



First Conference “Integrated Water Management: Technical Solutions for Small Settlements in Sub-River Basins of the Danube and Mekong”

„Legislative Framework of Integrated Water Management in Bulgaria”

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I. INTRODUCTION

There is growing recognition that unless we manage our water better, we will not achieve our societies' broader development goals.

In response to this challenge, over the last several decades numerous practitioners and policy makers around the world have been evolving practices for water resources management that have aimed to achieve a balance among economic efficiency, social equity and environmental sustainability.

These practices have collectively come to be known as the Integrated Water Resources Management (IWRM) approach. While IWRM is widely acknowledged as the way forward – particularly in the face of emerging challenges such as climate change – there are still questions about how to translate policy commitments to IWRM into practice.

Integrated water resources management (IWRM) is an approach that helps to balance competing water demands from across society and the economy, without compromising the sustainability of vital ecosystems. This is achieved through coordinated policy and regulatory frameworks, management arrangements and financing.

II. GENERAL FRAMEWORK FOR IWRM



This emphasizes the importance of an integrated approach as well as clearly articulating the link between water resources management and the “3Es” of sustainable development: economic efficiency in water use, social equity, and environmental and ecological sustainability.

According to the UNEP Report (2021). Progress on Integrated Water Resources Management. Tracking SDG 6 series: global indicator 6.5.1 updates and acceleration needs.

6 CLEAN WATER AND SANITATION



Sustainable Development Goal (SDG) 6:

Ensure availability and sustainable management of water and sanitation for all

Target 6.5:

By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

Indicator 6.5.1:

Degree of integrated water resources management implementation (0–100)

What are the key management challenges?

Water practitioners at all levels have reiterated time and again the value of IWRM, but point to a number of implementation challenges, including the following deficiencies:

- lack of coordination** and alignment of policies and institutional collaboration between water-related sectors and stakeholders, and between national, subnational and basin levels;
- insufficient financing**, including poor coordination between water-related initiatives, and lack of capacity to absorb and disburse funds;
- weak capacity** of institutions to enforce legislation, and of water professionals to develop and implement cross-sector programmes;

What are the key management challenges?

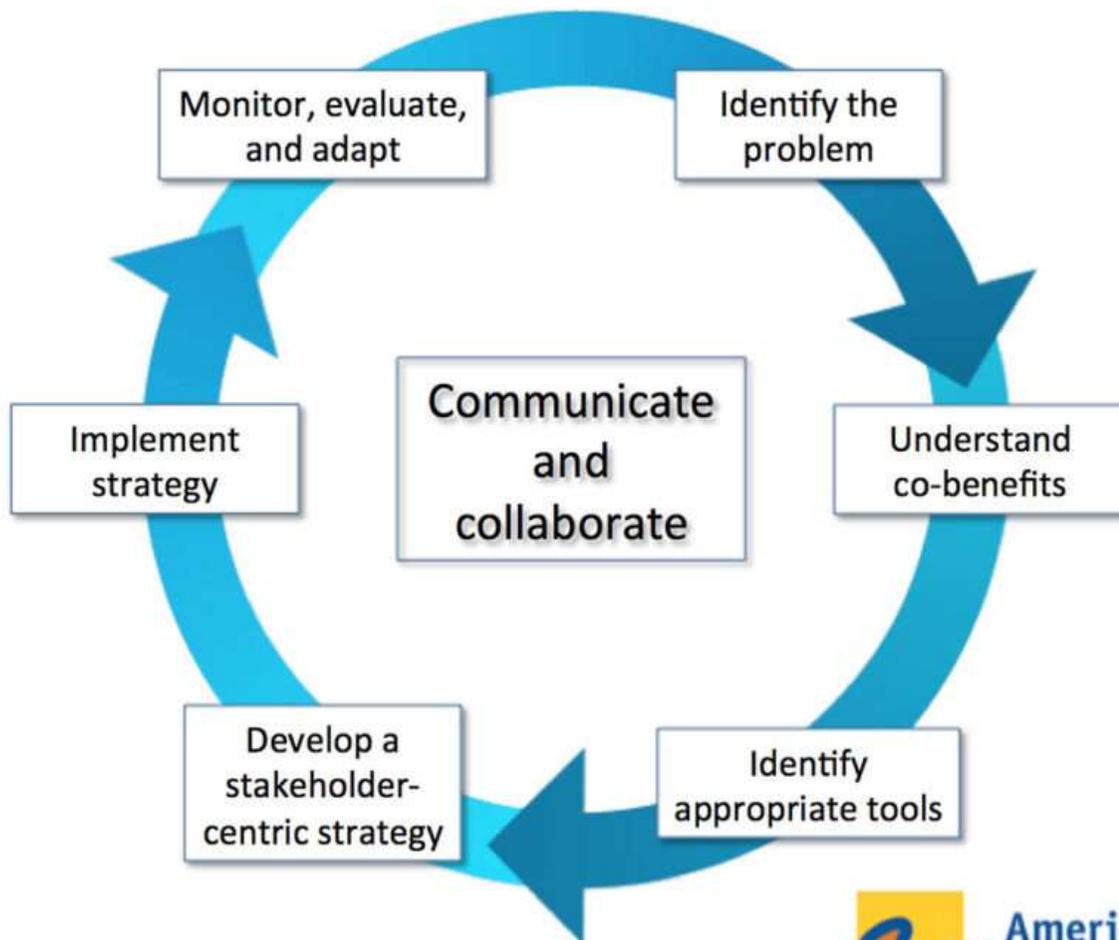
- insufficient monitoring, and data- and information-sharing in practice;
- outdated or ineffective legal frameworks;
- lack of appreciation of the value of implementing IWRM** among water-related sectors and across government ministries, including those responsible for national planning and financing.

