apparatus of some plants and animals, harmful pollution.

Good Municipal Practices

- ✓ There is a good municipal practice for keeping a public register of permits issued under the Water Act. Link to the public register of Burgas municipality.
- ✓ https://www.burgas.bg/bg/info/index/791



✓ Practice from the municipality of Plovdiv: from the municipal budget the cleaning of Maritsa River is financed – 10 km in 2018. Uses labour from temporary employment;



Interaction Between NGOs and Citizens

In 2016 the fishing association "Balkanka – 2009" held a wide public campaign to improve the awareness and understanding of the law among various groups of Dobrinishte, Dupnitsa, Kresna, Sandanski, Gotse Delchev and Breznitsa and seek their opinion and to initiate an interest in the protection of the rivers in the region of Blagoevgrad. It aimed to disseminate information on the changes in the Water Act to stakeholders from civil society and local authorities and the possibilities for separation special areas for protection. Development legislative changes, as well as recommendations of experts for protection regimes of recreation areas and water sports along rivers, as well as collected public proposals for such areas were presented at the meetings held on the ground. As a result, a public civil register of valuable river areas for 21 rivers in Blagoevgrad and Kyustendil districts was created.

Another example is a project implemented in Banya (Razlog). Razlog serves as an example of best practice on how a town can use EU Structural Funds to protect the environment and improve the quality of the life while promoting tourism and emerging sectors. One project, which illustrates this is co-financed by the ERDF “Implementation of the Small-scale Measures to Flood Prevention in Banya village, Razlog Municipality.” The project was implemented over a period of 15 months in Banya. More than 500,000.00 EUR has been invested in measures to prevent floods and to build aqueducts along the river. Before the implementation of this project, the heavy rainfall led to floods in the village, which destroyed property, endangered the lives of its inhabitants, as well as the natural beauties. Thanks to this project residents, the ecosystems and the property in the village are protected against natural threats.

Regulatory, Operational and Monitoring Public Institutions

Water management of National level is carried out by the Council of Ministers and the Minister of Environment and Water. The National Assembly adopts National strategy for the management and development of the water sector, which sets out the main objectives, milestones, means and methods for the development of the water sector.

The State policy for water management is carried out by the Minister of Environment and Water, and in the cases under art. 148, para. 1 - together with the Minister of Foreign Affairs.

The Environment Executive Agency is an administration to the the Minister of Environment and Water for the implementation of managerial, coordinating and information functions in terms of control and environmental protection in the field of Republic of Bulgaria. It designs and manages the National monitoring system on the state of the components and factors of the environment for the whole country.

The agency is the National Coordination Centre of the European Agency for Environment. The European Environment Agency is the body of the European Union, set up to provide timely, targeted, relevant and appropriate reliable information on the environment of both policy makers in the EU and the public.

Regional Inspectorate of Environment and Water are administrative structures to the Minister of Environment and Water, ensuring the implementation of the environmental protection policy at regional level.

International and European Legislation

The integrated approach to water management in Bulgaria is built on the basis of three legislative frameworks – international, European and Bulgarian legislation.

✓ International legislation: it includes all international conventions and agreements in the field of freshwater which Bulgaria has officially signed and ratified. Three international documents are linked directly or indirectly to fresh water: the Danube Convention, Helzinki Convention, Ramsar Convention and in some aspects the Black Sea Convention – art. 7 and Protocol for the protection of the Black Sea environment from contamination by ground-based sources.

✓ European legislation:

The main normative documents are the European directives. The most important for water management is the Water Framework Directive 2000/60/EU, which covers all other water directives. This directive introduces some basic approaches and principles for water management, such as legal requirements in Europe, which define the milestones that each EU Member State must pass in implementing the integrated approach:

o Basin principle of water management. Cross-border river basins require the establishment of international competent river basin management bodies.

o Sustainable water use – long-term protection of water resources.

o The ecosystem approach to water assessment and management is determined by biological parameters.

o Applying “the polluter pays” principle

o Water management requires self-financing of all activities within the river basin. The central budgetary allocation of funds shall be avoided.

o Implementation of integrated water management in river basins.

National, Regional and Local Legislation

The following priorities have been adopted for the successful implementation of integrated water management in Bulgaria:

✓ Full transposition of the requirements of the Water Framework Directive 2000/60/EU into national legislation.

