REPUBLIC OF BULGARIA

MINISTRY OF REGIONAL DEVELOPMENT

Strategy for Development and Management of the Water Supply and Sanitation Sector in the Republic of Bulgaria 2014 - 2023

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This document has been prepared within Project DIR-5111328-1-170 Support to WSS Sector Reform, implemented under Operational Programme Environment 2007-2013 co-financed by the European Union through the EU Cohesion Fund

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ABBREVIATIONS AND ACRONYMS

AC pipes	Asbestos cement pipes
BGN	Bulgarian Lev, the official Bulgarian currency
CAPEX	Capital expenditures
CoM	Council of Ministers
EEA	European Environment Agency
EUR	Euro
FLAG	Fund for Local Authorities and Governments
GoB	Government of Bulgaria
IFIs	International Financial Institutions
IAWBD	Internationale Arbeitsgemeinschaft fuer WasserBetriebe in der Donau Gebiet
IWA	International Water Association
JASPERS	Joint Assistance to Support Projects in European Regions
MIDP	Municipal Infrastructure Development Project
MOEW	Ministry of Environment and Water
MOF	Ministry of Finance
MOH	Ministry of Health
MP	Master Plan
MRD	Ministry of Regional Development
NSI	National Statistical Institute
NUTS2	Nomenclature of Territorial Units for Statistics (level 2)
OPE	Operational Programme Environment
OPEX	Operating expenditures
PAG	Program Advisory Group
PE	Person Equivalents
PER	Public Expenditure Review
PIU	Project Implementation Unit
PPS	Purchasing Power Standard
SEWRC	State Energy and Water Regulatory Commission
SFP	Strategic Financing Plan
TA	Technical Assistance
UIS	Unified Information System
UWWTD	Urban Wastewater Treatment Directive
UWWTP	Urban Wastewater Treatment Plant
WA	Water Act
WACC	Weighted Average Cost of Capital
WSS	Water Supply and Sanitation
WSSA	Water Supply and Sanitation Association
WSSC	Water Supply and Sanitation Company
WSSRA	Water-Supply and Sewerage Services Regulation Act
WTP	Water Treatment Plant
WWC	Wastewater Collection
WWT	Wastewater Treatment
WWTP	Wastewater Treatment Plant

1 EUR	= 1.95583 BGN

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EXECUTIVE SUMMARY

This draft Water Supply and Sanitation (WSS) Sector Strategy updates and sets out for consideration by the Council of Ministers the main objectives and priorities for the WSS sector in the Republic of Bulgaria, as well as proposals for the implementation and financing of policies to achieve these objectives within a ten-year horizon. The strategy integrates the findings of consultations and intermediate analyses, including a regulatory review, public expenditure review, and strategic financing plan, produced and discussed with stakeholders since September 2012. Considering that many WSS capital investments have a long life time, both the expenditure needs assessment and the strategic financing plan were prepared for a 25-year time horizon. This provides assurance that the measures proposed in the ten-year strategy are in fact compatible with a sustainable WSS sector in the long term.

Water supply services largely meet standards, but water losses are high and water supply systems maintenance insufficient

Coverage of the water-supply system in Bulgaria is very high, and drinking water quality typically meets standards. More than 5,000 towns and villages have central water-supply systems. This represents 99 percent of the overall population, which is high coverage by European standards. Drinking water quality meets standards more than 95 percent of the time in all large water supply zones, although problems remain with regard to compliance with standards in relation to water quality and seasonal modes of consumption, especially in the smaller water-supply zones.

Investments in water supply are far below the level needed to sustain good quality and uninterrupted service in the long run. It is estimated that the total length of the water transmission and distribution network exceeds 75,000 kilometers, of which approximately 30,000 kilometers dates prior to 1970. The World Bank has assessed that the annual investment needs in network renewal and replacements are in the BGN 650–800 million range. However, actual investments in water supply have been less than BGN 200 million annually since 2007. This indicates that network replacement and renewal takes place, but at a slower pace than needed.

Breakages and water losses are at a much higher level than other EU countries. The levels for breakages and water losses (non-revenue water) are extremely high. This is caused by the fact that most of the water supply systems are obsolete, built of poor quality material or incorrectly installed, combined with a lack of preventive maintenance. Renewal and replacement tend to take place in response to breakages rather than according to a proactive system for preventive maintenance. Combined with a low level of investments, this will lead to a water supply system crisis at some point in the future unless maintenance levels and practices are enhanced.

More than 35 percent of the population considers water quality to be poor "very often" or "constantly" according to a background study for the Water Sector Strategy. Perceived quality problems relate to pressure, odor, taste, and turbidity. Seven percent of the population report that they have experienced seasonal scarcity some time during the past five years.

Wastewater services fall short of standards

Bulgaria collects and treats a lower share of its wastewater than most EU member states and needs to extend its wastewater collection and treatment system. Only 66 percent of the population is connected to a wastewater collection network, and an even lower - 50 percent is connected to a wastewater treatment plant. Among the EU12 group of new EU Member States, only Romania and Cyprus collect a lower share of their pollution load than Bulgaria. At the end of 2010, only Romania and Malta were treating a smaller share of their collected loads than Bulgaria.

Bulgaria will miss the final deadline to comply with the Accession Treaty on wastewater collection and treatment. Bulgaria recognized that meeting the UWWTD would be difficult and costly and negotiated a transition period of 14 years with a final deadline of December 31, 2014. In order to comply, Bulgaria will need to extend wastewater collection and treatment to all agglomerations with more than 2,000 person equivalents (PE). During 2011 and 2012 one wastewater treatment plant (WWTP) was completed, but additional WWTPs for 282 agglomerations with a total of approximately 1.8 million PE would have to be built during the two years from 2013 and 2014 to comply by the final deadline. In addition, some upgrading of existing WWTPs is needed.

Few investments relative to needs have been made in wastewater since 2007. Less than BGN 200 million a year has been spent on wastewater collection and treatment since 2007. During 2012, only one wastewater treatment plant (Targovishte) was completed. At recent levels of capital expenditure (165 million BGN annually in wastewater) more than 35 years would be required to achieve compliance with wastewater collection and treatment regulations. For 2013 and 2014, much larger investments are expected based on the volume of signed contracts. Despite this surge, there is a cumulated deficit of investments, and Bulgaria will miss the final deadline for wastewater collection and treatment agreed to in the Accession Treaty.

Adequate financing is sine qua non

EU funds will be able to finance 30 to 40 percent of the total needed WSS capital investments over the strategy period. According to an assessment prepared for this WSS sector strategy, the remaining investment needs for compliance are BGN 7.0–7.5 billion of which BGN 6.7–7.2 billion are wastewater compliance costs. Urgent needs for renewal and replacement investments in water supply are estimated at BGN 5.0 billion, of which a small share (0.4 billion) are water supply compliance costs. Comparing the needs of BGN 11.7–12.2 billion with the existing allocation of EU funds to water and wastewater in the current programming period (2007–2013) and the expected allocation for the next programming period (2014–2020), suggests that EU funds can finance 30 to 40 percent of the estimated WSS total capital expenditure needs.

The remaining 60 to 70 percent will have to come from central government sources and own financing by utilities. Additional financing will be essential for Bulgaria to be able to sustain its water services and meet its obligations under the Accession Treaty within the time frame of this WSS sector strategy. In the past five years central government financing of capital investments has been far below what is needed. Furthermore, government policy has been to

absorb into the central budget 80 percent of any profit by state-owned enterprises including water utilities.

Poor financial viability and lack of economy of scale make it difficult for water supply and sanitation companies (WSSCs) to finance and implement large capital investment programs. A number of Bulgarian WSSCs do not cover their operating costs. In addition, small WSSCs find it difficult to attract qualified personnel and generate sufficient resources to secure modern technology for operation and maintenance of WSS assets. This problem is exacerbated when companies have to operate complex wastewater treatment plants to meet pollution discharge norms. According to an analysis done for the WSS sector strategy, larger companies perform better than smaller ones in terms of WSS services provision. This result corresponds to European experience where economy of scale has resulted in consolidation of the sector in recent decades.

Efficiency, governance and regulation need to be improved

Generally, the institutional set-up conforms to good European practice. However, in practice a number of issues create obstacles to WSS sector development. These include: (i) the complexity and uncertainty surrounding infrastructure asset ownership and management; (ii) a lack of predictability and transparency in regulation of service levels and tariffs including a tariff setting methodology that assumes that financing is easily available at low or no cost to WSSCs; (iii) political pressure to influence day to day operations of both WSSCs and the State Energy and Water Regulatory Commission (SEWRC).

Uncertainties about asset ownership and 80 percent profit retention by the state create barriers to WSSC debt funding. The complexity and uncertainty surrounding infrastructure asset ownership and management is partly due to the incomplete implementation of the Water Act. WSSCs still hold infrastructure assets on their books, which in accordance with the Water Act are public state or public municipal assets. No lender will provide commercial loans to a company that will lose almost all its assets within a year. When the WSS infrastructure assets are removed from the WSSCs' balance sheets, the companies will become operators rather than owner-operators.

The Water Supply and Sanitation Associations (WSSAs) are essential to create a clear institutional structure for ownership and operations, but they are not yet functional. According to the Water Act the WSSAs will be associations of infrastructure owners and will manage the infrastructure on behalf of the owners. Most importantly, in the future each WSSA will have to sign a contract with a WSSC for operation and management of the public water supply and sanitation system in the designated territory. Only then can a lender provide long-term financing based on the expected future cash-flow of the operator (WSSC) as per the terms of its contract with the WSSA.

Stakeholders perceive a lack of transparency in regulation of service levels and tariffs by SEWRC. Many WSSCs report that the prices allowed by the regulator are often significantly lower than those proposed in a company's business plan. This may not be a problem in itself, but the fact that the reasoning behind the regulator's decisions about specific price items is not transparent contributes to a lack of predictability for sector actors. At the same time, the tariff-setting methodology seems to assume that financing is easily available at low or no cost to

WSSCs. This is however not the case for most WSSCs. Concerns have also been raised about how the SEWRC determines service level requirements, such as the stipulations for efficiency improvements. These perceptions tend to undermine the legitimacy of the regulator.

At present there is a perception among stakeholders that political pressure is important in influencing day to day operations of both the SEWRC and WSSCs. The perception that SEWRC is under political pressure was strengthened by political statements about the regulator and energy pricing during the spring of 2013. At the same time there is a *perception* (true or not) that the director can in practice be removed at any time during her/his one-to-three-year tenure, for reasons that may not be clear. For the WSSCs the resulting insecurity inevitably leads to a short-term perspective; for example, very few companies have a systematic asset-management program.

Affordability is an important policy concern despite low average tariffs

At less than BGN 2.00 per cubic meter, average water and wastewater tariffs in Bulgaria are lower than in most other European countries. Taking into account the lower purchasing power of incomes in Bulgaria, however, Bulgarian water prices are closer to the average price in the EU; on average the cost of water is equivalent to less than 0.3 percent of GDP in Bulgaria, while, for example in Poland, France and Germany the annual cost is equivalent to between 0.3 and 0.4 percent of GDP. Implementation of the cost recovery principle, stipulated by law needs to be ensured through policies that enable cost recovery tariffs to be charged while taking into account their affordability.

It should be noted however, that there are large regional differences in water tariffs in Bulgaria, and the legal maximum water tariff may not be affordable for poor households. Current monthly water and wastewater expenditures are typically less than 2 percent of average monthly household incomes, but there are large regional differences. In addition, in order to finance operation and maintenance costs for a system that meets the objectives of this strategy, water tariffs will have to increase. The twin issues of affordability and willingness to pay need to be addressed by applying a set of measures – economic, technical, administrative, social etc., to reduce the risk of public discontent. There is a need to discuss the social assistance mechanisms, the tools and funding opportunities among the stakeholder institutions in order to identify the best ways to support the vulnerable households.

The vision for the WSS sector

The government's vision is for Bulgaria to have a financially, technically, and environmentally sustainable WSS sector that provides value for money and services that are affordable to consumers. The current WSS strategy addresses the key sector issues identified above in accordance with the government's long-term vision. Implementation of the ten-year WSS sector strategy will lead to substantial gains in public health, in the quality of surface and ground water resources, and in improved public perception of WSS services.

Table 1: Strategic objectives for the Water Supply and Sanitation Sector

Strategic Objectives	
Compliance	Water supply and sanitation sector meets all national/European regulatory requirements
Sustainability	Water supply and sanitation services are environmentally, technically and financially viable
Affordability	Water supply and sanitation services are affordable for consumers
Value for money	Bulgarian water supply and sanitation companies have efficiency and service quality performance equivalent to good European practice

Implementation of the WSS sector strategy is extremely urgent. Large amounts of EU grant funds are available for the sector. Delays in reforms and availability of considerable problems in the water sector have led to a real risk that some grant funds from the 2007-2013 programming period will remain unutilized by Bulgaria. This must not happen again. As mentioned, Bulgaria will miss the final deadline for implementation of the requirements of the Accession Treaty in relation to wastewater collection and treatment. Fast and full implementation of the Strategy is the best tool to reduce the risk of infringement procedures and penalties. The political and financial costs of addressing a future crisis will be much larger than the costs of securing WSS system sustainability in advance.

A successful strategy is balanced

The WSS strategy intends to achieve the vision for the WSS sector by balancing interventions aimed at these objectives.

Sustainability and compliance: The experience of some new EU member states has been that a strong focus on investments in compliance increases the risk of neglecting necessary investments in network replacement and renewal with negative consequences for non-revenue water, operational expenditures, and higher replacement costs. This WSS strategy underlines the need to continue to balance investments in sustainable operations of the entire water and wastewater system with (largely wastewater related) investments in compliance.

Additional financing and value for money. Scenario analyses prepared for this Strategy demonstrate that it is possible to identify the necessary finance for compliance and sustained operations through a combination of EU funds, central government grants, and higher tariffs. The same analyses also demonstrate that the costs to central government and the necessary tariff increases can be significantly decreased by appropriate measures including, but not limited to, cost-effective compliance measures and enhanced sector efficiency. Such measures are deemed to be a pre-requisite to secure the necessary re-allocation of public funds toward the water supply and sanitation sector in the coming decade.

Based on this analysis, the WSS sector strategy includes a **balanced set of measures to secure cost-effective compliance, increased efficiency, and to address regulatory and governance issues**. Achieving these objectives will enable the sector to debt finance WSS infrastructure, thereby contributing to the affordability and sustainability of compliance.

Table 2: Overview of scenarios and their impact on key variables by the end of the strategy period

Scenario/ Objective	Compliance	Sustainability		Affordability		Value for Money
Scenario/ Variable	**UWWTD compliance**	**Average age of network**	**NRW > 49 percent**	**Tariffs > max. affordable**	**Targeted income support**	**Central govt. grant funding**
	End of Year	**Years**	**No of districts**	**No. of districts**	**Mill. BGN total**	**Mill BGN total**
Business as usual	After 2038	41	27	4	0	0
Policy scenario: Base case	2023	36	16	25	132	1,997
Policy scenario: Base case and debt funding	2023	36	16	26	132	1,314
Policy scenario: Base case, debt funding and increased efficiency	2023	36	16	22	91	577
Policy scenario: Base case, debt funding, increased efficiency and cost-effective compliance.	2022 or earlier	36	15	22	91	391

Affordability must be addressed from the start, mainly through a comprehensive approach

Early design and implementation of social policies to protect vulnerable groups will be essential to WSS sector strategy success. This Strategy proposes to assess affordability in the broader context of rents, utility tariffs, and social impact. Opportunities shall be sought to ensure social protection of vulnerable groups while respecting the principles of extant legislation.

The solidarity principle will reduce inequalities in the WWS system. Provision of water supply and wastewater in remote and smaller settlements is more costly than in larger or more central settlements. There are large differences in cost between designated territories and even within a territory. Currently, the SEWRC asks WSSCs to produce different water tariffs depending on the way the water is produced and supplied to the population (gravity, pumping or combined supply); this contradicts the solidarity principle in the Water Act. This strategy recommends instituting a single water tariff per WSSC.

Measures to enhance efficiency, governance and regulation are needed

It is imperative to address WSS sector inefficiencies, both in order to allocate additional public funds and for public acceptance of tariffs. As mentioned above, at 60 percent, non-revenue water is higher than in other EU countries, staff productivity is lower, and the prevalence of main breaks is among the highest in the EU. The WSS strategy addresses the root causes of inefficiencies: some of the companies that are too small to reap economies of scale, governance issues, and aspects of the current practice of regulation.

Throughout Europe there is a trend toward consolidation of the water sector. Consolidation is typically driven by economies of scale. An industry benchmark for optimum service area size is at least 250,000 water and wastewater customers. The more restrictive regulations for tap-water quality and wastewater discharge will require more technical skills and tools to operate and manage WSSCs, the cost of which can better be absorbed by larger utilities. There are also major economies of scale in financing and financial management; small companies are likely to have to pay a premium relative to larger companies to borrow funds. There are various ways of WSSCs consolidation based on the water sector specifics of each European country.

The WSS strategy aims to achieve a consolidated sector with at most 28 regional companies as an important step toward achieving efficiency and high-quality services. The decentralization process in Bulgaria in the 1990s created companies that are too small to benefit from economies of scale and possibly even too small to manage the more complex WSS systems of the future. Many of these small companies were created opportunistically in locations where a dam or another water source provide cheap gravity-fed water supply for a single municipality. This has led to the misconception that these companies are efficient, when in fact their natural conditions reduce the costs of providing water. Analyses done for this strategy confirm that the larger WSSCs in Bulgaria are on average more efficient in their use of resource than smaller ones.

The current Water Act must be applied to remove the remaining obstacles to resolving the issues of asset ownership and management. The proposed Amendments to the Water Act include a non-controversial resolution of these issues, therefore the WA articles concerned should be amended early by Parliament. The required procedural steps for full implementation will take 16 months to complete the WSS sector reform.

The WSSAs need to become fully functional. This requires completion of the ongoing administrative steps such as preparation of Rules and Procedures to be followed by WSSAs, and approval of and adjustment to regional specific conditions of the so-called "model agreement" for contracts between the WSSA and the designated WSSC in that territory. For the WSSAs to become fully functional asset managers, they will need to balance legitimacy in the perception of all their constituents with procedures that do not enable small minorities to block decision making. They will also need professional capacity and knowledge in order to properly manage the assets including entering into far-reaching, long-term (10 or 15-year) contracts with operators.