However, the fundamental challenge lies in achieving political commitment at the highest levels and across sectors to prioritize the implementation of IWRM as an enabler for so many other SDGs.

FIVE KEY LESSONS

- ❑ IWRM is not a one-size-fits-all prescription and cannot be applied as a checklist of actions. Pragmatic, sensibly sequenced institutional approaches that respond to contextual realities have the greatest chance of working in practice.
- ❑ Water resource planning and management must be linked to a country's overall sustainable development strategy and public administration framework.
- ❑ Water management must ensure that the interests of the diverse stakeholders who use and impact water resources are taken into account.
- ❑ Approaches to water resources management will evolve as the pressures on the resource and social priorities change. The challenge is to develop institutions and infrastructure that can adapt to changing circumstances.
- ❑ While the river basin is an important and useful spatial scale at which to manage water, there are often cases where it is appropriate to work at smaller sub-basin scale or at a regional multi-basin level.

The Process of Integrated Water Management



The approach to the philosophy of integrated water management (IWM), often referred to as ‘One Water’ or Integrated Water Resources Management (IWRM).



Key recommendations for advancing integrated water resources management

Key enablers

1. Strengthening of political will through advocacy and communication: Without high-level political support, countries will not achieve sustainable water resources management. Such backing is essential for required actions, financing and follow-up to take place. This can be achieved by clearly communicating and demonstrating the value of implementing IWRM for achieving multiple SDGs to key stakeholders at all levels and across sectors.

2. Action planning: Countries can develop IWRM Action Plans, or similar, in order to focus, prioritize and coordinate efforts. Each country should identify and formalize their own pathway to make progress. A useful source of inspiration is the SDG 6 IWRM Support Programme; 2 its Acceleration Package³ contains guidance and is available to all countries.

3. Coordination and alignment: Coordination within the water sector and with other sectors needs to be prioritized and strengthened.

For example, adopt integrated approaches to policies related to investments and management of water supply, wastewater treatment and reuse, water use and water-use efficiency in agriculture, industry and energy production, ecosystem protection and restoration, and water-related disasters.

Identify opportunities to integrate water resources management into sectoral programmes and planning processes – such as climate change, agriculture and poverty reduction – and establish formal coordination mechanisms, with clear institutional mandates, responsibilities, and incentives for coordination.

4. Financing: Options include focusing on:

- (a) increasing direct central government investment backed by good policy;
- (b) raising revenue from traditional and non-traditional water and ecosystem services;
- (c) transparency, anti-corruption and accountability; and
- (d) leveraging opportunities from recovery support packages (COVID-19, natural disasters), using IWRM coordination mechanisms and stakeholder participation approaches as a tool for coordinating multiple interventions across sectors.

5. Basin and aquifer management: Prioritize the development of basin and aquifer organizations with clear mandates and strong links to relevant local government departments and agencies; technical capacity to monitor water resources and their use; and secured funding.

6. Capacity development: Identify and address the capacity gaps within and between key institutions and create incentives to retain qualified staff and encourage gender balance. Strengthen individual and institutional capacities through training programmes, peer-to-peer learning, partnering with universities, experience-sharing, career development pathways, and periodic evaluation. Ensure sufficient capacity and adequate and transparent management tools to enforce legislation, including for revenue raising. The aim should be long-term institutional capacity development, aligned with clear institutional mandates.

7. Data and information management: Options include:

- (a) developing an online national information system (or similar) for IWRM, which compiles and standardises relevant data and information on water use and allocation from different entities;
- (b) securing funding for establishing harmonized monitoring networks, making use of modern technology and approaches where appropriate;

- (c) encouraging national and international partners to share water data that may be of national interest;
- (d) ensuring that information is accessible and easily understandable to all relevant stakeholders.

8. Inclusive participation: The best ways and means to promote inclusive stakeholder participation in order to ensure the fairness and sustainability of water management and use are context-specific. However, general experience is that meaningful stakeholder engagement in at least the policy formulation and planning processes produces better results. In many countries, this approach will allow for consideration of vulnerable groups and of gender mainstreaming. Some countries include participation considerations in their laws.

9. Legal frameworks: Develop or update laws to reflect progressive, coordinated water resources management approaches, and ensure policy alignment between existing or new legislation related to the use or pollution of water.

10. Transboundary cooperation: Promote the value of transboundary cooperation to national and riparian counterparts to ensure political backing and resources. A useful approach can be to draw upon regional and global frameworks, to enhance political buy-in at the basin and aquifer level.

UN Environment is supporting countries in monitoring and reporting on Sustainable Development Goal (SDG) 6, including target 6.5: “By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate”. The target supports the equitable and efficient use of water resources, which is essential for social and economic development, as well as environmental sustainability.