✓ Strengthening the capacity of the basin management bodies.

✓ Improving coordination between the institutions involved in water management.

✓ Inclusion in the river basin management plans of priority measures for improving the quality and sustainable use of water resources.

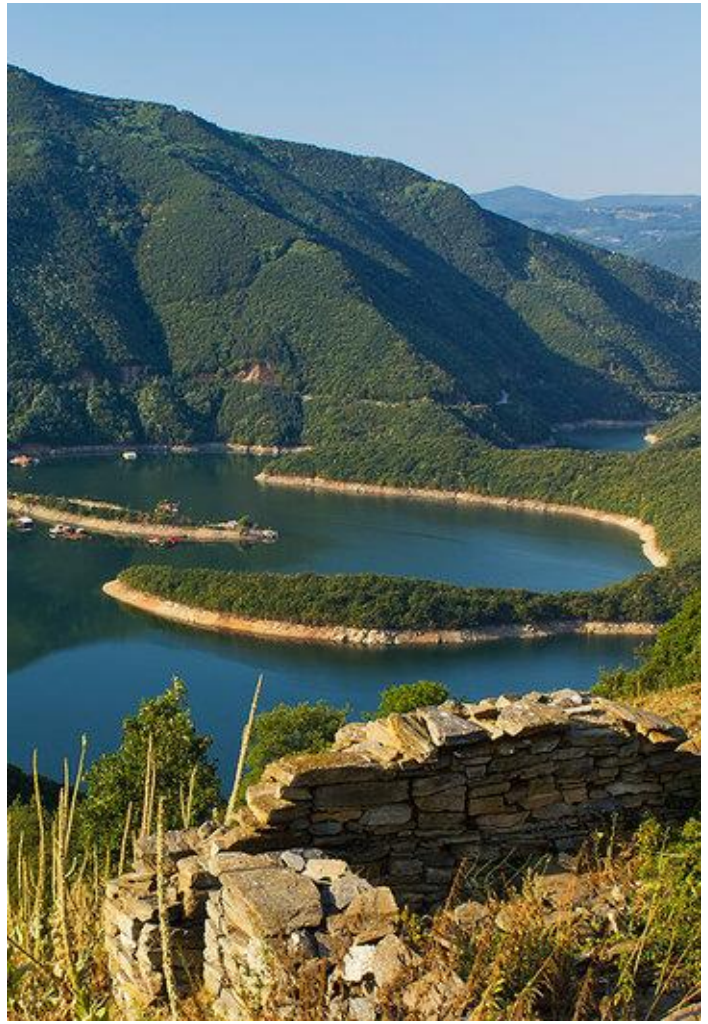
✓ Improving monitoring and control systems.

✓ Informing and advising the public.

The following laws have been elaborated, including amendments and additions to the:

✓ Water Law (additional, No. 26 of the 21.03.2014, and additional, issue 49 of 13.06.2014, No. 53 of 27.06.2014, issue 98 of 28.11.2014, in force as of 28.11.2014)

The amendments are related to protection against the harmful effects of water; specialised maps, registers and information systems for water and facilities; protection of water and water bodies;



Non-Governmental Sector and Civil Society

✓ Although somewhat scarce in legislative texts, non-governmental organisations are among the circle of entities that take part in the planning, the programming and proper absorption of EU funds. Through independent expertise, raising public awareness, initiating debates and monitoring the work of public authorities responsible for EU funds, the involvement of NGOs helps to ensure transparency and democratic decision-making. Solutions and helps to increase the effective use of public services and resources.

✓ The provisions in the legislation providing for the participation of the NGOs as a partner of the state for the most part are of a declaratory nature.

✓ In local legislation, the involvement of non-governmental organisations is also inadequate, with the exception of some municipalities which actively cooperate with non-governmental organisations.

✓ Notwithstanding the existing legal framework for partnership between the Government and the non-governmental sector in the field of ecology and sustainable development and the possibility to include non-governmental organisations as a participants when taking decisions at local level, the question arises as to whether the implementation of the partnership is a fact and whether it is a mere formality.

On the other hand, it is established that NGOs from a local government scale are often too small and unsustainable to be accepted by the administration as equal partners. Successful resolution of this conflict by intensifying cooperation between the institutions and the NGOs would demonstrate maturity and competence and in the both sides.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