The current system where the state or municipality designs, procures, and implements a WSS project, and the WSSC accepts the infrastructure and is responsible for operating it is not optimally efficient. While such distribution of responsibility has historic roots, it may lead to lack of sufficient attention to operational investments and to selection of projects that do not ensure the lowest lifetime costs.

Measures to increase the professionalization of the WSSCs will enhance stability, reward achievements, and decrease inefficiencies in staffing. Contracts between the WSSAs and future operators will provide stability for the managers of the WSSCs and reward the achievement of company-specific service-level indicators. Policies should also be put in place to enhance education and training at the level of the companies, better remunerate qualified staff, and reduce overall staff numbers. At the same time, security of tenure and appropriate tariff regulations proposed in the Strategy will provide WSSC managers the autonomy and the resources to manage their companies professionally.

Enhanced autonomy must be supplemented by minimum requirements for capacity and qualifications. The Water Act requires an ordinance to be prepared on minimum requirements to WSS operators and the terms and order for staff training. This will ensure minimum levels of WSSC capacity for provision of lawful WSS services. It may also require an operator to be able to document adequate operational skills and experience in order to comply.

The WSS Strategy foresees a larger role for regulatory and voluntary mechanisms that better align the interests of WSSCs with sector objectives. In terms of regulation this will include public disclosure of selected regulatory information and enforcement by competent authorities of penalties for not meeting water quality and discharge criteria. Establishment of a benchmarking system will enable WSSC managers to identify possible areas for improvement. European experience indicates that such a system may be more effective if (initially) based on voluntary participation by utilities. The Bulgarian Water Association is a possible candidate to manage and monitor such a benchmarking system.

The Water Supply and Sewerage Services Regulation Act (WSSSRA) needs to be amended to provide a sharper focus on the sustainability and efficiency of the sector, and its implementation should provide for the enhanced use of incentives. In carrying out its functions SEWRC must switch from using a one-size-fits-all approach to WSSC monitoring to a more tailored focus on service objectives, with company-specific service-level indicators applied in accordance with the principles of the regional master plans, the intentions of the WSSA, and what is achievable in any particular region. These issues might be also addressed by preparing and adopting a new WSS sector law.

Enhanced capacity and autonomy of SEWRC will contribute to an improved regulatory approach and practice. A combination of additional resources, high caliber staff with practical knowledge about utility operations, and a Commission with enhanced autonomy would contribute to a more credible and effective SEWRC. Currently commissioners are selected on term-limited basis, but many do not serve their full term. The financial independence of SEWRC from the state budget and its self-funding from regulatory revenues can be a step in the right direction.

Compliance can be achieved in a cost effective manner

Environmental objectives may be best achieved with legal requirements that can be met with cost-effective solutions. Achievement of environmental objectives suffers if compliance cannot be enforced in practice. Similarly the law requires that, in settlements without sewers, household wastewater shall be discharged in watertight septic tanks that are regularly emptied. In practice this requirement is not, and cannot be, enforced. Finding cost-effective alternatives to regulated sanitation requirements, and ensuring that they are affordable for all consumers, will be critical to environmental sustainability.

The strategy suggests changing those Bulgarian regulations and practices which currently exacerbate the cost of compliance. The WSS strategy suggests reassessment of the delineation of agglomerations to ensure that they do not include sparsely populated settlements or parts of settlements. In conjunction with this reassessment national guidelines to define "excessive costs" should be established in accordance with those of other EU countries. The European requirements allow to comply using alternative sanitation systems if traditional sewer systems entail excessive cost. The strategy notes that for the purpose of applying the River Basin Management Plans, it may be required to perform activities for construction of sewage network and securing of treatment for territories that are not agglomerations exceeding 2 000 p.e., whenever that is necessary to achieve good water condition.

The strategy also suggests amending specific legal requirements, including the stipulation that in the absence of sewers household wastewater be discharged in watertight tanks. This requirement is more stringent than those in other EU countries such as the Netherlands and Denmark. Finally, the WSS strategy proposes a mandatory requirement for households to connect to a newly built sewer line when available, while taking into account the issue of affordability.

A regional approach, including consideration of options and system solutions at the regional level, is essential to achieve compliance cost-effectively. The regional master plans are an important starting point. Detailed regional analyses of alternative solutions, including economic assessments and feasibility studies, are necessary additional steps.

Measures to update construction standards to take full advantage of best European practice will contribute to cost-effectiveness, enhanced quality, and technical sustainability. A number of ordinances have recently been revised to meet good European practice, most lately the Ordinance on the design, construction and operation of drain and sewer systems (promulgated in SG, issue 48 of 2013). However, the existing construction standards do not provide options for cost-effective compliance and technical/financial sustainability of the WSS systems. According to the WSS strategy some of these standards need to be reviewed and, when necessary, updated to reflect good European practice.

The WSS sector strategic investment plan must be realistic and fully funded

A credible sector financing plan is needed for short-, medium- and long-term expenditure needs. This requires a combination of policies and practices including: (i) full utilization of EU grants; (ii) specific changes in the regulatory and institutional framework to enhance the ability of WSSCs to co-finance capital investment, including in state and municipal infrastructure; (iii)

a revised Ministry of Finance dividend policy that retains the biggest share of profits in companies for reinvestments, (iv) substantial growth of tariff revenues; and, (v) continued support to access to finance by municipalities that choose to invest in WSS infrastructure. Such policies are included in the WSS Sector strategy.

Assessment of the source of finance for future WSS investment needs at the national level indicate that the EU grants can cover less than half of the expenditure. EU co-funding is equivalent to 31 percent of the estimated total capital expenditure needs and to 49 percent of the capital expenditure needs for compliance investments. Therefore, the WSS sector strategy pays considerable attention to the policies aimed at ensuring access to various sources of funding, including tariff revenues, debt financing and central government grants.

By adopting the WSS sector strategy, the government commits to allocate central government funding in accordance with an ambitious, yet realistic, ten-year financing plan. The strategy conducted preliminary analyses to develop ten-year financing scenarios that would fully fund a sustainable WWS sector as it worked toward compliance. For example, in the policy scenario that includes all policy measures of the strategy, (see Section 3.4.4) the sector is financed with BGN 3,684 million in EU co-financing grants, BGN 391 million in central government grants, and BGN 2,247 million national co-financing to supplement the EU funding. The rest, BGN 5,412 million, for investment would have to be financed by WSSCs, through borrowing (BGN 1,271 Million) or operating income (BGN 4,141 million) coming from tariffs in excess of what is needed to finance operational expenditures.

Debt financing may contribute as much as 10 percent of the investment needs and this is an important part of the funding package. However, this will require that WSSCs have long-term contracts, and that regulation becomes more predictable and transparent.

Strategy implementation and action plan

Two approaches to implementation of the legal changes required as part of the WSS strategy have been considered: 1) amendments to existing laws; 2) a new Water Supply and Sanitation Act that combines the relevant parts of the current Water Act, the current Act on Regulation of the Water Supply and Sanitation Services and relevant articles from other Acts (for example the Spatial Planning Act).

Considering the urgent need for multiple changes in policies and practice, it is appropriate to focus the immediate energies of the government on simultaneous actions in all directions , while recognizing that a new Water Supply and Sanitation Act which addresses the full range of legislative changes may be time consuming and may be postponed for a later stage.

There is no panacea or a single measure that would automatically lead to improvements in the sector. Implementation of the WSS sector strategy requires a number of changes in policies and practices of key WSS institutions, financial commitment, and legal changes. As stated above, the main part of the legal and institutional framework is already in place and water sector reform is more about making the systems work as intended than about establishing new systems. Therefore a large number of changes in policies and practice have been identified

and included in the WSS sector strategy. *Table* 3 summarizes the essential policy measures, the responsible authority, and the timing of implementation.

Changing the policies and practices of key central WSS institutions (SEWRC, MRD, and MOEW) might be difficult as it requires shifts in management attitudes. At the same time, because many of these changes can be put in place with resources and legal changes that the institutions themselves largely control (for example changes to guidelines and ordinances) they can be relatively quick to implement. In order to facilitate implementation, the Strategy envisages close monitoring of the progress that will be necessary to ensure effective results. The last chapter of the Strategy includes a framework for monitoring of results.

Figure 1: Key measures, responsible institutions and their inter-linkages

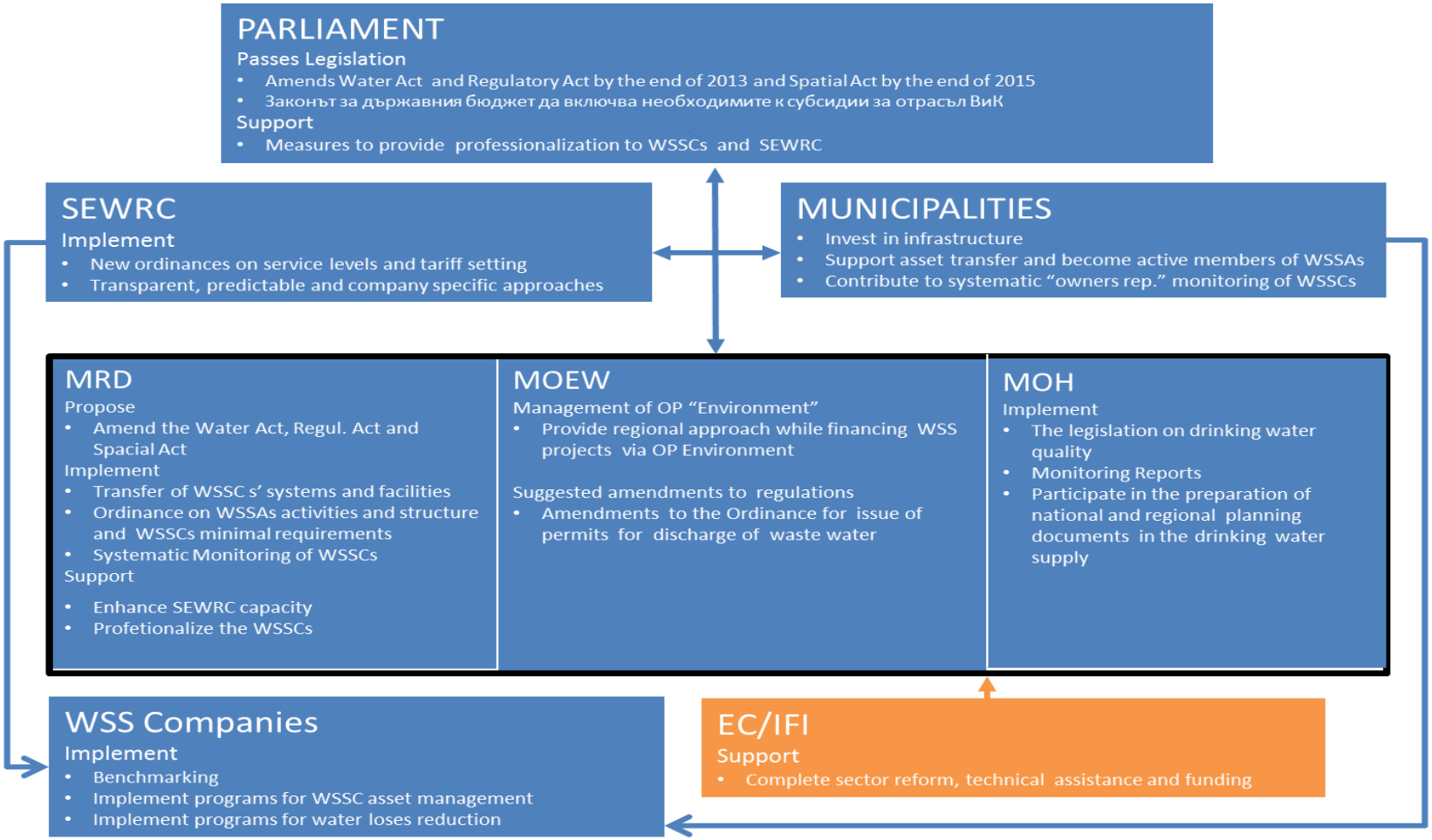

Table 3: WSS sector strategy essential policy measures organized by objective, responsible authority and timing for implementation

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
STRATEGIC OBJECTIVE: COMPLIANCE					
Specific objective: Required capital expenditure are financed					
Council of Ministers	Plan and commitment	A realistic and approved WSS financing plan which specifies sources of finance and timing of budget allocations	31/12/14		
Parliament, Council of Ministers, MRD, Municipalities, WSSCs and the Managing Authority of the respective programme providing EU funding	Budget Act, Funding	Approx. BGN 7.5 billion for investments in water supply and wastewater from 2014 to 2023			
Specific objective: Compliance with wastewater treatment regulations					
Municipalities and WSSCs	Project implementation	All practical steps for compliance investments in sanitation carried out with speed and quality in implementation			
MRD, SEWRC, WSSCs	Ordinance	Legal revision to make connection to existing sewer mandatory for customers combined with a mechanism to enable instalment plans for payment of investment costs		31/12/15	
Specific objective: Compliance with water supply regulations					
Municipalities and WSSCs	Project implementation	All practical steps for investments in water supply to achieve compliance carried out with speed and quality			
Specific objective: Avoidance of delay in WSS project implementation					
MRD, WSSCs, Municipalities	Procedures	Quality regional master plans completed and approved as scheduled	31/03/14		
STRATEGIC OBJECTIVE: SUSTAINABILITY					
Specific objective: Water supply coverage remains at 99 percent of the population					
WSSCs	Procedures and project implementation	Annual investments in renewal and replacement of WSS networks and plants within the required approximately BGN 800 million			

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
Specific objective: Sector regulation is perceived as predictable and in support of sustainability					
Parliament	Act	Regulatory Act revised to have sustainability as the primary objective		31/12/15	
Parliament	Act	Sustainability of SEWRC Commissioners for ensuring their full and independent terms of office		31/12/15	
Specific objective: WSSCs are financially capable of meeting future requirements					
Parliament	Act	The Water Act is amended to remove obstacles to transfer of assets from WSSCs to WSSAs and to assign WSS activities to operators.	01/01/14		
MRD, WSSCs	Ordinance, Procedures	Ability of WSSCs to enforce collection is strengthened through changes in legal framework and practice		31/12/15	
MRD, Municipalities, WSSCs	Ordinance, Procedures	Autonomy of WSSCs enhanced through appropriate contracts between WSSA and WSSC and between WSSCs, contracts of WSSC managers, as well as appropriate WSSA procedures			
Specific objective: WSSCs are technically capable of meeting future requirements					
Parliament	Act	The Water Act is amended to require consolidation of WSSCs		31/12/15	
Specific objective: Environmental sustainability through efficient use of resources					
WSSCs, IFIs	Procedures, funding, project implementation	Investments in energy and resource efficiency (for example targeted NRW reduction program, pump replacement) based on life cycle costs analysis			
STRATEGIC OBJECTIVE: AFFORDABILITY					
Specific objective: Mechanisms are in place that enable cost-recovery tariffs to be charged by utilities while respecting the principle of affordability					
Parliament, Council of Ministers, Ministry of Labour and Social Policy, MRD	Mechanism development and approval	Enabling investment and cost recovery while respecting the principle of affordability of WSS service tariffs			
STRATEGIC OBJECTIVE: "VALUE FOR MONEY"					
Specific objective: Cost effective compliance with regulations					
MRD and the Managing Authority of the respective programme	Study	National guidelines for "Excessive Cost" and reconsideration of spatial scope of "agglomerations" in order to achieve cost-effective compliance		31/12/15	

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
providing EU funding					
MRD and the Managing Authority of the respective programme providing EU funding	Study, Procedures	A regional approach to compliance investments based on regional WSS master plans		31/12/16	
Parliament, MOEW MRD, MIP	Act, Ordinance	Feasibility study of appropriate individual systems for wastewater collection and treatment and their applicability in Bulgaria, and if needed making legislative amendments to the respective legal framework	31/12/14		
Specific objective: Bulgarian WSSCs achieve efficiency performance equivalent to good European practice					
MRD, WSSCs	Ordinance, procedures	The MRD (as principal of WSSCs) will introduce operational targets (financial, technical and service quality) and systematic, regular monitoring hereof similar to the best European management practices	31/12/14		
MRD, WSSCs, Bulgarian Water Assoc.	Procedures	Benchmarking by majority of Bulgarian WSSCs leading to greater efficiency and customer orientation	31/12/14		
Specific objective: Satisfaction with WSS services and improved public acceptance of tariffs					
WSSCs	Procedures	Strengthened capacity of WSSCs and transition in their activity from "infrastructure operators" to "service providers"			

Note: This is a summary version of the Action Plan provided in Chapter 5.

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1 Analysis of Water Supply and Sanitation Sector Issues

1.1 Country context

The population of Bulgaria toward the end of 2012 is about 7 million people, with negative natural growth, a high mortality rate, and an aging population.

With Bulgaria's EU accession, a number of reforms were undertaken to improve the business climate. Until 2008, the economic development of the country was marked by sustainable growth, increased investment, high employment, and real income increases. But toward the end of 2008, the global financial crisis took a heavy toll on the Bulgarian economy. In 2009, GDP fell by 5.5 percent in real terms. A slow economic recovery has recently begun, driven mainly by exports; in 2011, GDP increased by 1.7 percent and approximately 1 percent in 2012 in real terms.

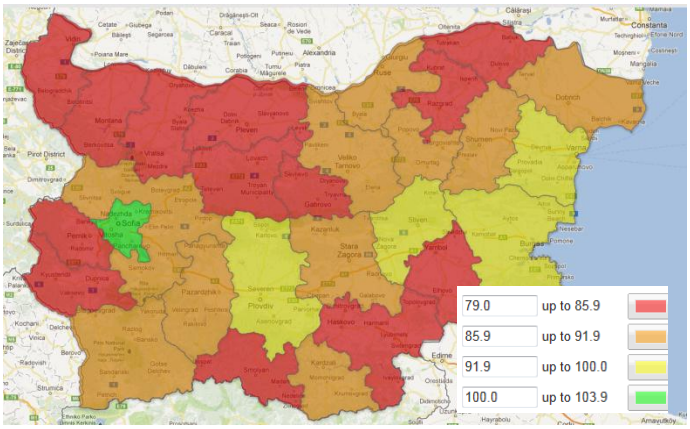
For 2014–2020, it is expected that GDP will grow by an average of 3.4 percent in real terms. As Bulgaria is in the process of convergence with the rest of the EU member countries, it is expected that the average growth of the Bulgarian economy for the period will surpass that of the EU.