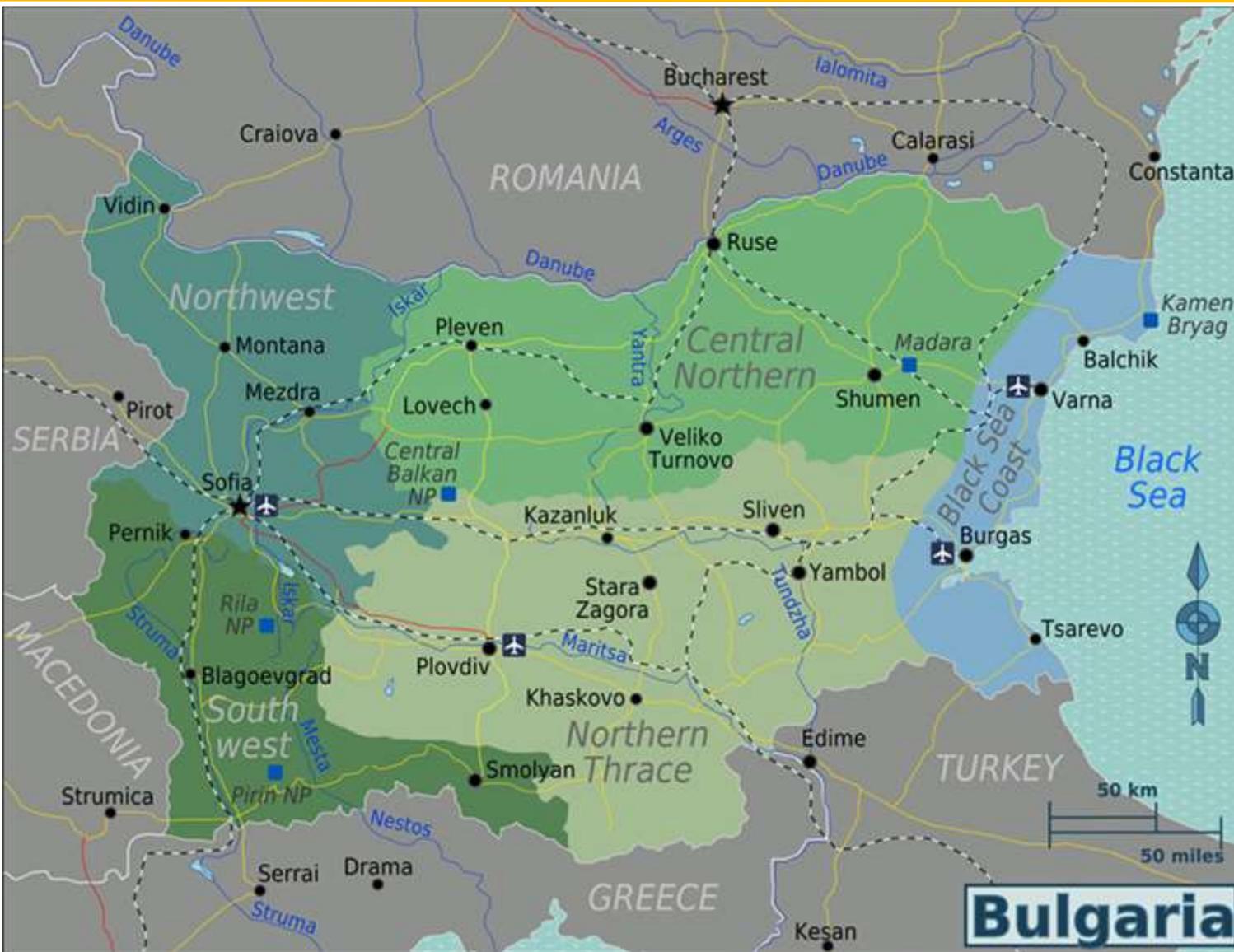
Indicator 6.5.1 score = Degree of integrated water resources management implementation (0 – 100) for all countries are available at

[Country database - IWRM \(unepdhi.org\)](https://unepdhi.org)

Interpretation of the score

The score indicates the ‘degree of implementation of Integrated Water Resources Management’, on a scale of 0 to 100, with 0 signifying no implementation, and 100 signifying complete implementation. However, the true value of the questionnaire to countries lies within the scores and justification provided for the individual questions, as this helps to identify which actions need to be taken to move towards a greater degree of implementation of IWRM.

Section	Average Score - 2020			
	Bulgaria	Viet Nam	Lao	Germany
Section 1 Enabling Environment	77	60	64	94
Section 2 Institutions and Participation	72	46	61	89
Section 3 Management Instruments	70	44	66	87
Section 4 Financing	58	57	58	85
Indicator 6.5.1 total score = Degree of IWRM implementation (0-100)	69	52	62	89



III. BULGARIA – PROBLEMS AND CHALLENGES

3.1. State policy (strategic documents)

3.2. Institutional and legislative framework (at national and river basin level)

3.1. State policy (strategic documents)

➤ EU POLICY RELATED TO WATER MANAGEMENT

Blueprint to Safeguard Europe's Water Resources (2012), a long-term strategy that aims to ensure the availability of a sufficient level of quality water for all legitimate uses by better implementing current EU water policy, integrating water policy objectives into other policy areas, and filling gaps in the current framework. It envisages the establishment by the Member States of water accounts and water efficiency targets, as well as the development of EU standards for water reuse.

Green Deal (2019) - A fundamental EU strategic document relevant to all sectoral policies and presents the EU plan for sustainable green transition, namely achieving climate neutrality of the Union by 2050 through concentration and bringing together the efforts in all sectors. Achieving of the objectives related to environmental protection and combat climate change requires modernizing the policies based on **circular economy**.

Circular Economy Action Plan, adopted by the European Commission in March 2020. This plan is one of the main instruments of the Green Deal. The EU transition to circular economy will reduce the pressure on natural resources and will create sustainable growth and employment. The circular economy is a prerequisite for achieving the climate neutrality objective by 2050.

The plan will contribute to halting the loss of biodiversity, defined as an objective in the new **EU Biodiversity Strategy by 2030** (adopted in May 2020).