There are major differences between regions in Bulgaria. The Southwest planning region has the best economic indicators in Bulgaria, while the Northwest and North-central are the two poorest planning regions (NUTS2) in Europe.

1.1.1 Demography

The population of Bulgaria has decreased since 1990, and at the same time there has been a movement of people from rural to urban areas and from smaller to larger settlements. According to the official population projection, this process is likely to continue (*Figure* 2). It is projected that only Sofia municipality will gain population over the next three decades. The Northwest planning region (Severozapaden) and parts of the North-central planning region (Severen tsentralen), as well as a few other districts (oblasts), may see as much as a 15 percent decrease in their population.

Figure 2: Population Projection. Changes in population in 2040 relative to 2010 in percent



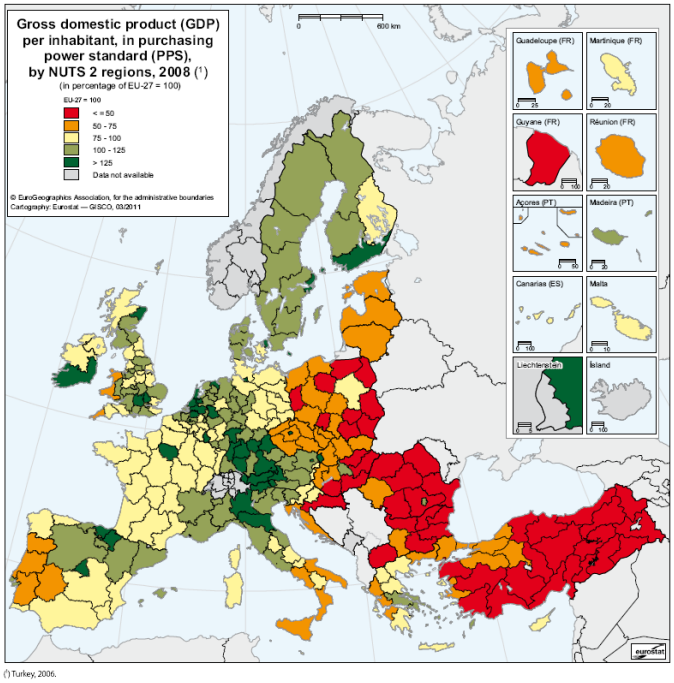
Source: NSI

It is important to carefully determine the spatial extent of population agglomerations in order to reduce the risk of overinvestment in wastewater infrastructure. The population and economic activity in agglomerations greater than 2,000 person equivalents (PE) determine the wastewater infrastructure investment needs. As of the end of 2011, 75 percent (about 5.5 million people) of the population of Bulgaria lived in agglomerations greater than 2,000 PE. Based on projected trends, the future economic activity and population in these agglomerations will decrease. While the legal requirement to provide wastewater collection and treatment to these agglomerations is clear, this WSS strategy recommends specific measures to reduce the risk of overinvestment.

1.1.2 Economic Development

Incomes in Bulgaria are expected to continue to grow faster than the EU average as the country catches up to European levels. In 2011 the GDP in Bulgaria at EUROSTAT purchasing power standard was EUR 11,600 per capita compared to EUR 27,200 per capita for EU27. But within Bulgaria there are major differences in income. Among the NUTS2 planning regions in Europe, the two with the lowest income are in Bulgaria (Severozapaden and Severen tsentralen), whereas one region (Yugozapaden) is close to 70 percent of EU average. The strategy is based on an assumption of 3.4 percent growth in GDP per year which is in line with the official medium-term growth forecast. The social policies proposed in the strategy take the wide disparity in incomes, which is found among planning regions, and even more pronounced among administrative regions (oblasts), into account.

Figure 3: GDP per capita in PPS. NUTS 2 Regions in Europe and in Bulgaria



(1) Turkey, 2006.

GDP in PPS	Year 2010
European Union (27)	24,500
European Union (15)	26,900
Bulgaria	10,700

GDP in PPS	Year 2010
Severozapaden	6500
Severen tsentralen	7000
Severoiztochen	8700
Yugoiztochen	8700
Yugozapaden	18400
Yuzhen tsentralen	7500

Source: EUROSTAT 2012c; and EUROSTAT 2012d.

1.1.3 Water Resources in Bulgaria

The River Basin Management Plans provide key linkages between the WSS sector and the larger water sector, including measures aimed at achieving good water quality in surface and groundwater. In relation to the WSS sector, the emphasis is on the construction of wastewater collection and wastewater treatment plants in accordance with the Bulgarian legislation (harmonized with the EU acquis). The river basin management plans also propose efficiency and cost-recovery measures to decrease water losses in the water supply networks, increase water metering, and introduce volumetric pricing. This WSS strategy is consistent with the existing river basin management plans.

Generally the data for Bulgaria show that there is low water stress. The projected total domestic water consumption of 3,340 million cubic meters in 2035 (excluding hydro energy and nuclear power plants) is much less than the multi-year average internal water resource of 18,547 million cubic meters (excluding the Danube River) for the period 1974–2008. Prior to 1990, Bulgaria was considered to be close to the threshold of a water-scarce country. Since then, abstractions have fallen drastically for both agricultural and industrial purposes, and today Bulgaria overall is non-stressed.

Nonetheless, there are areas of Bulgaria that experience water scarcity, particularly seasonal water scarcity in dry summers. The most vulnerable areas with rainfall below 300 millimeters are: Vidin to Lom and Montana, Pavlikeni, and Sofia in the Danube region; Shabla and Varna in the Black Sea region; Sliven, Plovdiv, Sadovo, Pazardzhik, and Panagyurishte in the East Aegean Sea region; and Blagoevgrad, Sandanski, and Kyustendil in the West Aegean Sea region.

The climate is changing in Southeastern Europe. Climate scenarios were developed for the period up to 2035 for the National Strategy for Management and Development of the Water Sector for the changes in precipitation and water availability. The average temperature is expected to increase by 1.8 to 2.1 degrees Celsius with a particular decrease in the number of frost days. Precipitation and run-off will decrease only slightly, while the intensity and variability of rainfall and the intervals between wet days will increase, and heat waves will become more frequent. As a result, the risk of flooding will increase, as will the risk of seasonal water scarcity in selected areas.

In response to these climate risks, this WSS strategy emphasizes flexibility. This flexibility includes connecting currently isolated water supplies, as well as a review of the construction standards for buildings and for WSS systems.

1.1.4 National Water Strategy

Parliament approved a National Strategy and Action Plan for Water Sector Management and Development in November 2012. This strategy outlines the overall vision for the water sector at large, including water resources management, hydropower, flood protection, irrigation, and water supply and sanitation, which provides for a more active role of the public authorities in developing and managing the sector. It also specifies the responsibilities of the various institutions in the preparation and implementation of the sub-sector strategies and plans.

The Water Strategy has four main objectives:

- **Objective 1**. Guaranteed water supply to the population and business under climate change conditions leading to drought;
- **Objective 2**. Protecting and improving the status of surface and ground water;
- **Objective 3.** Improving the efficiency of integrated management of the water as an economic resource;
- **Objective 4**. Decreasing the risk of and damage from floods.

The document confirms the responsibility of the Ministry of Regional Development (MRD) for the preparation and implementation of a Strategy for Development and Management of Water Supply and Sanitation Sector as stipulated in the Water Act. The present WSS strategy is consistent with the National Strategy and Action Plan for Water Sector Management and Development.

1.1.5 The WSS sector

Until 1989, Bulgaria's WSS service needs were covered by 28 regional utilities or water supply and sanitation companies (WSSC) and one municipal WSSC (Sofia). Their territorial scope coincided with the country's subdivision into 28 administrative districts (oblasts). All WSSCs were 100 percent state owned, with the exception of the Sofia WSSC which was owned by the municipality.

With the general economic restructuring and decentralization of the 1990s, some of the water companies were split; they were reorganized into companies jointly-owned by the state and by municipalities, whereby the state transferred 49 percent of the share capital to the municipalities served by the companies. During the 90s the number of WSSCs was significantly increased. Some companies remained 100 percent state owned, while others (usually the smaller ones serving one municipality) were wholly transferred to the municipalities. Resulting inconsistencies in the ownership of regional water storage and transmission infrastructure are yet to be resolved.

In 1999, the "Sofiyska Voda" concession was established with United Utilities to improve WSS service in the capital of Sofia. Since 2010, the concession is jointly owned by Veolia Water (77.1 percent) and Sofia municipality (22.9 percent). The water supply and sanitation fixed assets are public municipal property.

In 2005, a joint water and energy regulator (State Energy and Water Regulatory Commission–SEWRC) was established, and all WSSCs were required to submit and implement approved business plans as a prerequisite to continuing their operation. The Water and Sanitation Services Regulation Act is the basis for the regulation of WSSCs.

Currently, 66 WSSCs provide WSS services to customers. In total, 65 companies have submitted business plans for the current period (2009–2013).

The WSS sector in Bulgaria is characterized by complexity and uncertainty with respect to asset ownership and management. The latest changes in the Water Act relevant to the WSS sector (in force as of September 24, 2009) were intended to address these issues. They mandated the transfer of management rights from the state and the municipalities to the Water

Supply and Sanitation Associations (WSSAs). These associations are to be responsible for contracting public, public–private or private water operators under the Water or Concession Acts. The first step toward implementing the mandate is the creation of a fixed assets inventory currently operated by the existing WSSCs. However, issues related to accounting have prevented the transfer of assets. In September 2013, amendments to the Water Act were submitted to Parliament. Passing the amendments would enable the transfer of assets to take place as intended. In November 2013 amendments to the Water Act were adopted marking the beginning of transfer in ownership of WSS infrastructure.

According to the proposed amendments to the Water Act, there should be one WSSA per administrative region and one water supply and sanitation company (WSSC) per WSSA. Such consolidation would have followed if the Parliament had amended the Water Act as proposed by the government in 2012. Without these amendments, consolidation must be voluntary.

1.1.6 Water and Wastewater Tariffs in Bulgaria

The combined water and wastewater tariffs in Bulgaria have increased significantly since 2008 (*Table* 4), but continue to be lower than the combined tariffs in other European countries (*Table* 5). In order to recover the full cost of operating and maintaining compliant water and wastewater systems, tariffs will have to increase further in conjunction with the construction of new infrastructure and facilities (e.g. water and wastewater treatment plants).

Table 4: Average water and wastewater tariffs in Bulgaria 2008–2011 in BGN/m^3

Year	2008	2009	2010	2011
Total WSS	**1.55**	**1.72**	**1.81**	**1.85**
Water supply	1.19	1.32	1.36	1.38
WW collection	0.13	0.13	0.14	0.14
WW treatment	0.23	0.26	0.31	0.33

Table 5: Water and wastewater tariffs in Europe in 2011in EUR/m^3

Country	BG	RO	LIT	PL	HR	D	A
Total WSS	**0.94**	**0.85**	**1.40**	**1.74**	**0.93**	**3.95**	**2.17**
Water supply	0.71			0.76			0.87
WW collection	0.07						
WW treatment	0.16			0.98			1.30

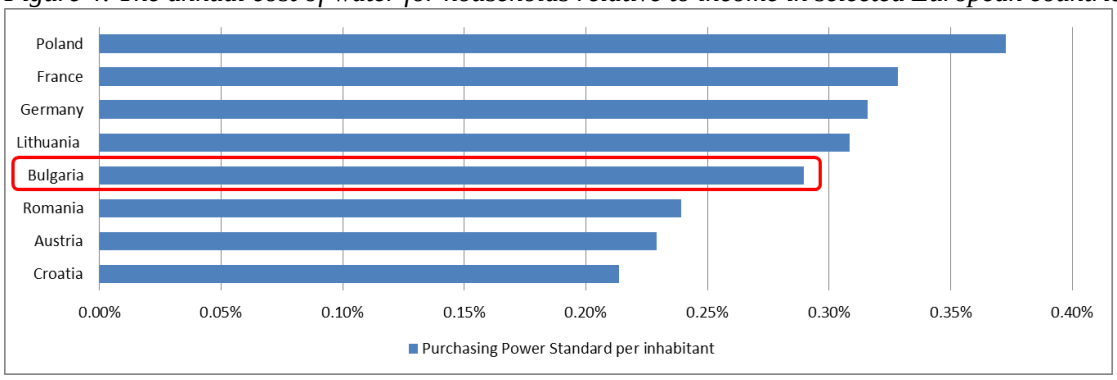
Sources: Analysis prepared by the World Bank for the development of the Strategy.
Note: BG=Bulgaria, RO=Romania, LIT=Lithuania, PL=Poland, HR=Croatia, D=Germany and A=Austria. Brackets are provided where one price covers two components, for example Poland 0.98 is the price for WW collection and treatment. Bracket combined with NA indicates that the breakdown of the price in components is not available.

In those countries that charge separately for water supply and wastewater, the wastewater charge is higher (*Table* 5). This is consistent with the typical European cost structure. Bulgarian tariffs for water supply are similar to the water supply tariffs in Poland and Austria, whereas the wastewater tariffs are only 20–30 percent of those in comparable

countries. This is likely to change as operation of wastewater treatment plants in accordance with the regulation and activity-based costing become universally applied.

The combined water and wastewater tariffs in Bulgaria are not high, even when compared to the purchasing power of households. This is illustrated by *Figure 4*.

Figure 4: The annual cost of water for households relative to income in selected European countries



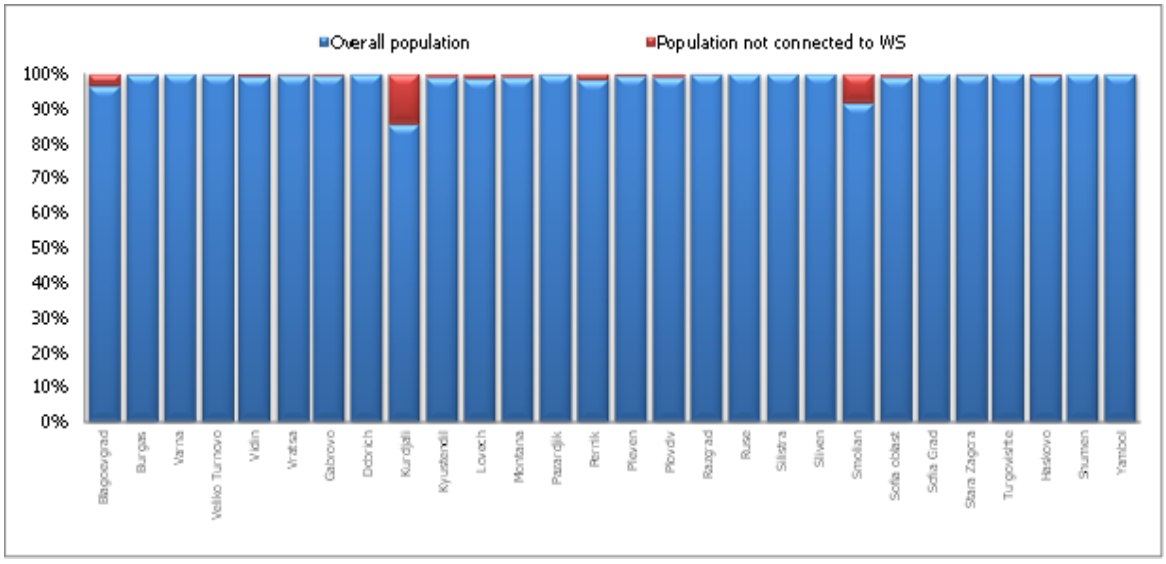
Source: Analysis prepared by the World Bank for the development of the Strategy.

1.2 Water supply

1.2.1 Water supply coverage, quality, and customer satisfaction

The rate of access to piped water in Bulgaria is high by European standards with 99 percent of the population of Bulgaria with access to piped water. More than 5,000 towns and villages are covered by centralized water-supply systems with a total pipe length of more than 75,000 kilometers. Only two districts in Bulgaria have less than full coverage from centralized piped water (*Figure 5*).

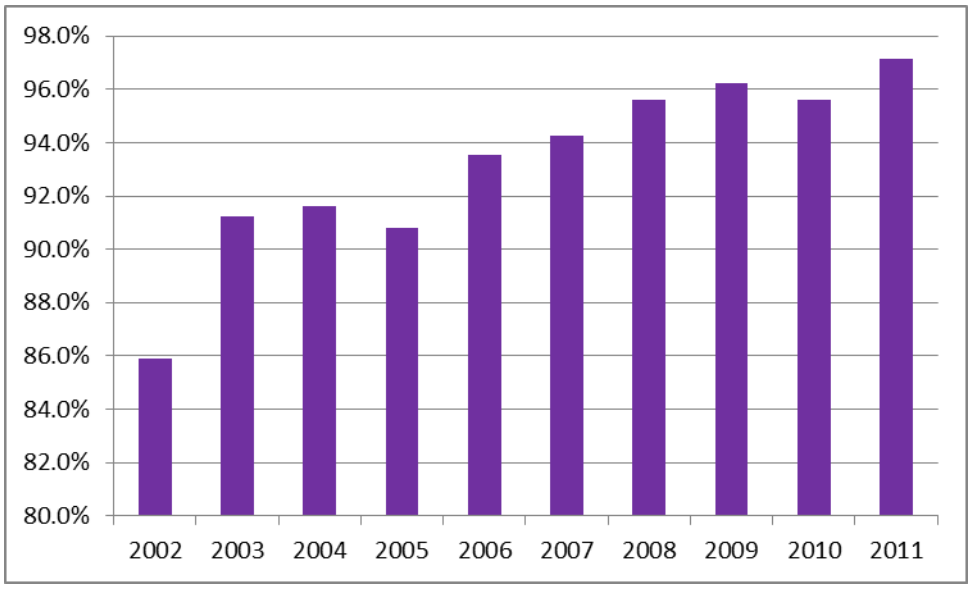
Figure 5: Water supply coverage by district



Source: Analysis prepared by the World Bank for the development of the Strategy.

Over the past decade, there has been considerable improvement in the quality of drinking water.

Figure 6: Drinking water compliance with micro-biological parameters 2002–2011, in percent of all samples



Source: Ministry of Health 2013.

Today, Bulgarian tap-water quality generally meets the requirements for healthy drinking water. For the larger drinking water zones, typically with more than 5,000 persons or with more than 1000 m^3 supplied water per 24 hours, Bulgaria is one of ten EU countries that meet the tap water quality criteria in more than 95 percent of cases for micro-biological chemical and indicator parameters. This success notwithstanding there are quality issues in some, mainly smaller, drinking water zones where the microbiological non-compliance exceeds 5 percent (*Table 6*). In some of the larger as well as smaller drinking water zones noncompliance is related to nitrates, manganese, organoleptic indicators such as turbidity and color, as well as some of the microbiological indicators. More detailed information is presented in Annex 5 to the Strategy. This type of non-compliance typically occurs in small water-supply systems, which do not have treatment facilities and where water is supplied to the population directly after only decontamination.

Table 6: Drinking water quality compliance rates for selected indicators in 2010

Indicator	Large Zones (> 1,000 m^3/day)	Small zones III	Small zones II	Small zones I	Small zones 0
Arsenic	100.00	94.40	100.00	98.93	100.00
Nitrates (source)	98.41	89.95	90.94	90.03	97.05
E. coli	98.01	96.39	95.80	92.41	88.95
Turbidity	95.47	98.87	99.17	98.54	96.81

Source: Ministry of Health 2013.

Customer satisfaction is low. More than one third of the customers state that their water supply quality is poor very often or constantly as shown in *Table 7*.

Table 7: Public perception of the quality of drinking water in 2010

Satisfaction in percent	Population	Business
Excellent all the time	23.5	29.1
Deteriorated quality in rare cases	40.2	44.4
Deteriorated quality very often	23.2	17.2
Constantly poor quality	13.1	8.6

Source: Based on MOEW 2011, Annex 4, Tables 4.3 and 4.6.

Some customers experience seasonal rationing. Approximately 6 to 7 percent of customers have experienced seasonal rationing (so-called water supply regimes) during the past five years as shown in *Table 8*.

Table 8: Frequency of water supply regimes in 2006-2010 as perceived by customers

Water supply regime last 5 years?	Population	Business
Yes	6.6	6.0
No	93.4	94.0

Source: Based on MOEW 2011, Annex 4, Tables 4.3 and 4.6.

1.2.2 Water supply issues and their causes

The main water-quality issues and seasonal scarcity are found in specific locations. These are typically in more rural settings or in isolated settlements in the hills. The problems are largely caused by past and present agricultural practices and the fact that in a number of cases there is no drinking water treatment plant even for surface water sources. There are cases of large cities (for example, Shumen) being supplied from a surface water source with no treatment plant. The issues are exacerbated by small, isolated water-supply systems in some regions. For example, the population of Pernik region (oblast) is served by more than 100 unconnected systems. To the list of issues should be added the failure to set up new water sources where water is contaminated by anthropogenic or natural causes; lack of modern facilities for decontamination of water in several small areas of water where chlorination is done "manually" without proper and continuous preparation dosing time; poor technical condition and high depreciation of pipe networks for drinking water supply in the country as a whole; and lack of sanitary protection zones or failure to comply with bans and restrictions in different areas of these zones.

There is insufficient water quality monitoring by WSSCs, but currently the Ministry of Health is trying to compensate by carrying out and implementing an extensive tap-water quality monitoring program. As much as half of the monitoring of tap-water quality in Bulgaria is carried out and financed by the Ministry of Health, although WSS companies are obligated to perform 100% of the monitoring. Even with the monitoring carried out by the Ministry of

Health, the country as a whole does not meet the requirements of Directive 98/83/EC on the volume and frequency of monitoring for the majority of indicators included in it. Many WSSCs do not have laboratories and/or equipment and will need to send many (or all) their samples to accredited laboratories. Many utilities in a difficult financial situation have chosen to "save" on monitoring. In the future monitoring will be carried out by WSSCs and the Ministry of Health will remain responsible for the functioning and control of the system (rather than implement the current monitoring). This will be resolved as part of the larger reform aimed to enhance the financial sustainability of WSSCs and aimed at more systematic enforcement of the legislation.

Low customer satisfaction seems difficult to reconcile with universal coverage and the results of water quality sampling. It is believed to relate mainly to three issues: (i) internal plumbing is often poor leading to poor water quality; (ii) turbidity issues during the spring and summer, where water originates from springs or dams and is only chlorinated; (iii) a large number of breakages and (iv) insufficient information.

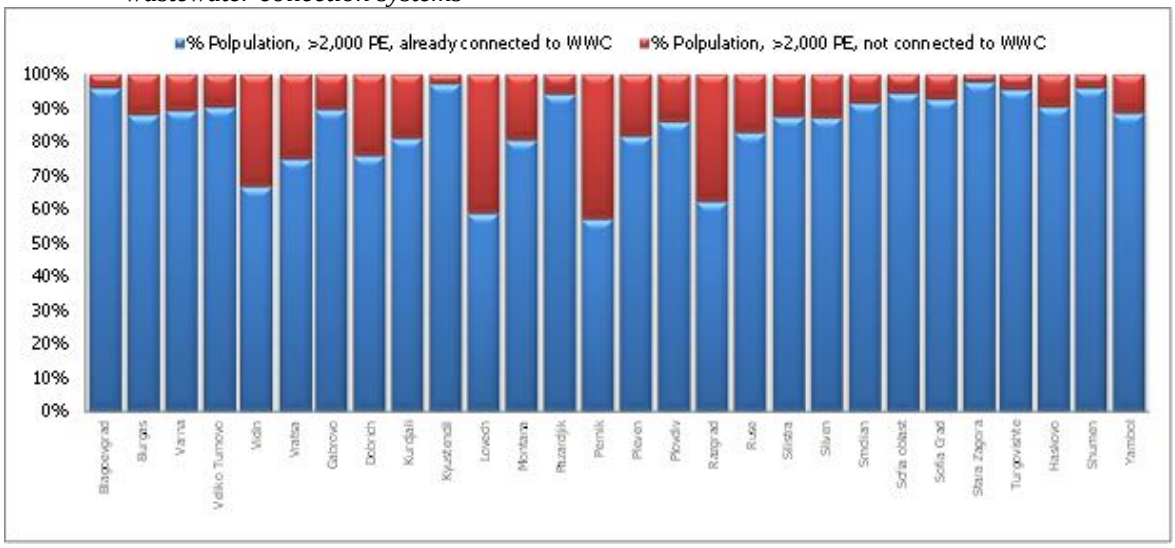
1.3 Wastewater collection and treatment

1.3.1 Wastewater collection and treatment coverage

Nationally, about 670,000 people that live in agglomerations greater than 2,000 person equivalents (PE) need to be connected to wastewater collection and as many as approximately 1,800,000 people need to be connected to a wastewater treatment plant in order to comply with regulations. Bulgaria has to increase both wastewater collection and the connection to urban wastewater treatment plants from the current coverage levels of 66 percent and 50 percent respectively in order to comply with the regulations.

Figure 7 illustrates the proportion of the population per district, living in settlements greater than 2,000 PE that are already connected to wastewater collection (WWC) versus the population that is not currently connected and is in need of WWC.

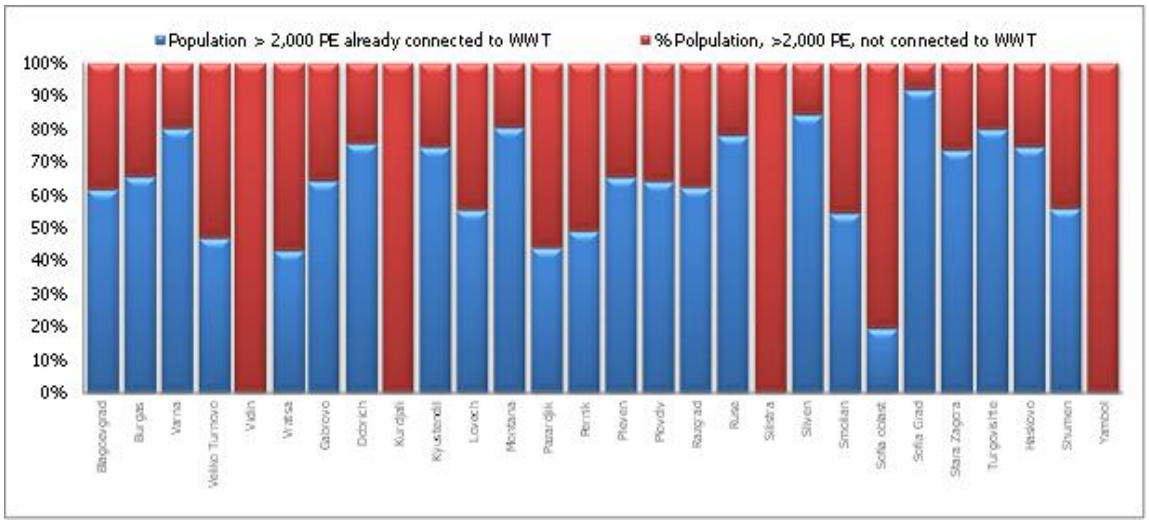
Figure 7: Population in agglomerations larger than 2,000 PE already connected / not connected to wastewater collection systems



Sources: Analysis prepared by the World Bank for the development of the Strategy.

Figure 8 presents the ratio of those already connected to urban WWTPs versus those requiring connection. In four districts - Vidin, Kurdzhali, Silistra, and Yambol there is no functioning WWTP.

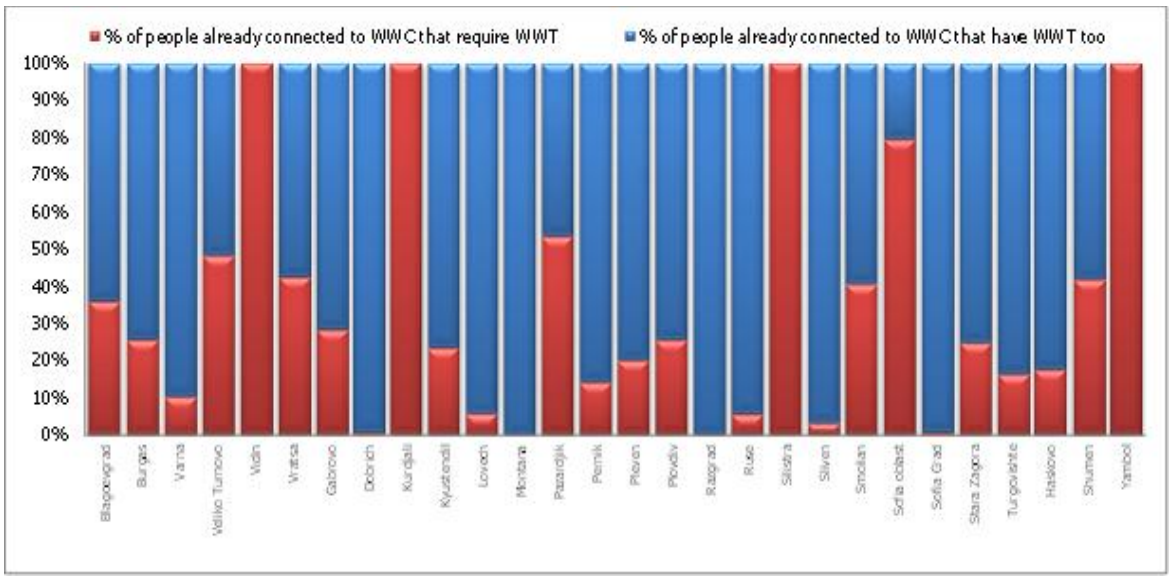
Figure 8: Population in agglomerations larger than 2,000 PE already connected/not connected to a wastewater treatment plant



Sources: Analysis prepared by the World Bank for the development of the Strategy.

Most, but not all, of the population that is connected to a sewer is connected to a treatment plant at the end of the sewer. In a few districts, the wastewater treatment plant is missing even where the sewers are established. *Figure 9* presents the current status by district.

Figure 9: Proportion of people currently connected to sewers that also are connected to a wastewater treatment plant



Source: Analysis prepared by the World Bank for the development of the Strategy.

1.3.2 Wastewater issues and their causes

Expansion of wastewater collection and treatment systems is behind schedule. Bulgaria missed the interim deadline to provide wastewater collection and treatment to all agglomerations above 10,000 PE by the end of 2010 and will miss the final deadline to provide wastewater collection and treatment to all agglomerations above 2,000 PE by the end of 2014. This reflects a combination of Bulgaria agreeing to a comparatively short transition period (14 years) and the fact that relatively few investments in wastewater collection and treatment have been completed since January 1, 2007.

Lack of mandatory connection to sewers endangers both cost-effectiveness and the achievement of environmental objectives. When constructing sewers it is required that new buildings are connected, but currently it is not possible to force owners of existing buildings to also connect. According to an informal survey in a peripheral neighborhood in Sofia, approximately 15 percent of the water customers there refuse to connect to the available sewer. The rate of non-connection in smaller settlements is not known but is likely to be much higher. Connecting to a sewer requires capital outlays of BGN 2,000 or more (depending on distance) as well as recurring payment of the wastewater tariff.

If agglomerations are defined to include sparsely populated areas, the risk of excessively costly solutions or non-compliance increases. The European Commission has noted that in a number of cases only part of an agglomeration has centralized wastewater collection, and those agglomerations are, therefore, not compliant with the requirements. Most other new EU member states have addressed this issue by providing guidelines to determine when centralized wastewater collection entails excessive costs. These guidelines are either formulated in relation to a cost per PE (the Czech Republic) or to the distance between buildings (for example Hungary and Poland). Currently, there is no such guideline in Bulgaria and there are examples of wastewater collection and treatment projects with costs in excess of EUR 3,000 per PE.

Bulgarian legislation is very restrictive with regard to wastewater collection and discharge from households in areas that do not have piped wastewater collection. This endangers the achievement of environmental objectives due to difficulties in exercising control. According to the regulations, for areas that do not have piped wastewater collection, the only legal wastewater collection is to discharge into a watertight tank with no discharge pipe. The tank must be emptied regularly, and the wastewater must be transported to a wastewater treatment plant. This is a costly solution for the households that meet the requirements. At the same time, the regulation is impossible to enforce for the authorities.

Currently, most wastewater projects propose a local, and therefore costly, sludge treatment solution. This reflects the lack of a national sludge treatment master plan. Sludge treatment at the site of every wastewater treatment plant is technically possible. However, there are significant economies of scale in sludge treatment and a situation with only local solutions is unlikely to be cost-effective.

Cost-effectiveness concerns are important in design and project approval practice. For both wastewater collection and wastewater treatment, different technologies result in different costs over the lifetime of the projects. For example, combined sewer systems may be more costly than separate sewers, yet achieve the same environmental impact in smaller

agglomerations. Similarly, traditional activated sludge plants may have higher lifetime costs than other technologies. Currently, there is a tendency to require designs to adhere to well-known practices that have been proven in Bulgaria. When these solutions are more costly, there is a need to reconsider past practice.

1.4 Common Issues in the WSS Sector

A number of water treatment plants are in the pipeline to be built or upgraded. Similarly, a large number of projects for wastewater collection and treatment have been committed and are either under construction or will soon be under construction.

These efforts notwithstanding, it is clear that **challenges remain including**:

- the implementation of a large investment program during the next programming period will be necessary to achieve compliance;
- for the part of this investment program, which will be EU funded, securing quick absorption through appropriate rules for the OPE, a high quality of project design, and an ability to overcome obstacles in the procurement process will continue to be a challenge;
- for the remaining part finding additional financial resources either as co-funding or full funding will be demanding; and
- to maintain and enhance the sustainability of WSSCs and WSS systems during a period where many new treatment plants and other new assets are being constructed has proven to be difficult in other countries and is likely to be difficult also in Bulgaria.

Key steps have already been taken in order to plan and implement the large investment program needed for compliance. These include but are not limited to the transfer of responsibility of planning and management of the WSS system to WSSAs level and a legal framework to ensure the consistency between this planning and the business plans of the WSSCs.

The responsibility for WSS infrastructure planning and management is at the level of designated territory and according to the WA shall be exercised by the district WSSA or the municipal council. The rationale for this is to ensure integration at district level of the WSS systems and capital investments. Each district WSSA is responsible for the development and approval of the so-called regional master plans. The first regional master plans have already been approved.

2 Analysis of Legislation, Regulatory and Institutional Issues

2.1 Legislation

2.1.1 European legislation

As a member state of the European Union and as part of its Accession Treaty, Bulgaria has committed to certain obligations involving transposition of the EU legislation and reaching compliance within a certain time framework. The harmonization process is complete and all European directives concerning water and wastewater are fully transposed into national legislation. The country has committed to ensuring that wastewater is collected and subject to secondary or equivalent treatment, before being discharged into water bodies, by December 31, 2010 for all agglomerations with over 10,000 PE, and by December 31, 2014 for all agglomerations with 2,000 to 10,000 PE.

Key elements of the WSS management legal regulation are not addressed by the EU legislation and are dealt with by the national legislation. These include the ownership of WSS systems and facilities, the types and models of management of WSS operators, and the methods and instruments to regulate water service tariffs.

2.1.2 National legislation

The principal piece of legislation of the general legal framework is the Water Act (WA), which regulates the ownership and management of water as a national natural resource and the ownership of water development systems and facilities. A comprehensive system of secondary legislation has been developed on the basis of the WA to ensure its implementation. The WA also regulates the management, planning, and construction of water and sewerage systems and provision of water supply and sewerage services, as well as registration of Water Supply and Sewerage Associations (WSSAs) and Water Supply and Sewerage Companies (WSSCs).