➤ NATIONAL POLICY RELATED TO WATER MANAGEMENT

Water management in the Republic of Bulgaria is also expected to align with the ambition of the European Green Deal, which will require efforts for full-fledged use of the potential for sustainability and efficiency through circular use of water resources. At the national level, measures have been undertaken to elaborate the „**Strategy and Action Plan for Transition to Circular Economy of the Republic of Bulgaria for the period 2021 – 2027**“.

The main strategic documents for development of the sector are directed to improving investment planning and management of the WS&S sector.

A fundamental document in the WS&S sector is the **Strategy for Water Supply and Sewerage Development and Management in the Republic of Bulgaria 2014-2023** (approved by Council of Ministers' Decree N 269 of 7 May 2014), which sets the main objectives and priorities of the sector in the Republic of Bulgaria and defines the guidelines for implementation and financing the policies to achieve these objectives for a period of ten years.

The strategy has been established upon the National Strategy of Management and Development of the Water Sector in the Republic of Bulgaria, elaborated pursuant to Art. 151 (1) of the Water Act and adopted by the National Assembly on 21 Nov 2012 (SG, issue 96 of 6 Dec 2012);

NATIONAL POLICY RELATED TO WATER MANAGEMENT

The challenges in the water sector are solved by an integrated, regional investment planning comprising the elaboration of Regional Feasibility Studies (RFS). They are the grounds for defining integrated WS&S projects, expected to result in achieving full-fledged functioning of the water sector in compliance with the applicable national and EU legislation in this field.

The WS&S systems is performed both on a territorial basis and in view of development of the particular water economic services to the population and business in the country.

The territorial planning is based on the following hierarchy of planning documents:

- National strategic documents in the sector
- River Basin Management Plans (RBMPs) 2016-2021
- Flood Risk Management Plans (FRMPs) 2016-2021
- Regional Master Plans, prepared and adopted WS&S regional master plans for the entire territory of the Republic of Bulgaria in 2014.

3.2. Institutional and legislative framework

➤ EUROPEAN UNION LEGISLATION

EU policy has established two main legal frameworks for the protection and management of our freshwater and marine resources in an eco-system-based, holistic approach, **the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD).**

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy and the specific additional directives in the water sector.

The EU Water Framework Directive establishes a framework for the protection of inland surface water, transitional water, coastal water and groundwater. It aims to prevent and reduce pollution, promote sustainable water use, protect and improve the aquatic environment and mitigate the effects of floods and droughts. The overall objective is to achieve good environmental status for all water.

The WFD is supported by more targeted directives, i.e. ***the Groundwater Directive, the Drinking Water Directive and the Bathing Water Directive, the Nitrates Directive, the Urban Waste Water Treatment Directive, the Environmental Quality Standards Directive and the Floods Directive.***

International agreements on regional waters

The protection of marine water in Europe is governed by four international cooperation structures, so-called Regional Sea Conventions between the Member States and neighbouring countries sharing common water:

- the OSPAR Convention of 1992 (based on the earlier Oslo and Paris conventions) for the North-East Atlantic;
- the Helsinki Convention (HELCOM) of 1992 on the Baltic Sea Area;
- the Barcelona Convention (UNEP-MAP) of 1995 for the Mediterranean;
- and the Bucharest Convention of 1992 for the Black Sea.

EU river waters are protected under the Danube River Protection Convention of 1996 and the 2009 Convention for the Protection of the Rhine.

Interregional environmental cooperation focused on marine water or river basins has led to the creation of several macro regional strategies in the EU: the 2009 Baltic Sea Region Strategy (the first comprehensive EU strategy designed for a macro region); the Strategy for the Danube Region (2011), and the Strategy for the Adriatic and Ionian Region (2014).

Other EU legislation of importance to water management are as follows:

- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance;
- Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment;
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds;
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- 2012/21/EU: Commission Decision of 20 December 2011 on the application of Article 106(2) of the Treaty on the Functioning of the European Union to State aid in the form of public service compensation granted to certain undertakings entrusted with the operation of services of general economic interest (notified under document C(2011) 9380) Text with EEA relevance.

➤ NATIONAL LEGISLATION

The main national acts significant for the primary regulation of the sector are *the Water Act, the Act on Regulation of the Water Supply and Sewerage Services, the Spatial Territorial Act and the Health Act, as well as the secondary legislation thereto.*

Water Act (Promulgated, State Gazette issue 67 of 27 Jul 1999, most recent amendments and supplements SG, issue 17 of 26 Feb 2021). According to Art. 148 of the Water Act, the water management in the Republic of Bulgaria is carried out at a national and river basin level.

The Act on Regulation of the Water Supply and Sewerage Services (Prom. SG, issue 18 of 25 Feb 2005, most recent supplement SG, issue 77 of 18 Sep 2018) is a special act regarding the WA and stipulates the regulation of prices, the accessibility and quality of the water supply and sewerage services performed by the water supply and sewerage operation companies (WS&S operators) and the control thereof, as well as establishing the National Information System of WS&S services.

Ordinance on Regulation of Water Supply and Sewerage Service Prices, adopted by Decree of the CM N 8 of 18 Jan 2016 (Prom., SG issue 6 of 22 Jan 2016): defines the methods for price regulation of WS&S services provided by WS&S operators;

Ordinance on Regulation of Water Supply and Sewerage Service Quality, adopted by Decree of the CM N 8 of 18 Jan 2016 (Prom., SG, issue 6 of 22 Jan 2016): defines the long-term levels of the quality indicators of WS&S services, the conditions and order for defining annual target levels of quality indicators of these services and their way of reporting, the components and parameters of the business plans, the order for control on their implementation.

The Spatial Development Act (Prom. SG, issue 1 of 2 Jan 2001, most recent amendment SG, issue 94 of 12 Nov 2021), and more specifically its Chapter Four “Networks and facilities of the technical infrastructure”, as well as the group of ordinances issued on the grounds of the STA, are related to the activities on provision of WS&S services, while regulating the investment process and the requirements to the construction of WS&S systems and facilities.

The Health Act (Prom. SG, issue 70 of 10 Aug 2004, most recent supplements SG, issue 21 of 12 Mar 2021) and its relevant secondary legislation include requirements on quality of water for drinking and domestic needs.

State Aid Act (Prom. SG, issue 85 of 24 Oct 2017) regulates the provision of state aid and de minimis.

Ordinance N 4 of 14 Sep 2004 on the Conditions and Order for Connection of Customers and Use of the Water Supply and Sewerage Systems, issued by the minister of the regional development and public works (Prom. SG, issue 88 of 8 Oct 2004, most recent amendments and supplements SG, issue 70 of 3 Sep 2019). The ordinance regulates the conditions, technical requirements and order for connection of property and customers to water supply sewerage networks and facilities etc.

Ordinance on the requirements and criteria for WS&S operators and qualification of their staff, adopted by DCM N 11 of 23 Jan 2018 (in force as from 26 Jan 2018) define the requirements and criteria that the WS&S operators shall comply with, in order to perform the activities under Art. 1980, (1) of the Water Act, in the designated territory.

Order N 1 of 22 Jan 2020 of the Council of Ministers of the Republic of Bulgaria for establishing Bulgarski ViK holding EAD (Bulgarian WS&S Holding). The holding is a sole owner joint stock holding company with state share in the capital. It is a principal of all companies with state share and its field of activity is water supply and sewerage.

BULGARIA - Overall administrative framework (Water Management at National Level)

The Water Act stipulates the details of the responsibilities of the institutions and bodies involved in the management and operation of the WS&S systems, referring to some special legislation as regards the statute and functions of EWRC and WS&S operators.

The Council of Ministers (CM) defines the state policy in the WS&S sector as part of the water economic policy of the country and the National Strategy for Management and Development of the Water Sector in the Republic of Bulgaria.

The Ministry of Environment and Water (MoEW) is responsible for: environmental protection, water management at national level; preparation of a National Water Sector Strategy.

The Ministry of Regional Development and Public Works (MRDPW) conducts the state policy in the water supply and sewage sector at national level by: developing and proposing to the Council of Ministers a strategy for development and management of water supply and sewerage in the Republic of Bulgaria, and acts as a principal of the trading companies – WS&S operators etc.

Ministry of Health (MoH) exercises control on the quality of water for drinking and household needs, and the health and sanitary condition of water supply facilities through its territorial structures – the Regional Health Inspectorates.

Municipalities are responsible for the management only of WS&S systems that are fully owned by them; represent the municipality in the management bodies of the WS&S operators with municipal participation in the capital and in the relevant WS&S Association; exercise control as stipulated by the law.

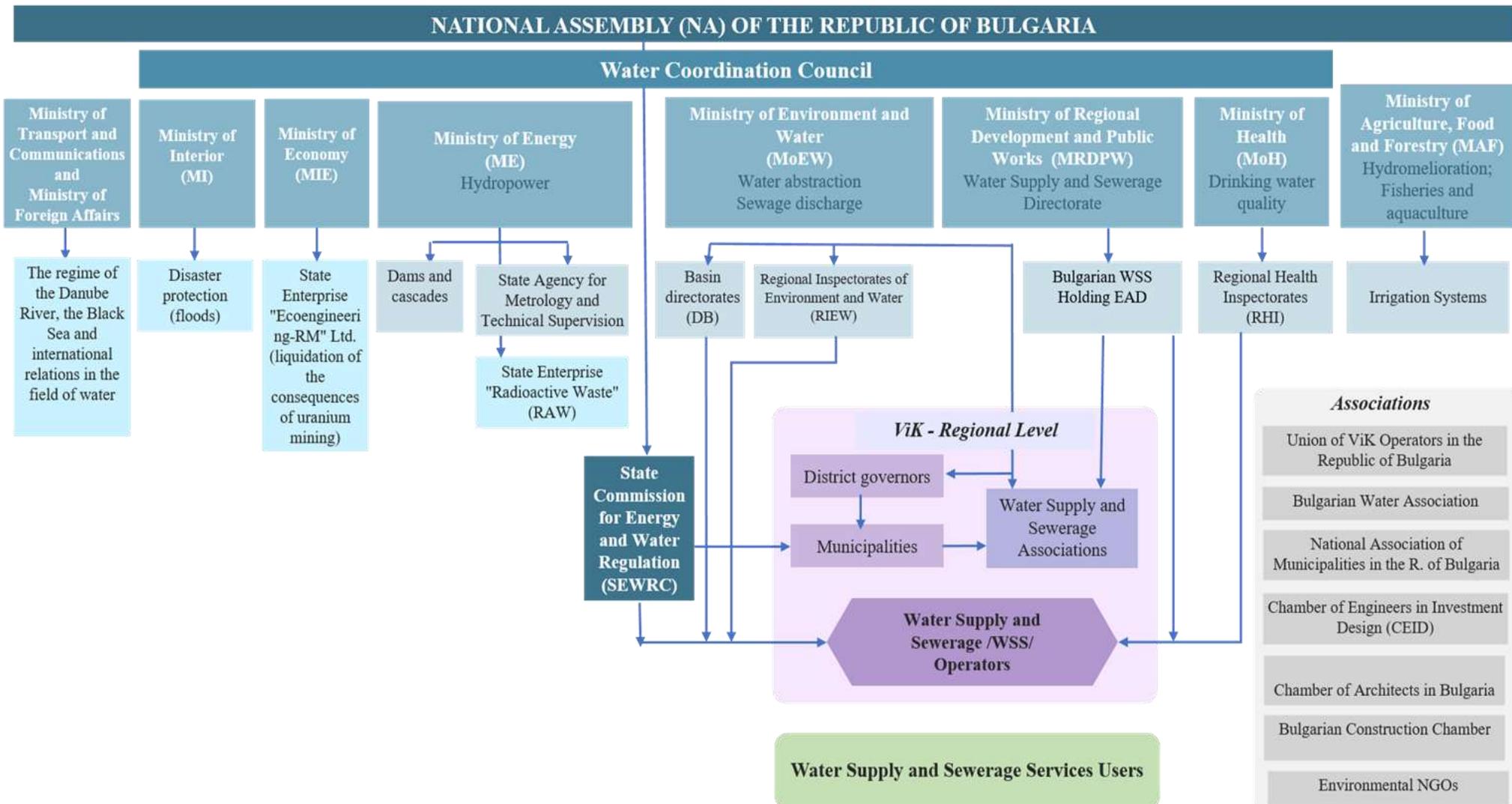
The Water Supply and Sewerage Associations (WS&S Associations) are non-profit public legal entities established by the Water Act that manage the WS&S systems within the designated territories, when WS&S system ownership is divided between the state and the municipalities or among more than one municipality.