The WA regulates the right of the state, municipalities, and natural persons to ownership of waters, water bodies, and water development systems and facilities. The basic principle enshrined in the act is that water-supply and sewerage systems serving public needs shall constitute state, public, or municipal public property. A clear distinction is made between state and municipal ownership, based on the principle that systems operating in the territory of only one municipality, and meeting its own needs, constitute public municipal property, whereas water and sewerage systems, or parts thereof, servicing more than one municipality constitute state public property. Exceptions are only provided for water and sewerage systems financed and built with EU funds.

In 2009, the WA was amended to define principles for management, planning, and development of WSS services and systems as follows**:**

- Provisional division of the country into *"designated territories"* and definition of the process for designating and amending their boundaries;
- Establishment of WSSAs with the role of a union of the owners of the WSS systems;

- Assignment of responsibilities for planning and management of the WSS systems, rendering of water and sewerage services, and transferring the management of assets to the WSSAs;

- Assignment to the WSSAs of the right to contract water operators that will own private assets (e.g. offices, equipment etc.), operate public assets, and provide services (through concession or direct award contract between the utility and the WSSA);

- Preparation of Regional Master Plans as the main tool for planning the development of the WSS systems.

The 2009 Water Act Transitional and Final Provisions regulate key issues including the procedure of asset transfer. They include reducing the capital of existing WSS operators by the value of assets that are public property; financial reporting on the public assets amortization; and assigning of WSS activities to existing WSS operators by the WSS associations.

It should be noted that the transfer of assets envisaged in the 2009 WA has not yet happened. The transfer of assets has been delayed by an accounting issue ensuing from the WA. The November 2013 amendments have addressed this issue. The lack of public assets (WSS systems and plants remain on the financial balances of the operators) is the main reason for the WSSAs to remain nonfunctioning. Even where some assets (for example EU co-funded infrastructure) are already owned by municipalities, the WSSAs have not started to function. One of the consequences hereof is that many WSSCs still do not have contracts with WSSAs for system operation and maintenance and for WSS service provision. This legal limbo creates a number of difficulties.

The Water-Supply and Sewerage Services Regulation Act (WSSSRA) is a specialized piece of legislation with reference to the Water Act. It regulates the tariffs, accessibility, and quality of water-supply and sewerage services provided by the WSSCs, and provides for the establishment of a National Information System of WSS services.

The WSSRA is complemented by several pieces of secondary legislation including: (i) a methodology to regulate the WSS service tariffs; (ii) the long-term target levels for WSS service quality indicators; (iii) the terms and procedures to set annual target levels for the quality of such services and the accounting methods for them; (iv) the elements and business plan parameters and control procedures for their execution; (v) the methodology and the rules to exercise control over the state of water-supply systems in urban territories and analyze the situation thereof, including the total water losses.

The Spatial Planning Act (SPA), promulgated in SG of 2.01.2001, in effect as of 31.03.2001, in particular Chapter Four "Networks and facilities of the physical infrastructure**"** and a set of ordinances issued based on SPA, is pertinent to WSS services through regulation of the investment process and the requirements for construction of WSS systems and facilities. Noteworthy is Article 87, which requires watertight tanks as the only wastewater collection solution for buildings in settlements without sewer networks.

Finally, the Health Act along with the respective by-laws contains requirements for the quality of water for drinking and household needs.

2.1.3 Regulation of the WSS sector

The water sector in Bulgaria is regulated by a regulator that was established according to the Water Supply and Sewerage Services Regulation Act in 2005. The regulator became effective shortly after and the first business plan period started in 2007.The State Energy and Water Regulatory Commission (SEWRC) is the technical and economic regulator of WSS services in Bulgaria. The law and functions of SEWRC have been inspired by UK's regulatory law and the functions of OFWAT, which are arguably Europe's most complex regime and the most sophisticated regulator. SEWRC regulates WSSC activity by monitoring up to 72 performance indicators and approving WSS tariffs. The regulator is using "one size fits all" approach towards all WSSCs.

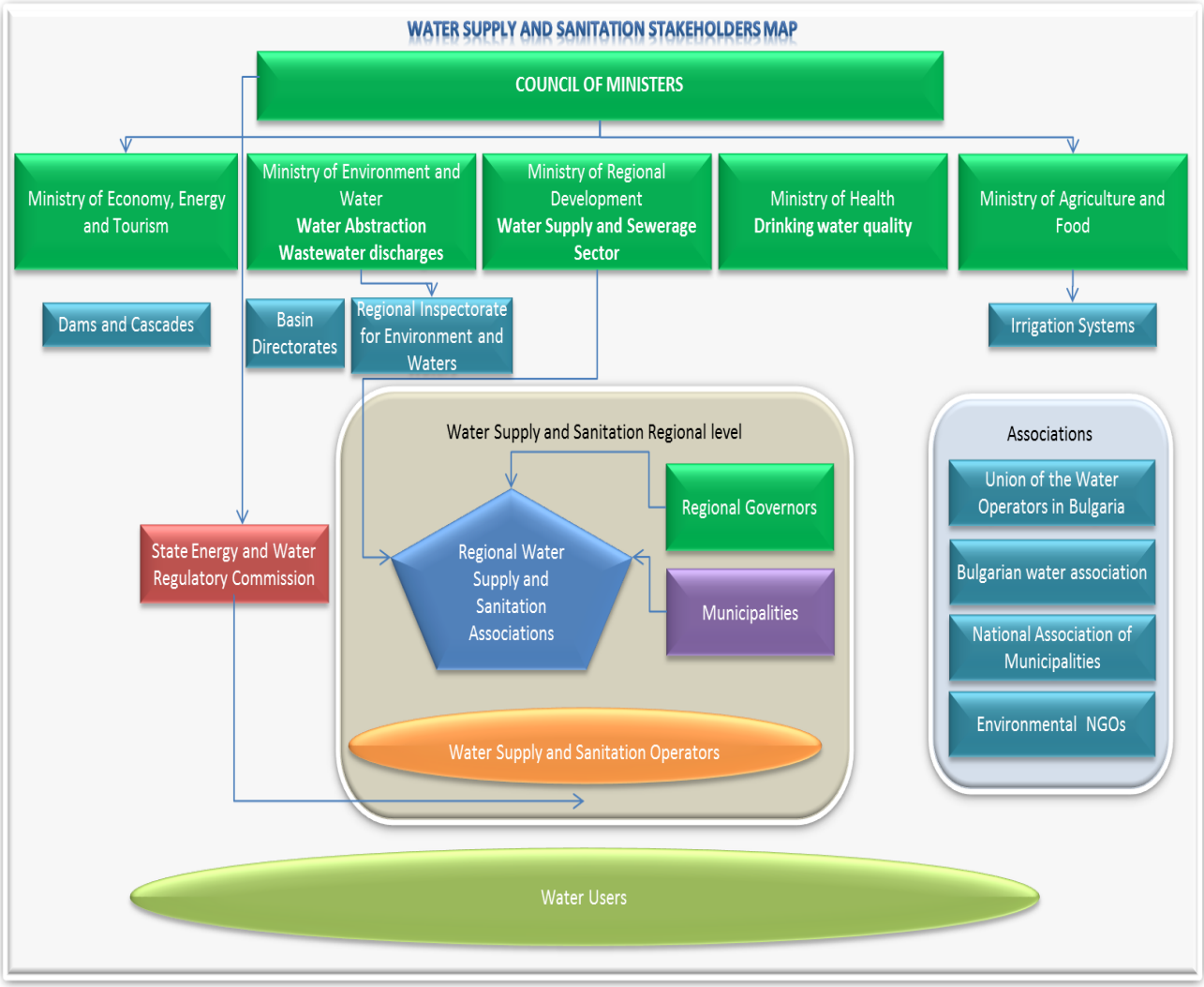
There are some issues with WSS sector regulation that need to be urgently addressed. These issues pertain to the need of (i) improving the sector overall management; (ii) optimizing WSS asset ownership and operating roles; (iii) better balance between the regulatory mandate and the capacity and resources of the regulator; and (iv) improving the effectiveness of WSS tariffs regulation to jointly meet sector efficiency and financing objectives, including through better consistency between Master Plans, Business Plans and Service Levels.

Because of the on-going processes in the WSS sector the Government is considering to extend the current regulatory period by two years. In this case the next regulatory period would cover 2016 – 2020. The Regional Master Plans (RMP) should be ready and approved by MRD by the end of 2013; the WSS assets change of ownership process should be completed by mid-2015 and WSSAs should select and sign up with WSSC by the end of 2015. This would be consistent with the approval of WSSC Business Plans by SEWRC for the next regulatory period covering 2016 – 2020.

2.1.4 Key WSS stakeholders

In Bulgaria, like in most countries, there is a multitude of stakeholders with complex interrelationships in the WSS sector (*Figure 10*).

Figure 10: Key Water Supply and Sanitation Sector Stakeholders in Bulgaria



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

The Minister of Environment and Water is responsible for: (i) environmental protection and water-resource management and control at national level; (ii) preparation of the National Water Sector Strategy, which provides the general framework for the water sector management and development; and (iii) the implementation of the Operational Programme Environment (OPE), under which WSS infrastructure can be co-funded in accordance with the OPE guidelines.

The Minister of Regional Development conducts the state policy in the water supply and sewage sector at national level by: (i) developing and proposing to the Council of Ministers a strategy for development and management of water supply and sanitation in the Republic of Bulgaria, and exercising coordination and control over its implementation; (ii) developing the legislative framework on the management and development of the WSS sector; (iii) creating

and maintaining a unified information system and register of WSSAs and WSS operators, and exercising control in the cases stipulated by the law. The Minister also coordinates the management of WSS systems at national level, as well as the activity of WSSAs and provides methodological guidance on the preparation of WSS regional master plans.

Ministry of Health (MoH), as the body responsible for the implementation of European and national legislation on drinking water quality has the obligation to report at European and national level on its implementation. MoH controls the quality of water for drinking and household needs, and the health and sanitary condition of water supply facilities. In the Regional Health Inspectorates connection with the foregoing the Ministry of Health and its territorial structures –play an important role in determining the priority issues and the necessary measures which should attract the respective amount of funds for fast and effective solution within the time limits set under the European legislation. Elaboration of various national and regional strategic planning documents and legislation in the field of drinking and household water supply should be carried out with the participation of the Ministry of Health at national and by the RHI at regional level.

Municipalities are responsible for the management only of WSS systems that are fully owned by them. Their elected bodies: (i) adopt general and detailed territorial plans necessary for the development of WSS infrastructure in the municipality in conformity with the WSS regional master plans and the general plan for agglomerations with over 10,000 PE; (ii) act as principal owner of the business companies - WSS operators, in which the municipality is the sole owner; (iii) coordinate as direct beneficiaries the preparation and implementation of the projects related to WSS infrastructure, financed by the operational programs funded by the EU Cohesion and Structural Funds; (iv) express an opinion on the business plans elaborated by the WSSCs and control their execution; (v) represent the municipality in the management bodies of the WSSCs with municipal participation in the capital and in the relevant WSS association; (vi) exercise control as stipulated by the law.

The Water Supply and Sanitation Associations (WSSAs) are designed to be non-profit public legal entities set up under the Water Act that manage the WSS systems within a designated territory when WSS system ownership is divided between the state and the municipalities or among more than one municipality. The competences of the WSSA include: (i) appointing the sole WSS operator; (ii) deciding on entering into a contract with the an WSS operator for provision of WSS services; (iii) elaborating and approving the WSS investment program and the WSS regional master plan in accordance with the general plan for agglomerations with over 10,000 PE; and (iv) approving the business plan of the WSS operator.

The State Energy and Water Regulatory Commission (SEWRC) is an independent specialized state body consisting of seven members, of which two are to have a certain minimum number of years of experience in the sphere of WSS. The competences of the SEWRC include: (i) drafting statutory instruments for the water sector; (ii) approving the business plans of the WSSCs; (iii) approving the water-supply and sewerage service tariffs in response to applications by WSSCs; (iv) controlling the achievement of target values for service level indicators by WSSCs; and (v) considering complaints filed by consumers, etc.

Water supply and sanitation companies (WSSCs) are commercial legal entities (regardless of the equity structure ownership—state, municipal, private, or a combination thereof). A WSSC is an entity that provides WSS services such as: (i) treatment and delivery of potable water and water for industrial and other use; (ii) discharge/disposal and treatment of sewerage and rain waters in urban areas; and (iii) construction, maintenance and operation of WSS systems, including treatment and other facilities. The actual start of activities by a WSSC requires issuance in advance of a number of administrative acts/approvals by the SEWRC and will be further regulated by an "Ordinance on Minimum Requirements for WSSCs", which is yet to be adopted. The WSSCs are responsible for meeting the discharge requirements provisions of the Water Act.

The Minister of Finance moves a proposal and the Council of Ministers determines the policies on profit retention in state owned companies, including wholly or partly state owned WSSCs. Currently, the general dividend policy allows a company to retain no more than 20 percent of its profits.

WSS service users are key beneficiary stakeholders, and include residential, commercial, institutional, and industrial users. User interests are represented by consumer associations and other relevant civil-society organizations. So far, consumer organizations have not been very active in the field of WSS services.

Other key stakeholders include the employees, professionals, consultants, suppliers and contractors serving the sector, as well as their unions and associations. The Bulgarian Water Association broadly represents and convenes these stakeholders on selected sector issues. Most of the WSSCs are members of the Union of WSS Operators.

2.1.5 Key regulatory and institutional issues identified

Generally, the institutional set-up conforms to good European practice. However, in practice a number of issues create obstacles to WSS sector development. These include:

(i) the complexity and uncertainty surrounding infrastructure asset ownership and management;

(ii) a lack of predictability and transparency in regulation of service levels and tariffs;

(iii) external pressure to influence day to day operations of both WSSCs and the SEWRC; and

(iv) the imbalance caused by WSSCs being responsible for discharge requirements without the means to construct the infrastructure necessary to meet discharge requirements.

There is still a lot of complexity and uncertainty surrounding infrastructure asset ownership and management. The 2009 amendments to the Water Act (WA) require that the ownership of WSS infrastructure assets rest with the public authorities as so-called "public state assets" or "public municipal assets" (henceforth just called state and municipal assets). Except for the City of Sofia, the Bulgarian WSS sector predominantly features public operators. The majority of operators are owned by the state, a municipality or jointly by the state (51%) and municipalities (49%).

The delay in the implementation of the WA significantly affects the proper management of WSS assets. Since the WA is still not fully applied most of the WSS assets are still (March 2013) commercially owned – and reflected in the balance sheets of WSSCs. In addition, similar assets are reflected differently in the balance sheets of WSSCs (both WSS assets as well as the right to use WSS assets exist simultaneously). The resulting complexity contributes to the slow pace of improvements to service quality, efficiency and asset management and maintenance.

As per the WA for the purpose of management, planning and delivery of water and sewerage services, the territory of the country is divided into "designated territories". These territories correspond to the regions served by the existing WSSC. Some of these "designated territories" are small and as a result provision of water supply and sanitation services for these should be combined with neighboring territories in order to achieve economies of scale. An early version of amendments to the Water Act required that the boundaries were adjusted to match administrative boundaries. This implies that WSSAs will appoint only one operator within each region, and thus some of the existing WSSCs will not be operators in the future. The Water Strategy prepared the Ministry of Environment and Water even discussed to establish four territories based on river basin boundaries. As discussed in section 2.2, consolidation remains an important tool to achieve efficiency.

The act requires that a Water Supply and Sanitation Association (WSSA) is established when the ownership of the WSS assets in the designated territory is separated between the state and one or more municipalities. WSSAs are mainly responsible to:

- Select WSSCs for the operation and maintenance of WSS assets and provision of WSS services;
- Develop and approve Regional Master Plans for the WSS systems and Master Plans for agglomerations above 10,000 PE within their designated territory.
- Approve the Business Plans of the WSSCs.

All WSSA have been established as at March 31, 2013 with the exception of one. However, the WSSAs are not yet functional. This requires completion of the ongoing administrative steps such as the establishment of the register of the WSS associations and operators, preparation of an ordinance for the rules and procedures to be followed by WSSAs and approval of and adjustment to regional specific conditions of the so-called "model agreement" for contracts between the WSSA and the designated WSSC in that territory. In addition, for the WSSAs to become fully functional asset managers on behalf of the owners they will need to balance legitimacy vis a vis their constituents including the smaller municipalities with procedures that do not enable small minorities to block decision making. They will also need professional capacity and knowledge in order to properly manage the assets including entering into far-reaching, long-term (10 or 15 years) contracts with operators. More capacity building measures should be put in place to make the WSSAs functional and to enable them to perform their role as stipulated in the current legislation.

The WSSAs are essential to creating a clear institutional structure for WSS assets development and management. According to the Water Act the WSSAs will be associations of WSS infrastructure owners and will manage the assets on behalf of the owners. Most importantly, in the future WSSAs will need to have a contract with a WSSC (operator) for

operation and management of the public water supply and sanitation services in the designated territory against investment in WSS infrastructure. Only then can a lender provide long-term financing based on the expected future cash-flow of the operator as per the terms of its contract with the WSSA for provision of WSS services.

As stated above according to the WA **the entire WSS infrastructure (apart from buildings, vehicles, equipment and etc.) is a state or municipal property.** WSS assets within the boundaries of a municipality are public municipal property. However, if a WSS asset serves more than one municipality they are public state property. The assets, however, have not yet been transferred from the balance sheets of the WSSCs to the state and the municipalities. This transfer has been hindered by a specific provision in the Water Act as to how to transfer the assets, which contradicts the procedure required according to the Accounting Act. So far, it has proven impossible to resolve this issue administratively.

The current Water Act stipulates the following process of **changing the WSS assets ownership**:(assuming that it will start on day A): the WSSCs should prepare a list of all the public assets on their balance sheet; local public authorities should do the same for all WSS assets that are not on the balance sheets of the operators but are within their territory and are used for the provision of WSS services; both WSSCs and municipalities should submit those lists to MRD (A+4 months). The MRD should then prepare protocols for distribution of these WSS assets between the state and municipalities (A+10 months). The new WSS owners (state and municipalities) will have 2 months to appeal the distribution protocols (A+12 months). If there is no objection the WSS assets will be considered accepted and their management transferred by law (*ex lege*) to a WSSA. After that, to finalize the process, the owners of the WSSCs need to start the process of removing the public WSS assets from their balance sheets (A+15 months). Upon commissioning, the management of new WSS assets (including, but not limited to, EU co-funded assets) will be assigned to the WSSC (based on a contract with WSSA).