The Energy and Water Regulatory Commission (EWRC) is an independent specialised state body, include: preparing draft legislation for the water sector; approving the business plans of the WS&S companies; approving the water supply and sewerage service prices; controlling the achievement of target values of service level indicators by WS&S companies; and considering complaints filed by consumers, etc.

Water supply and sewerage operators (WS&S operators) are legal entities that provide the following WS&S services: treatment and delivery of potable water and water for industrial and other uses; discharge/ disposal and treatment of sewerage- and rain-water in urban areas; and construction, maintenance and operation of WS&S systems, including treatment and other facilities.

The Bulgarian WS&S Holding Sole Owner Joint Stock Company, which subject of activity encompasses: acquisition and management of participation in companies in the WS&S sector; financing of companies; coordination and management of the investment activities and of the WS&S infrastructure maintenance activities; coordination of the management model and functions of the WS&S sector companies, etc.

Main participants in the Water sector, in Bulgaria, WS&S field





The **Water Coordination Council** is aimed at integrating water policy into other policies relevant to the water sector. The composition and functions of the Council are regulated in Art 10e, Par.1 and 2 of the Water Act.

The Water Coordination Council is chaired by the Minister of Environment and Water.

Members of the Council are the Minister of Agriculture and Food, Minister of Energy, Minister of Economy, Minister of Regional Development and Public Works, Minister of Health, Minister of Interior, Minister of Transport, Information Technologies and Communication, Minister of Education and Science and the Chairman of the management board or another representative of the National Association of Municipalities in the Republic of Bulgaria.

The composition and functions of the Coordination Council are indicative of the complicated nature of water management in the water sector of the Republic of Bulgaria.

The numerous participants in the process and their shared responsibilities are one of the system challenged in the sector.

It is necessary to optimize and simplify water management, in order to enable effective and operative actions.

Water Management In Bulgaria at river basin level

The WATER MANAGEMENT IN BULGARIA is realized at national and river basin level.

The delineation of river basin districts is based on natural distribution of main river watersheds in the territory of Bulgaria.

Bulgarian Ministry of Environment and Water and the Water Directorate in particular provides the national policy for water management.

4 River Basin Districts are determined in Bulgaria – Danube Region BD (Pleven), Black Sea Region BD (Varna), East Aegean BD (Plovdiv) and West Aegean BD (Blagoevgrad).

Functions of the River Basin Directorates

- ❑ **Planning** – Development and actualization of River Basin Management Plans (RBMP) and Flood risk Management Plans (FRMP), Reporting, Control of implementation of Programs of measures, public consultation, support the cooperation of RBMP and FRMP with competent authorities of other countries
- ❑ **Licensing** – issuing permits for water abstraction and usage, amendments, maintenance of register of permits
- ❑ **Controlling** – control of the activities in river beds and the compliance with the requirements of the issued permits
- ❑ **Monitoring** – assess the current status of water quantities and qualities, operate the national network of water monitoring

Some major problems and challenges by IWRM implementation in BG - possible solutions

Identified problem and its causes	Possible solutions
Political issues	
Political interference in the allocation of public contracts;	A new political practice preventing such distortion of the free market;
Complicated governance structure in the water sector – too many actors and lack of coherence;	Optimization of the overall management structure for water management and distribution of responsibilities among the various participants;
Permanent delay in the imposition of policies and the preparation of up-to-date programs and strategies, as well as a missing control mechanism for their implementation;	Rapid harmonization and strict implementation of European directives. Strong political will to honor commitments;
Lack of capacity and qualified personnel at all levels.	Creation of a strategy for sustainable development of education and training of personnel in the water sector. It is necessary to support small and medium-sized companies from the sector (design, construction) in order to create an opportunity for a good competitive environment and the development of innovative approaches and technologies.