The complexity and uncertainty surrounding infrastructure asset ownership and management is due to the incomplete implementation of the Water Act. WSSCs still hold infrastructure assets on their books, which in accordance with the Water Act are public state or municipal assets. The transfer process has been delayed by an issue related to a legal requirement to reduce the operators' registered capital. The issue is addressed in the proposed amendments to the Water Act. The amendments were adopted in mid-November 2013 and the WSS assets ownership transfer procedure has been launched. **The tariff-setting methodology seems to assume that financing is easily available at low or no cost to WSSCs.** SEWRC's policy not to allow depreciation of assets that are not on the WSSC's accounting balance sheet suggests an implicit assumption that financing (or, alternatively, third-party provision) of capital expenditure must be easily available, or that it is expected that the government will step in and replace the grant-funded assets when they have reached the end of their useful life. The permitted cost of equity of approximately 4–5 percent for the test year of 2005, when inflation in Bulgaria was about 5 percent, seems equally unrealistic. These decisions reflect a concern with the affordability of tariffs for consumers (see **Section 4.5**), but they are included in tariff-setting methods in a non-transparent manner.

Furthermore, the tariff setting methodology and the present policy of profit retention in WSSCs with predominantly state owned assets create additional barriers to WSSC debt funding. The policy of returning 80 percent of profits to the owners leaves the WSSCs with little available funds and in actual fact blocks the possibility to leverage debt financing (because of lack of capital to repay the loans).

External pressure to influence day to day operations of both WSSCs and SEWRC. The WSSCs experience a very low degree of autonomy in decision making, also with respect to day-to-day operations. There are many examples of WSSC managers being replaced and while some replacements may reflect poor performance, with other replacements clear motives are missing. The lack of autonomy in day-to-day operations is one of the major causes of inefficiency in the WSS sector.

The implementation of the proposed amendments to the WA would result in WSSCs having a contract with an association of owners and this could promote arm's length governance. The formalization of the relationship between the WSSC and WSSA could lead to clear contractual responsibilities compared to the current situation. Financial independence of publicly owned WSSCs must be caveated by several considerations, including the fiscal interests of the owner to secure a return on his investment and the need to protect consumers against abuse of monopoly power on behalf of SEWRC. A model contract has been prepared which would serve as the basis for the contract for operation and provision of WSS services between each WSSA and WSSC.

As mentioned above, **one of the main obligations of the WSSA is to select a WSSC for the operation and maintenance of WSS assets and provision of WSS services.** The Water Act provides for two options for WSSA for the selection of an operator:

1) Direct award to a current operator providing WSS services in the region. In this case the operation and maintenance of the WSS assets will be handed over through a "quasi-Concession" Contract (10 years if there are no requirements for major investments or 15 years if there is an obligation for major investments). With the financial support of EBRD, the MRD has approved a Model Contract between the WSSA and an existing WSS operator.

2) Competitive selection of a new operator (under the Concession Act). In his case a Concession Contract (up to 35 years) shall be used. The MRD has been working jointly with the International Financial Corporation (IFC) to develop a model Concession Contract for such cases.

What would the Model Contract or Concession contract between WSSA and WSSC regulate when the levels of services and tariffs are regulated by SEWRC? It is envisaged that in comparison to the national water regulator the WSSA would prioritize levels of services depending on the specific needs, add new ones, provide different deadlines and in general be able to terminate the contract with WSSC for non-performance. In comparison, the SEWRC can only penalize non-performing WSSCs.

Discharge requirements remain difficult to enforce because WSSCs are responsible for their implementation but are without access to the means to comply. In many places,

additional infrastructure (a new or upgraded wastewater treatment plant) is necessary for compliance. But WSSCs are not designated as direct beneficiaries of EU-funds, and they do not have sufficient internal funds to finance the required infrastructure—directly or via leveraging of debt. As an unintended consequence, the absence of wastewater treatment plants and sewerage networks in many agglomerations puts polluters in a privileged position: the polluters do not pay a sewer fee even though they pollute, and thus the "polluter pays" principle laid down by law is not implemented in practice.

The strategy proposes that during the next programming period the WSSCs should be also important party in the implementation of projects financed through state budget funds or EU funds in order to create incentives for them to meet discharge requirements at the earliest time and in the most efficient manner, as currently there are no obvious incentives to select projects that have the lowest lifetime costs. In addition, given the technical capacity of the current beneficiaries – the municipalities in planning and preparing projects in the WSS sector, the greater involvement of the WSSC in the project preparation would increase the technical viability, ensure more coordinated project implementation and better efficiency in the future operation of the WSS systems.

Is there a role for private sector participation in the WSS sector? The Water Act provides an opportunity to WSSAs to select a new operator (differing from the existing operator that provides the WSS services). The WSSAs should observe the Concession Act if they would like to select a private operator. Despite the existing legal opportunity, it is difficult to imagine that this would become a preferred model for the following reasons: (i) The Concession Act requires technical, financial and legal analysis to justify the need to concession out works or services; these cost money to prepare along with tender and contractual documents; (ii) WSSA decisions are taken with the votes of ¾ from all members, which requires significant support to concession WSS services; (iii) IFC prepared a pilot water PPP project but the respective WSSA did not take a decision for the start of the concession preparation activities due to the negative public perception about private monopolies. Nevertheless, the opportunity exists although there is still no market for significant private sector participation.

The organization of sector regulation. The Bulgarian WSS sector predominantly features public operators. The majority of operators serve designated territories that span multiple municipalities, and are owned by the state or jointly by the state and the municipalities. The SEWRC regulates both the levels of services and the tariffs of the WSSCs. The main regulatory tool is the approval of the WSSCs Business plans every five years. 2009 changes to the Water Act have implications on the sector regulation. The regulator should avoid a tendency to use a "one size fits all" approach focused on the achievement of a large number of individual indicator values, and focus instead on the optimization of the overall operator-specific business plans, in accordance with the principles of the master plans and the intentions of the WSSA (a contract should be in place between the WSSA and WSSC). In the changed framework and relations the approved business plans and the related performance indicators may substantially differ from one WSSC to another. Such a process will require additional resources for SEWRC compared to what is spent today on dialogue and approval of business plans and it will require additional input of SEWRC staff with utility background and knowledge of utility operations in practice.

2.2 Efficiency and Governance

2.2.1 Key Efficiency Issues

Bulgarian WSSCs appear to be much less efficient than most of their European peers (*Table 9***).** Bulgarian WSSCs tend to be overstaffed. Measured in terms of staff per 1,000 connections Bulgarian companies have staff that is four to five times higher than other EU countries. This partly reflects inefficiency, partly that Bulgarian WSSCs rely on in-house equipment and staff for almost all their needs (typically including workshops for heavy equipment). Non-revenue water and pipe breakages per year are also higher in Bulgaria than in most European countries.

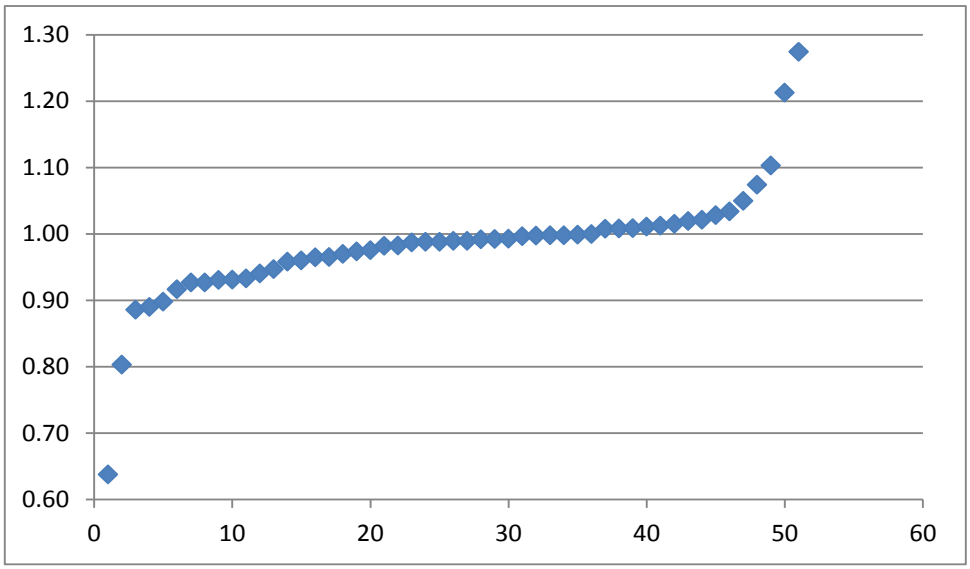
Table 9: Selected indicators of efficiency for WSSCs in select EU countries

Efficiency of WSSCs	Bulgaria	Romania	Czech Republic	Lithuania	Germany	France
Staff per 1,000 connections	7.7	1.9	0.6	0.8	2.5	2.4
Non-Revenue Water	60%	49%	47%	24%	7%	26%
Pipe breakages (breaks/km/year)	1.5	1.9	0.7	1.1	0.01	0.1
Tariff (€/m^3)	0.94	0.85	1.75	1.40	3.95	3.40

Source: Bulgaria: Staff productivity and average tariff: WSSC reporting to SEWRC; NSI 2013a http://www.nsi.bg/ORPDOCS/Ecology_9.2.xls;
WB analysis prepared for the WSS strategy.

A large number of Bulgarian WSS companies do not cover their operating costs. Many companies have a working ratio (operating cost/operating revenues) above 1.00 and only very few have a working ratio below 0.90 (*Figure 11*). A high working ratio impedes a company's ability to use its own funds for major capital investments. The cost-recovery principle needs to be fully integrated in the requirements for calculation of the end price of the water paid by the user, incorporating the cost of the water resource, the cost for the environment and for the exploitation of the infrastructure. The "polluter pays" principle also needs to be taken into account in defining the taxes for discharge of waste water from the settlements which need to be defined in a way to stimulate the development of waste water treatment facilities for the agglomerations.

Figure 11: Working ratios for WSS companies in Bulgaria



Source: Analysis prepared by the World Bank for the development of the Strategy.
Note: Working ratio defined as operating cost/operating revenues. If the working ratio is above 1.00 the company does not generate enough operating revenue to cover its operating costs. Companies that generate an operating surplus that can be invested (or used to finance debt) have a working ratio below 0.90.

Poor financial viability and inefficiencies make it difficult for WSSCs to finance and implement large capital investment programs, which are necessary to meet compliance requirements and to achieve the required long-term service levels.

As part of the WSS strategy preparation, the performance and efficiencies of Bulgarian WSSCs were analyzed in a comparative analysis. The analysis was carried out using two internationally accepted tools: *IWA Water Utility Efficiency (Self) Assessment Methodology* and *Data Envelopment Analysis (DEA).* The IWA methodology invokes a broad definition of efficiency and includes qualitative assessments. DEA is a linear programming tool widely used to compare the efficiency of complex production where several inputs produce more than one output. The details of the analyses are presented in an Annex to the Strategy.

Of the 66 WSSCs that submitted business plans to SEWRC, 51 were analyzed. These companies include 28 district companies (providing services to more than one municipality) and 23 municipal companies (providing services to a single municipality). The 15 water operators excluded from the review are small private companies, providing services to enterprises or resorts, and municipal companies for which data was not presented by SEWRC.

It should be noted, however, that the results of this assessment are preliminary. This is an external assessment that relies on quantifying sometimes qualitative information. Indicator values below 3.0 indicate that companies perform below the expected norm in their field. In the future, *ad hoc* external assessments should be replaced by regular assessments performed by the key stakeholders themselves and made publicly available.

Table 10: Overview of indicator values by performance area and types of operator

	Performance Area	All Operators	Public Operators		Private Operators[1]	
			District	Municipal	District	Municipal
1	Corporate Governance	2.50	2.95	1.85		4.00
2	Human Resources	2.69	2.93	2.35		3.33
3	Accountability towards Customers	3.42	3.50	3.26		4.67
4	Financial	2.31	2.18	2.38		4.67
5	Commercial	2.91	3.04	2.75		2.67[c]
6	Technical	2.88	2.67	3.15		2.83
	TOTAL SCORE	**2.78**	**2.88**	**2.62**		**3.69**

[1] "Sofiyska Voda" is given separately in the table as it is the only of its kind private operator providing services in Sofia.
[2] In 2011, "Sofiyska Voda" provided information to the regulator (Report on the achieved annual target levels for quality of WSS services) for a very high uncollected revenue. They indicated cumulative, not annual uncollected revenue. The authors did not adjust the data and therefore the result is so low.
[3] The scale is from 1 to 5: 1 – very poor performance; and 5 – very good performance

Of the 51 water operators reviewed, Sofiyska Voda stands out as a better performer than the Bulgarian average. The traditional argument for private operators is their ability to achieve higher efficiency due to better access to international experience, higher incentives for attaining efficiency, and less political interference. In addition, larger companies tend to perform better than smaller ones because they are able to benefit from economies of scale and attract better staff. Both these factors work in favor of Sofiyska Voda.

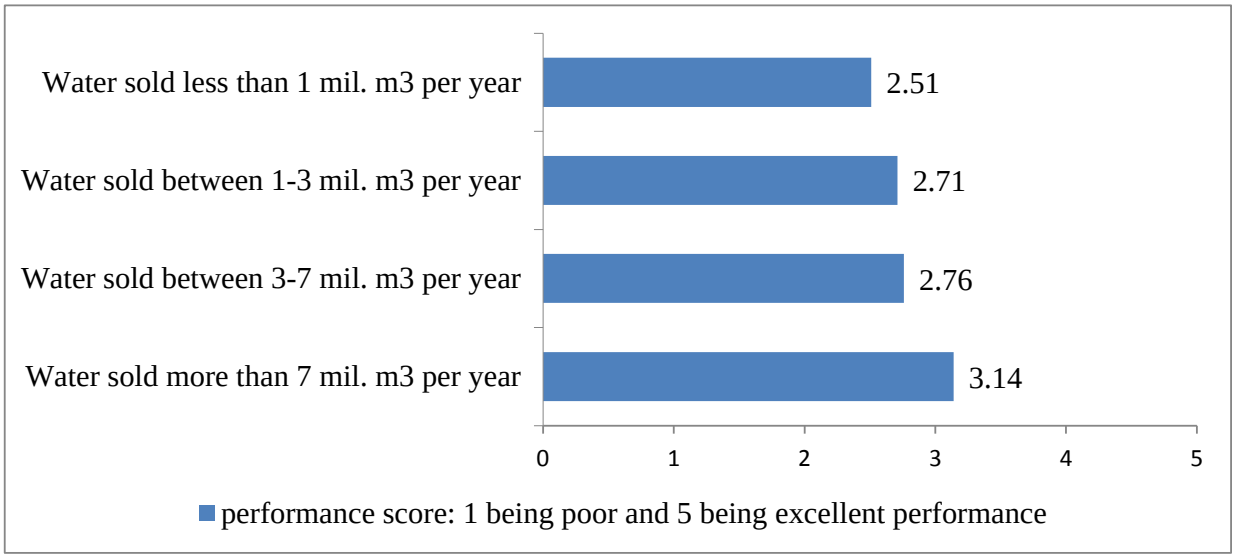
In four out of six performance areas there is little difference in the performance scores achieved by district and municipal companies (less than 0.5). **District companies, however, achieve significantly higher scores in governance and human resources as compared to the municipal companies.** More detailed analysis—based on a more complete data set and carried out with active involvement of the utilities in question—is necessary to reveal the causes of these differences.

International research demonstrates that there are major economies of scale in operating utilities, and that larger utilities on average perform better than smaller ones. Ferro, Lentini and Mercadier (2011) reviewed a large number of empirical studies covering several regions in the world and found that, "*The studies from a significant set of countries show economies of scale … in populations of 100,000 to 1 million (or in some cases covering many millions), with population densities of up to 250 inhabitants per square kilometer, or with volumes up to 100 million to 200 million cubic meters per year*."

Namely economies of scale have been a motive for many consolidation efforts in Europe. For example, in France and the UK, the private market (typically interested in financial efficiency) showed a preference for large-scale operations. The size of utility companies in the EU differs, but the average water production is approximately 45 Mm³ per year.

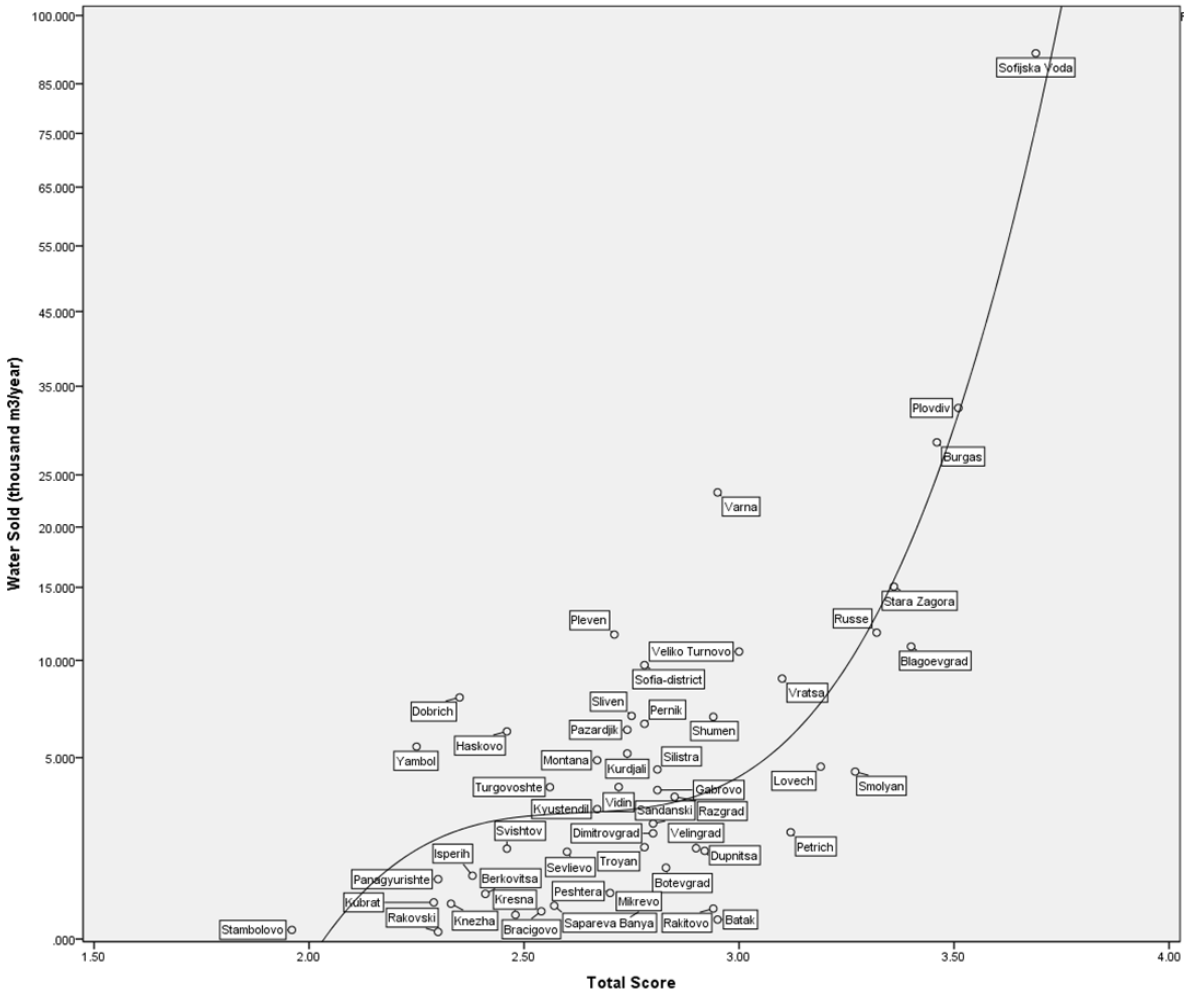
In Bulgaria, larger companies also perform better than smaller ones. For the analysis, the WSSCs were grouped into four groups based on quantity of water sold per year (in cubic meters) (*Figure 12*). The data show the group of larger companies performing better overall.

Figure 12: Average value of indicators according to size groups



Source: Analysis prepared by the World Bank for the development of the Strategy.

Figure 13: Relation of value of indicators to size for 51 companies



Source: Analysis prepared by the World Bank for the development of the Strategy.

Statistical analysis indicates that there is a moderate to strong, statistically significant correlation between the indicator values and the volume of water sold (*Figure 13***).** The analysis also shows a statistically significant difference between group 4 (the smallest companies) and group 3 and between group 1 (the largest companies) and group 2. However, there is no statistically significant difference between groups 2 and 3.

Analyses also demonstrate that consolidation of companies in Bulgaria may lead to efficiency gains. This was illustrated using data envelopment analysis (DEA) which calculates the relative efficiency of an organization within a group by comparing it to the organization that performs the best practice within that same group.

Consolidation is not just about economies of scale. Small companies find it difficult to hire qualified personnel—particularly for new wastewater technologies. It is also a challenge for them to generate sufficient resources to secure modern technology for operation and

maintenance. As a result, they may burden their customers with relatively high prices for WSS services.

Past developments in Europe show that choices for levels of aggregation have not only been a matter of financial and efficiency considerations. Political, cultural, and legislative considerations have also affected the organization of the sector. Furthermore, the optimal size of WSSCs depends on the country context. For example, in Austria, Germany, and Scandinavia water companies continue to be small and are typically organized in a municipal context. It would be erroneous to conclude that they are therefore inefficient compared to their peers in countries with other organizational models. Their service tariffs however are high.

There are European precedents for the current efforts of consolidation in Bulgaria. In some countries significant consolidation of public companies has already taken place: in Romania, a regionalization process resulted in 42 (multi-)utility companies (one per 450,000 population), down from a total of 800 water operators in the 1990s; in Italy the current 91 providers (one per 650,000 population) is down from 13,000 in the 1990s; and the Netherlands, which presently has 10 operators (one per 1,700,000 population), had more than 200 in the 1950s.

In addition, steps to promote public information about service quality, consumer satisfaction must be considered to enhance efficiency. These include, but are not limited to, regular publication of comparative regulatory information, public benchmarking of utilities etc. Establishment of a system of public benchmarking will require an extensive period of consultation, involvement of stakeholders to become generally accepted.

2.2.2 Key Governance Issues

Key stakeholders perceive a lack of transparency about how the SEWRC determines service level requirements such as the stipulated assumptions about required efficiency improvements. WSSCs also report that the prices allowed by the regulator are often significantly lower than those proposed in a company's business plan. This may not be a problem in itself, but the fact that the reasoning behind the regulator's decisions about specific price items is not transparent contributes to a lack of predictability for sector actors. These perceptions tend to undermine the legitimacy of the regulator.

A more transparent, but also a more company-specific approach to regulation is needed. For the SEWRC to interact with WSS operators and asset owners to achieve a business plan that is compatible with the master plans (approved by the WSSA), in-depth scrutiny and dialogue on each business plan is required. Currently, the regulator has few resources and must resort to a one size fits all approach toward the WSSCs' business plans and service level requirements.

Legal tradition and governance tends to be top-down. The existence of very detailed provisions in the WSSSRA and related ordinances does not seem to have contributed much to achieve overall sector objectives over the past seven years. Current regulatory practice—with 72 key performance or service level indicators—creates governance issues (lack of

transparency and predictability), is likely to promote bad accounting and reporting practices, and does not contribute to WSSC efficiency.

At present there is a perception among a number of stakeholders that the appointment of WSSC managers may not be based on their professional qualities. Furthermore, there is a perception that at this point pressure may be exerted for influencing day-to-day operations of both SEWRC and WSSCs.

The owners (state and municipalities) do not provide clear targets for effective and efficient operation of their companies and do not systematically monitor neither financial results efficiency in operations nor the quality of service delivery as perceived by customers. The state requires at least annual reporting by its companies, while requirements for municipally owned companies vary. However in both cases, the reporting required is nor suitable for, and is not used for, a dialogue with WSSC management on the effectiveness and efficiency of their operations. Such a dialogue, when it takes place, tends to be based on individual incidents, such as complaints by consumers or contractors, rather than on consistent control.

The combination of political pressures and lack of clear operational targets with systematic monitoring lead to reactive, short-term behavior. Very few companies have long term programs for financial and operational improvements, including but not limited to systematic asset management programs If managers had a long-term perspective, more companies would have clear plans for how to improve collection, be more proactive in their renewal and replacement and have programs for investments in efficiency improvements and NRW reductions.

Nevertheless, aspects of the manner by which the directors of majority-state-owned companies are compensated is positive. Under the present system, a substantial part of the remuneration of the director is composed of a performance-based bonus. Performance-based pay in this kind of industry, where there are clear and objective measures of success, is in theory good—but practice depends on the specific indicators used. Performance-based pay must be carefully designed as it works as a powerful incentive with sometimes unintended consequences.

The negative consequences of some incentives may be exacerbated by poor accounting practices. One of the consequences of the practice of tariff regulation in Bulgaria seems to be that WSSCs report certain expenditures as operational expenditures when international accounting standards would consider them to be capital expenditures. This has a number of consequences: (i) analyses carried out on the basis of data reported to the SEWRC (including this strategy) may underestimate the volume of renewal and replacement that takes place; (ii) the financial performance of companies may seem worse than it is; and (iii) proactive management of activities and costs are difficult if there is no activity-based costing, and if an internationally accepted definition of capital expenditures is not consistently used.

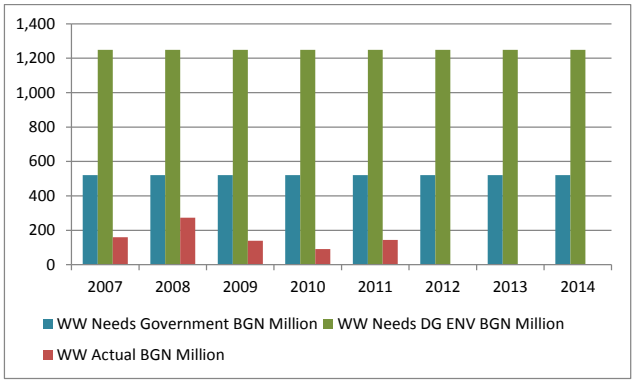
3 Past Expenditures, Future Expenditure Needs and Funding Options for WSS Infrastructure

3.1 Historic Expenditures versus Expenditure Needs

The accession to the European Union in 2007 and the implementation of the EU directives required very large infrastructure investment expenditures, therefore Bulgaria negotiated a 14-year transition period for wastewater compliance. The government assessment was that EUR 2.1 billion was needed to comply with the Urban Wastewater Treatment Directive, the World Bank (2005) assessed EUR 3.0 billion and DG Environment (EC 2010) assessed EUR 5.1 billion.

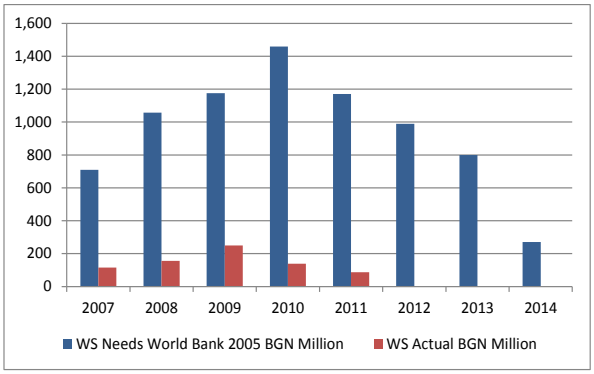
The level of wastewater investments has been low relative to investment needs since 2007. Less than BGN 200 million annually has been spent on wastewater collection and treatment since 2007 (*Figure 14*). *Figure 15* shows investments in water supply. During 2012, only one wastewater treatment plant (Targovishte) was completed, and preliminary data for 2012 indicate a level of investment similar to the preceding three years. For 2013 and 2014, much larger investments are expected based on the volume of signed contracts. Despite this surge, there is a cumulated deficit of investments, and Bulgaria will miss the final deadline for wastewater collection and treatment agreed to in the Accession Treaty. According to an assessment prepared for this WSS sector strategy, the remaining investment needs for compliance are BGN 7.5 billion (EUR 3.8 billion).

Figure 14: Wastewater: Two estimates of need for compliance versus actual investments



Source: World Bank 2013a.

Figure 15: Water supply: An estimate of need versus actual investments



Source: World Bank 2013a; World Bank 2005.

Investments in water supply are also below the level needed to sustain good quality and uninterrupted service in the long run. World Bank (2005) assessed investment needs in new water supply and in network renewal and replacements at EUR 3,969 million over ten years, or approximately BGN 800 million annually on average. This figure has been reconfirmed by a recent assessment done for the World Bank for this water supply and sanitation strategy. However, actual investments in water supply have been less than BGN 200 million annually. This indicates that network replacement and renewal takes place, but at a far slower pace than needed for maintaining the age and status of the network.

Cumbersome public procurement and land acquisition procedures and poor capacity to design and implement major capital projects have been identified as key constraints to execution of WSS capital projects in Bulgaria. Frequent changes to the Public Procurement Law have created difficulties for municipalities in preparing bidding documents in accordance with changing requirements. Major projects have been delayed in Brussels over design issues. Cumbersome and lengthy land acquisition procedures have delayed the processes of WSS project approval and obtaining construction permits. However, at this stage, a substantial pipeline of projects has been put in place and these problems may cause fewer delays in the future.

Poor ability to co-finance WSS projects by water utilities and barriers to debt financing have also constrained the sector's ability to rapidly increase the volume of investments. The government has addressed these issues in various ways such as central government co-funding of the required national contribution on EU co-funded projects and the establishment of the Fund for Local Authorities and Governments (FLAG) and the lending facilities that FLAG makes available.

Delays are further exacerbated by major uncertainties about the ownership and management of WSS assets and consolidation of operators. These contribute to delay approval and implementation of major investment projects in a multitude of ways as discussed above.

Tariff revenues are generally insufficient to provide for a WSSC contribution to financing of major investment programs (see *Figure 11*). This is caused by a multitude of factors including the policy for dividend retention, tariff setting methodology and practice, and the lack of predictability in tariff approvals.

3.2 Assessment of Future Expenditure Needs

Bulgaria continues to have a major challenge to meet the national WSS requirements. Preliminary calculations of the World Bank based on the short-term investment programs to the Regional Master Plans indicated that approximately BGN 12.2 billion will be needed. For the purposes of this WSS sector strategy, the time profile of the short-term investment programs has been modified and the expenditure needs updated. The modified profile of capital expenditures is still ambitious compared to the historical levels but is achievable in terms of financial, institutional, and technical capacity.

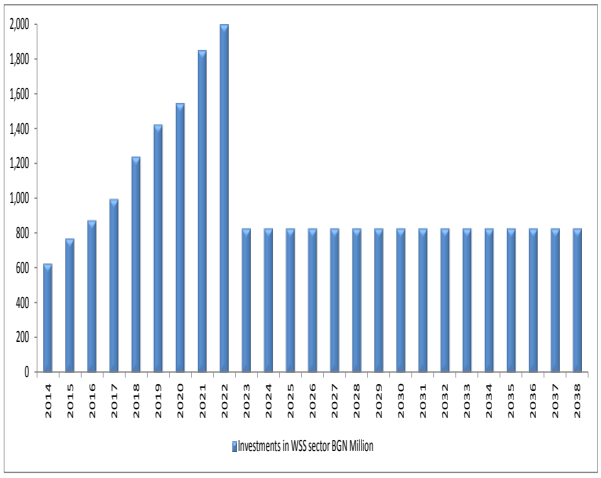
EU funds will be able to finance only 30 to 40 percent of the total needed WSS capital investments over the strategy period. Compliance costs are estimated to be BGN 7.5 billion, of which 7.1 billion are wastewater compliance costs. Urgent needs for renewal and replacement investments in water supply are estimated at BGN 5.0 billion, of which a small share (0.4 billion) are water supply compliance costs. Comparing the needs of BGN 12.2 billion with the existing EU funds allocation to water and wastewater in the current programming period (2007–2013) and the expected, roughly same volume allocation, for the next programming period (2014–2020), it may be calculated that EU funds may be able to finance 30 percent to 40 percent of the estimated WSS total capital expenditure needs.

The strategy covers 10 years, but the expenditure needs were assessed up to 2038 in order to move the WSS sector from its current state to the desired future state. To achieve such a change in service quality, environmental performance, resource efficiency, and value for money requires not just adequate expenditure and financing, but also improvements in sector governance, institutional and regulatory frameworks, and in attitudes and skills within the sector.

In order to have high-quality and sustainable services in the long run, it is essential that sufficient funds are allocated not just for investments, but also for operation and maintenance of the assets. The assessment of future expenditure needs takes both capital expenditures and operational expenditures into account. The two scenarios presented in the strategy have been calculated separately for each administrative region (oblast). Technically, operational expenditure needs are met first from the revenues of the region's WSSC. Capital investments are lumpy (for example one wastewater treatment plant) and are only undertaken (and financed) if the WSSCs can generate sufficient revenues to maintain and operate the new asset. Capital investments are funded from various sources, including the Cohesion Funds (EU funds), central government grants, lending, and tariff revenues. Detailed explanations of the assumptions are provided in an appendix to the strategy.

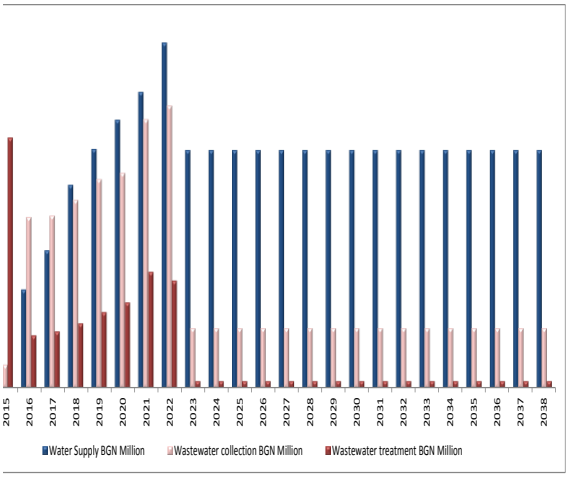
For the period 2014-2023 the assessed investment needs are BGN 12.2 billion, of which BGN 5.0 billion are for water (abstraction, treatment, transmission and distribution), BGN 4.4 billion are for wastewater collection, and BGN 2.8 billion are for wastewater treatment (*Figure 15* and *Figure 16*). It is considered that total compliance costs are approximately BGN 7.5 billion or which BGN 7.1 billion from wastewater, and BGN 0.4 billion are from water supply. In addition, the investments needed for water supply are essential as they are required to ensure that the water-supply systems (continue to) provide uninterrupted and healthy piped water-supply services. The proposed investment profile takes into account the historical volume of investments, recent trends, capacity development and capability of WSS businesses to mobilize the required resources (equipment, people, etc) in the implementation of these investments.

Figure 16: Investment needs profile to achieve sector objectives—total WSS



Source: Analysis prepared by the World Bank for the development of the Strategy.

Figure 17: Investment needs profile to achieve sector objectives - WS, WWC and WWT



Source: Analysis prepared by the World Bank for the development of the Strategy.