Administrative issues	
Tenders are announced with very short deadlines and there is no time left for interested participants to react;	Tenders should be announced in terms that are consistent with the size and complexity of the project;
The requirements for proving professional competence cover a very short retrospective period - the last 3 years. In politically influenced tenders, which are invariably won by the same firms, small competent firms gradually and permanently lose the legitimacy to participate independently;	The requirements for proving professional competence should cover a longer retrospective period (exceeding the usual duration of a political administration in our country);
Public contracts are announced for the implementation acc. to the FIDIC Conditions of Contract “Yellow book“and Public procurement law, often without a previously available project in the "conceptual" phase. Such tenders are invariably won by construction companies that have to develop the projects in all their phases, for which they usually do not have the necessary high professional competence.	Public procurement could be announced separately for design in all project phases (or at least in the "conceptual design" phase). Separate tenders may be announced for the execution of the construction and for the supply of equipment.

legislative framework (gaps and shortcomings in the current legislative framework)

The necessary regulatory framework is available but needs improvement;
Problems with restrictions under Public Procurement act; Difficulty in the joint application of the [Spatial Territorial Act, Public Procurement Act](#) and FIDIC;
Regulation No 9 of 16.03.2001 on the quality of water intended for drinking and household purposes - prom. SG. 30 of 28 March 2001, last amend. and suppl. SG. 6 of 16 January 2018
Regulation No 12 of 18.06.2002 on the quality of surface water intended for drinking and household purposes - last amend. SG. 15 of 21 February 2012

Regulation No. RD-02-20-8 of May 17, 2013 on the design, construction and operation of sewage systems;
Regulation No 7 of 14.11.2000 on the terms and conditions for the discharge of industrial waste water into the municipal sewerage systems, - prom. SG. 98 of 01 December 2000

Regulation No. 3 of 16.10.2000 concerning the study, design, approval and exploitation of sanitary protection zones near to water sources and drinking water supply systems as well as mineral water sources, used for medicinal, prophylactic, drinking and hygiene purposes - prom. SG. 88 of 27 October 2000 and others;

This applies mostly to Ordinance RD-02-20-8, which lacks essential regulations - basic technological requirements and parameters, mandatory application of modern information technologies, requirements for energy efficiency, requirements for the use of certified materials, etc.;
Necessary update of the water source monitoring program and update of Ordinance No. 12;
Update of most of the Ordinances commented on in the report, but not limited to it;

legislative framework (gaps and shortcomings in the current legislative framework)

Slow entry of new technologies into the country and non-admission of alternative solutions.

Introduction of mechanisms and provision of financing and opportunities for implementation of new technologies.

Lack of an effective legislative basis for the application of circular decisions.

Development of a legislative framework at the national level for the implementation of circular solutions and incentives, including financial, for the use of recycled products, in particular sludge and treated wastewater;

- lack of stimulus/incentives for water supply operators and interested parties (agriculture, industry) to use treated wastewater and sewage sludge;
- lack of stimulus/incentives for the recovery of rainwater, gray water at the point of its formation (ie use/recycling in buildings);
- lack of stimulus/incentives (other than the price of water) for efficient use of water in households;

legislative framework (gaps and shortcomings in the current legislative framework)

Imperfect regulatory and legislative framework regarding the various possibilities for the utilization of WWTP sludge; Absence of specific requirements for the quality of the sludge for utilization other than agricultural use; Health risk;

A systematic approach to the construction of a regulatory framework for the various ways of utilizing WWTP sludge with the participation of all interested parties;
Creation of a complex approach in determining the methods and technologies for the sludge utilization, setting, for example, requirements for incineration, composting, as well as requirements for the corresponding quality of the sludge;

Cumbersome administrative procedure for sewage sludge utilization; Difficulties in organizing and tracking the sludge utilization;

Facilitation of administrative procedures, especially regarding sludge utilization in agriculture;
Develop clear procedures when using sludge for reclamation, co-incineration and other recovery options;

Lack of clarity about the organizations responsible for tracking and organizing the sludge treatment and utilization;

Establishing an organization and line of organizational responsibility;

Lack of clarity on the value, prices and funding sources of sludge treatment and utilization.

Creation of a financial framework and designation of financially responsible organizations for financing the sludge treatment and utilization.

Technological/process (eg information about/need for new technologies)

Opportunities for cooperation with international companies and organizations

<p>Lack of sizing guides; The design of the biological stage in wastewater treatment plants (WWTP) in our country is carried out according to the outdated German technical guidelines ATVA131/2000. The new German technical guidelines from 2016 are inapplicable in our country due to the imperative requirement in them that the design parameters have to be determined after studies of waste water subject to treatment, carried out over a period of 3-5 years;</p>	<p>Preparation of sizing guides by water supply, sewerage, DWTP and WWTP, including for small agglomerations under 2 000 PE;</p>
<p>Increasingly noticeable impact of climate change on some water sources (e.g. appearance of toxic algae);</p>	<p>Need to increase the requirements for the monitoring of the quality of water sources, improvement of water purification technologies;</p>
<p>Rainwater harvesting;</p>	<p>Development of good practice guidelines for rainwater harvesting;</p>
<p>The energy potential of water resources (eg the kinetic energy of the Danube) is not used efficiently;</p>	<p>Study of new possibilities for extracting energy from water (e.g. construction of hydropower nodes along the course of the Danube River);</p>
<p>Poor use of "green technologies" in urban environments (eg green roofs, temporary rainwater retention coverings, etc.);</p>	<p>Application of an integral approach in planning the urban environment;</p>

<p>Lack of installations for the production of gray water and lack of separate networks.</p>	<p>Encouraging the construction of reliable installations with measuring devices for the composition of recycled water and separate networks in the new construction of public and private buildings.</p>
<p>Pollution problems from radioactively contaminated mine waters;</p>	<p>Development of manuals for the management of radioactively contaminated mine waters and their damage removal;</p>
<p>Problems with the control of the industrial waste water discharge;</p>	<p>Development of a system for monitoring and control of industrial waste water discharges, incl. update of the regulatory framework in the area;</p>
<p>Lack of techno-economic justification for applying a regional approach for energy production through anaerobic digestion in methane tanks (these are available only in larger WWTPs).</p>	<p>Application of a technically and economically justified approach to create a rational logistics network on a regional basis, for the sludge utilization of all WWTP in a given region for energy extraction through methane tanks.</p>
<p>Problems with the final utilization of sludge. Inefficiently sludge treatment in WWTP, which limits the application of sludge in agriculture (the main discrepancy is in terms of microbiological indicators) or its use as energy raw material in thermal power plants / cement plants;</p>	<p>Preparation of guidelines for a regional approach to the final utilization of WWTP sludge. Need for wider application of technologies for thermal drying of sludge - scope of application, investment and operating costs;</p>

At the operational level (lack of qualification, lack of automation, lack of personnel, etc.)

<p>The operating companies do not have enough well-qualified personnel due to the low pay in this sector;</p>	<p>Increasing the salaries of the staff of the operating companies, for which an agreement is periodically reached between the government and the trade unions, but so far without a tangible result.</p>
<p>There is no regular training of the operational staff, which would be tied to a corresponding payment/remuneration;</p>	<p>There are organizations that offer (and conduct) training for the operational staff of water and sanitation companies (e.g. BWA), but the received certificates for the level of professional qualification are not legally bound to a corresponding payment;</p>
<p>Many of the technological problems in WWTPs are due to poor-quality equipment (already laid down in the builder's projects according to the cheapest options), as well as due to a discrepancy between the quantitative and qualitative parameters of the wastewater entering WWTP with those laid down in the projects (as a rule determined on literature data due to the lack of opportunity for preliminary research).</p>	<p>The mentioned technological problems in WWTP can be avoided by solving the problems mentioned above.</p>

Financial reasons (own financial capacity, EU funds, external resources)

Water utilities are chronically underfunded. Although they are commercial companies, they work in conditions of strict regulation by The Energy and Water Regulatory Commission (EWRC) according to a new, very detailed and complicated methodology, in accordance with the current laws and norms. According to her, the maximum price of water offered by a water supply company to consumers is tied to many financial, managerial and technological indicators, the achievement of which requires the presence of a certain financial resource, which many companies do not have;

As a result, The EWRC sets lower maximum prices, whereby they gradually fall into a spiral of chronic financial shortage. There are also bankruptcies.

In a number of cases, in order to avoid bankruptcies of the companies, they have to use borrowed funds for their operational needs, which they have to pay back with interest. To avoid such a situation, it is necessary to urgently develop recovery plans and improve the management of companies that have fallen into a similar situation.

Others

Lack of personnel;
Due to the shrinking of the activities of small competent consulting/design firms, the places where young engineering personnel can improve their professional qualifications and skills are becoming more and more limited. Due to the limited scope for professional expression, the number of students in the specialty Water Supply and Sewerage also decreases, and many of the graduates leave the country. This may eventually lead to the need to import such personnel or the preparation of the projects to be assigned (if necessary) entirely to foreign companies.

Ineffective communication between stakeholders;
Lack of understanding in society and in local/regional government bodies about the importance of treatment quality, incl. and sludge utilization with minimal risk to the environment and the population.

It is necessary to create political and administrative conditions in the country for the normal course of market relations without protectionism and neglect of good expertise;
Creation of combined programs, link between education, science and practice, need of personnel for the industry and posing problems to academia (universities).

Creating and conducting targeted communication campaigns among the public with an emphasis on the benefits of water- and wastewater treatment (incl. sludge treatment and utilisation), the application of the principles of sustainability, energy efficiency, integrated approach, circular economy, etc., based on the current state of the art and good practices.

CONCLUSIONS

Looking at IWRM as it is successfully applied in the real world yields several insights:

IWRM is a means not an end.

None of the successful case studies is set out to achieve IWRM.

Rather they set out to solve particular water-related problems or achieve development goals by looking at water holistically within larger physical and development contexts.

IWRM is not a fixed prescription but an iterative process.

This means that the specific form IWRM takes will vary from country to country and from region to region.

It also means that **IWRM is an inherently adaptive approach – one that can accommodate emerging challenges, constraints and changing social priorities.**

- ❑ **What tools from the IWRM arsenal are appropriate is highly context-specific.** Although certain tools such as water pricing and river basin organisations have come to be seen as pillars of IWRM, they are not appropriate in every situation and many of the successful examples of IWRM in practice do not include either.
- ❑ **How water is developed and managed must reflect country priorities (including environmental standards) and governance approaches.** Water management will not be successful if it is set up as a stand-alone system of governance separate from other structures of public administration.
- ❑ **IWRM includes both ‘hard’ and ‘soft’ components:** the infrastructure needed to harness water for productive use and protect from droughts and floods and the institutions and management interventions needed to: ensure its efficient use, mediate between competing users and uses, and safeguard the resource and the ecosystems that depend on it.



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„Legislative Framework of Integrated Water Management in Bulgaria”

Thank you for your attention!

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