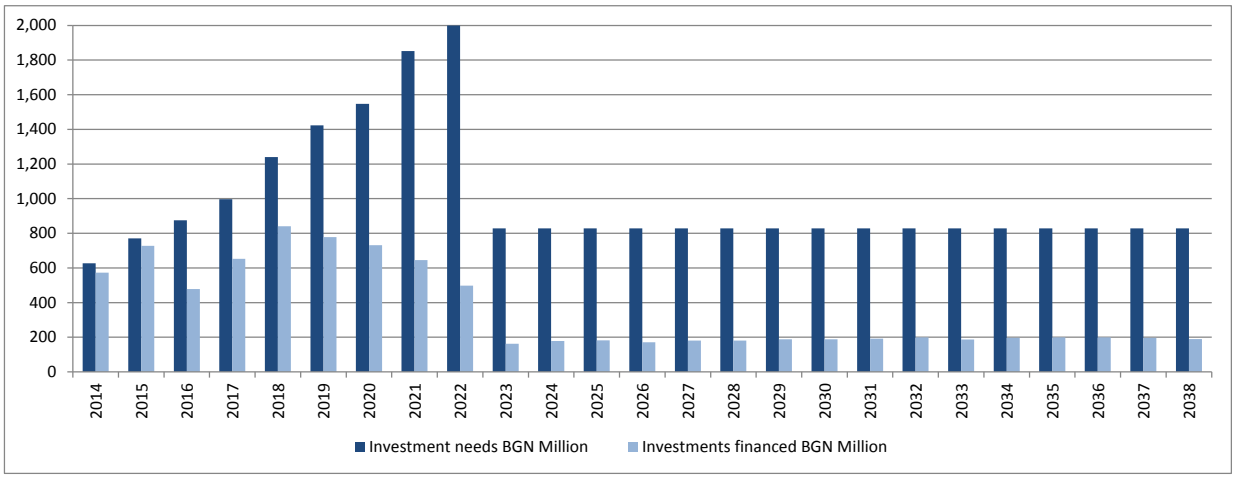
The strategy presents a business-as-usual scenario and four scenarios that illustrate the effect of the alternative policies and measures. One can think of these scenarios as keeping the status quo versus achieving the objectives of the strategy with additional policy measures to optimize the costs, efficiencies, and operation of the WSS sector. Business-as-usual fails to meet the objectives of the WSS strategy. Additional policy measures are needed, including but not limited to additional investments. The investment needs are of the same order of magnitude in all scenarios which meet the strategy's objectives, but there is a saving of approximately BGN 500 million in the scenario that includes measures for cost-effective compliance. The main difference between these four scenarios relates to funding.

3.3 Business-as-usual Scenario

With the business as usual there are continued gradual improvements to wastewater collection and treatment coverage, but water-supply networks age and water supply services are likely to deteriorate. The scenario assumes that all available EU funds for the sector (for the period 2014–2020) are fully utilized. In spite hereof, most districts will not achieve compliance with the national and EU wastewater requirements within the 25 year period of analysis. Only 39 percent of the required investments can be financed under this scenario (*Figure 18*). As a result, NRW may not decrease and maintenance of high standards of tap-water quality becomes increasingly difficult (

Table 11). Clearly, additional policy measures are needed.

Figure 18: WSS Investment needs and investments financed under business-as-usual scenario



Source: Analysis prepared by the World Bank for the development of the Strategy.

Table 11: Business-as-usual scenario: Summary of results at national level, BGN million

Period	Investment needs	Investment financed	Investment cost of debt	EU co-financed projects		Government grant	WSSCs		Investment gap	Gov't Income Support
				Grant from EU funds	National contribution		Internal funds	Loans		
2014-2023	12,190.0	6,086.4	-	3,159.0	2,072.2	-	855.1	-	6,103.7	-
2024-2028	4,154.1	892.9	-	-	-	-	892.9	-	3,261.2	-
2029-2038	8,308.3	1,935.6	-	-	-	-	1,935.6	-	6,372.6	-
TOTAL, MBGN	**24,652.4**	**8,914.9**	**-**	**3,159.0**	**2,072.2**	**-**	**3,683.7**	**-**	**15,737.5**	**-**

Key indicators

Key indicator, Unit	2011	2024	2028	2038	Target 2039	Gov't Income Support
NRW, %	60.0%	60.0%	60.0%	60.0%	30.0%	
population connected to WWC, % of water supplied population	66.0%	72.3%	72.8%	73.8%	75.3%	
population connected to WWT, % of water supplied population	50.0%	69.2%	69.6%	70.5%	75.3%	
National weighted average tariff (inc. VAT)	1.90	2.02	2.07	2.17		First year:
compliance with UWWTD, year: -	last year of deferred investments:				**2038**	-
compliance with UWWTD, % of target	66.4%	91.9%	92.4%	93.6%	100.0%	Last year:
water supply (savings) / additional costs, MBGN since 2014	NA	0.02	(0.48)	(6.20)	NA	-
wastewater collection (savings) / additional costs, MBGN since 2014	NA	0.40	0.46	0.42	NA	
wastewater treatment (savings) / additional costs, MBGN since 2014	NA	34.15	34.75	35.13	NA	

Source: Analysis prepared by the World Bank for the development of the Strategy.

Note 1: Data in million fixed price 2011 BGN.

Note 2: The table summarizes the data at national level. It presents the investment needs and the ability of the scenario to implement them, sources of finance, effect of the investments in key indicators and their values at a specific period, forecasted average WSS prices; compliance (or not) as well as the effect of the investments on WSSCs operational expenditures (savings are presented in brackets as per the international accounting standards).

Note 3: The column "Grants from EU Funds" includes unabsorbed funds under OPE for the current period, the funds envisaged to finance WSS projects under the programme for the period 2014-2020 and funds to finance WSS projects under the future Rural Development Programme (2014-2020)

Note 4: The funds from the future Rural Development Programme (2014-2020) will go as complementary funding to regions of priority need for budget assistance to achieve compliance under the rules of the programme.

Note 5: Achieving compliance by 75.3% of the country's population = 100 % of the population living in agglomerations above 2000 pe (see Compliance with EU directives, % of target).

Note 6: The figures for grant funds from the European Union for environmental protection are still indicative, as the country has not finally negotiated the Partnership Agreement of the Republic of Bulgaria, outlining the assistance from EU structural and investment funds for 2014-2020.

3.4 Alternative Scenarios to Achieve Strategic Objectives

This strategy aims to achieve four strategic objectives: compliance, sustainability, affordability and value for money (*Chapter 4*). The scenarios in this section are evaluated according to how they achieve these objectives.

All policy scenarios achieve the objectives of compliance, sustainability, and affordability. The scenarios differ mainly in the value for money part and in the amount of central government grants that will be needed to achieve the objectives**.** All policy scenarios combine compliance with investments in a sustainable water supply and wastewater infrastructure. All districts achieve compliance with the national and EU wastewater requirements before 2024. Large, targeted investments are used to replace and renew networks. The policy scenarios all assume that all available EU funds for the sector (for the period 2014–2020) are fully utilized, and that tariffs can be increased to the legal maximum affordable level if needed.

The four policy scenarios differ in the amount of central government grants required and the tariff increases needed to achieve the Strategy objectives. Implementation of more of the policies of the WSS strategy generally results in lower costs to consumers and to the state. The last scenario provides the most value for money and entails the least cost to consumers and the state. The objectives can be achieved at the cost indicated in this scenario (*Table 15*) if, and only if, all the proposed WSS strategy policy measures are implemented.

The four scenarios can be considered as four alternative ways to fund the desired end goal. The scenarios explore different combinations of measures and funding sources in achieving compliance, sustainability, affordability and value for money. Other combinations of measures are conceivable and in practice a specific combination will be chosen. The intention of the scenarios is neither to predict the chosen combination, nor to pass any value judgment on which is the optimal combination, but rather to illustrate the trade-offs involved. The main trade-off illustrated shows that the use of central Government grants can be reduced by measures which promote efficiency, measures that reduce cost of implementation and measures that promote the use of alternative funding sources, namely additional tariff revenues and/or debt funding. The scenarios have been prepared to present the financial implications of measures and tools and to enable informed policy decisions. The last policy scenario: "Base case, debt funding, increased efficiency and cost-effective compliance" represents the policy choices of the WSS strategy presented in the WSS Strategy.

The scenarios have been created with certain restrictions. All scenarios achieve compliance, but the data of achieving compliance may differ. All scenarios include expenditures for necessary operation and maintenance costs as well as necessary replacement investments in order to achieve sustainability. All scenarios have the same affordability restriction: In each district, the average household among the poorest 30 percent of households will pay a maximum of 4 percent of household income for water consumed at a rate of 2.8 m^3 per person per month. Tariffs may be higher and in this case households are assumed to be compensated via social policies. The expenditures hereto are included. With respect to value for money, the four scenarios do not all deliver the same level of value for money. Scenarios that include efficiency measures and the scenario that include both efficiency measures and cost-effective compliance investments provide better value for money than the other scenarios.

Scenarios only include policy measures, whose effects are quantifiable in monetary terms. The last scenario: "Base case, debt funding, increased efficiency and cost-effective compliance" includes the policy measures, whose effects are quantifiable in monetary terms and which have been included in the WSS strategy presented in Chapters 4 and 5. Naturally, the WSS strategy includes a number of policies, whose effects are difficult to quantify in monetary terms, such as policies linked to improved governance of WSSCs, strengthening of the SEWRC etc. The reason for their omission in this chapter is not that they are less important, in fact they may be more important, but solely that they are not quantifiable in monetary terms.

3.4.1 Policy scenario: Base case

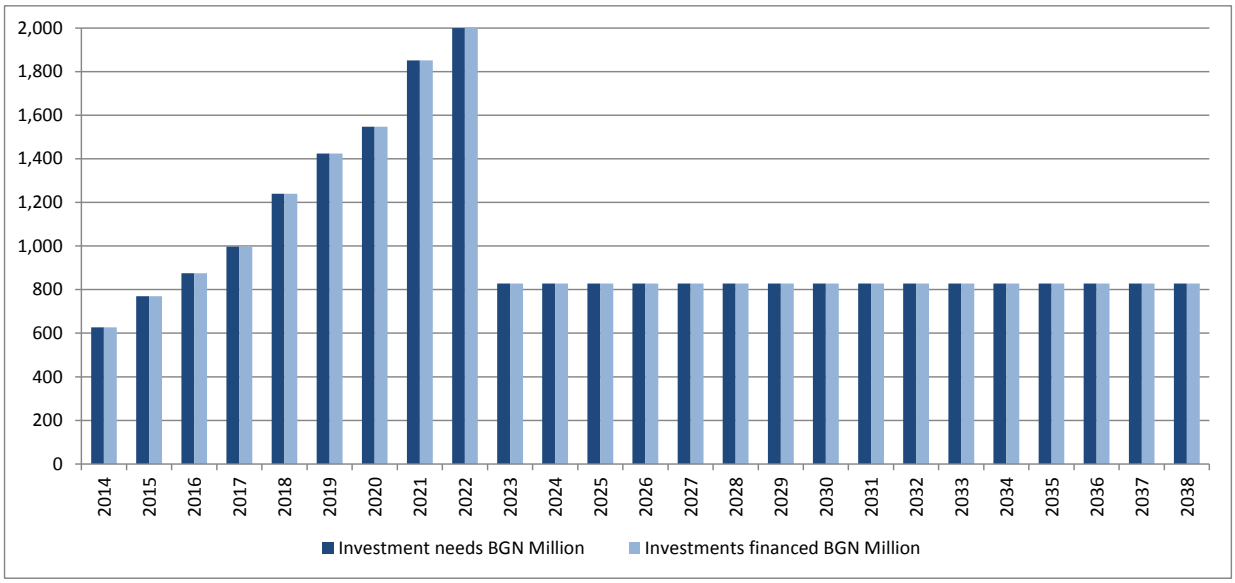
In the base-case policy scenario, only those measures that ensure that tariffs can be increased and EU funds are fully utilized are implemented. This is complemented by additional central government grants, which are necessary to meet the compliance and other objectives. As a result, the compliance, sustainability, and, affordability objectives can be met, but at a high cost to central government (*Table 12*). Government grants are required to fully finance the shortfall in investment and to compensate socially vulnerable consumers for the new WSS prices. The value for money objective is not fully met as measures to increase cost-effective compliance and sector efficiency are not all implemented.

Key policy measures include:

- **A realistic financing plan,** that specifies sources and timing of finance, including but not limited to multi-year commitment on central government budget allocations;
- **Enhanced quality of projects** through compliance with a regional approach, active involvement of WSSCs in design, procurement and implementation, and review mechanisms for feasibility studies to achieve lowest lifetime costs while meeting environmental and health requirements;
- **Implementation of the cost recovery principle, through policies that enable cost recovery tariffs to be charged while observing the principle of their affordability.** These policies have to take into account the possibilities provided by the social protection mechanisms, the respective instruments and financing of stakeholder institutions, in order to identify the best way to support the vulnerable households; introduction of the principle of tariff solidarity at the regional level is also needed.

Under this scenario all the required investments are financed (*Figure 19*), but central government grants to capital investments constitute BGN 2.7 billion. The total capital contributions from the national and municipal budget for the ten-year period 2014–2023 amount to BGN 4.7 billion, 2 billion of which is central government grants. Grants from EU funds constitute BGN 3.7 billion in this scenario. In addition, targeted government support for poor households is envisaged to ensure tariff affordability and social protection of the persons and families from vulnerable groups.

Figure 19: Base Policy Scenario: Investment needs and investments financed



Source: Analysis prepared by the World Bank for the development of the Strategy.

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Table 12: Base policy scenario. Summary of results at national level, BGN million

Period	Investment needs	Investment financed	Investment cost of debt	EU co-financed projects		Government grant	WSSCs		Investment gap	Gov't Income Support
				Grant from EU funds	National contribution		Internal funds	Loans		
2014-2023	12,190.0	12,190.0	-	3,684.0	2,247.2	1,997.4	4,261.5	-	-	132.0
2024-2028	4,154.1	4,154.1	-	-	-	362.8	3,791.3	-	-	79.9
2029-2038	8,308.3	8,308.3	-	-	-	233.6	8,074.7	-	-	100.8
TOTAL, MBGN	**24,652.4**	**24,652.4**	**-**	**3,684.0**	**2,247.2**	**2,593.7**	**16,127.5**	**-**	**-**	**312.8**

Key indicators

Key indicator, Unit	2011	2024	2028	2038	Target 2039	Gov't Income Support
NRW, %	60.0%	48.8%	43.4%	31.2%	30.0%	
population connected to WWC, % of water supplied population	66.0%	76.1%	76.3%	76.8%	75.3%	
population connected to WWT, % of water supplied population	50.0%	76.1%	76.3%	76.8%	75.3%	
National weighted average tariff (inc. VAT)	1.90	3.88	3.84	3.79		First year:
compliance with UWWTD, year: **2024**	last year of deferred investments:				**-**	**2014**
compliance with UWWTD, % of target	66.4%	101.1%	101.3%	102.0%	100.0%	Last year:
water supply (savings) / additional costs, MBGN since 2014	NA	(9.30)	(13.83)	(22.24)	NA	**2038**
wastewater collection (savings) / additional costs, MBGN since 2014	NA	0.75	0.77	0.66	NA	
wastewater treatment (savings) / additional costs, MBGN since 2014	NA	43.20	44.31	45.15	NA	

Source: Analysis prepared by the World Bank for the development of the Strategy.
Note 1: Data in million fixed price 2011 BGN.
Note 2: The column "Grants from EU Funds" includes unabsorbed funds under OPE for the current period, the funds envisaged to finance WSS projects under the programme for the period 2014-2020 and funds to finance WSS projects under the future Rural Development Programme (2014-2020)
Note 3: Compliance of 75.3% of the population = 100% of the population living in agglomerations above 2,000 PE (see Compliance with EU Directive, % of target)

3.4.2 Policy scenario: Base case and debt funding

In this policy scenario, measures to reduce or remove barriers to debt funding by municipalities and WSSCs are implemented. As a result the compliance, sustainability, and

affordability objectives can be met at a lower cost to central government (*Table 13*). These measures include:

- **Reduction of the uncertainty about the future WSSC revenue stream** through resolution of the asset transfer and finalization of agreements between WSSAs and operators;
- **Changes in the regulatory regime** to allow adequate return on capital and provide transparent and predictable decisions on the WSS tariffs. This will improve the financial situation of the WSSCs;
- **A dividend policy** which leaves most of the profits in the state or state majority owned WSSCs to enable them to build cash and become more creditworthy.

This scenario achieves the objectives with reduced central government grant funding for the period 2014-2023 (BGN 1.3 billion or BGN 700 million less than the base policy scenario). Furthermore, debt funding allows utilities to change the profile of the tariff increases in favor of a less rapid increase, compared to a situation where utilities have to finance investments from current revenues. This has positive effects for public acceptance, but in the long run the costs of funding have to be paid by water consumers.

Table 13: Base policy and debt funding scenario. Summary of results at national level, BGN million

Period	Investment needs	Investment financed	Investment cost of debt	EU co-financed projects		Government grant	WSSCs		Investment gap	Gov't Income Support
				Grant from EU funds	National contribution		Internal funds	Loans		
2014-2023	12,190.0	12,190.0	112.9	3,684.0	2,247.2	1,314.3	4,195.8	748.7	-	132.6
2024-2028	4,154.1	4,154.1	199.8	-	-	371.9	3,672.4	109.9	-	88.9
2029-2038	8,308.3	8,308.3	303.5	-	-	203.6	8,037.4	67.3	-	133.0
TOTAL, MBGN	**24,652.4**	**24,652.4**	**616.2**	**3,684.0**	**2,247.2**	**1,889.7**	**15,905.6**	**925.9**	**-**	**354.4**

Key indicators

Key indicator, Unit	2011	2024	2028	2038	Target 2039	Gov't Income Support
NRW, %	60.0%	48.8%	43.4%	31.2%	30.0%	
population connected to WWC, % of water supplied population	66.0%	76.1%	76.3%	76.8%	75.3%	
population connected to WWT, % of water supplied population	50.0%	76.1%	76.3%	76.8%	75.3%	
	1.90	3.92	4.01	4.07		First year:
compliance with UWWTD, year: **2024**	last year of deferred investments:				**-**	**2014**
compliance with UWWTD, % of target	66.4%	101.1%	101.3%	102.0%	100.0%	Last year:
water supply (savings) / additional costs, MBGN since 2014	NA	(9.30)	(13.83)	(22.24)	NA	**2038**
wastewater collection (savings) / additional costs, MBGN since 2014	NA	0.75	0.77	0.66	NA	
wastewater treatment (savings) / additional costs, MBGN since 2014	NA	43.20	44.31	45.15	NA	

Source: Analysis prepared by the World Bank for the development of the Strategy.
Note 1: Data in million fixed price 2011 BGN.
Note 2: Compliance of 75.3% of the population = 100% of the population living in agglomerations above 2,000 PE (see Compliance with EU Directive, % of target)

3.4.3 Policy scenario: Base case, debt funding and increased efficiency

In this policy scenario, additional measures that increase WSSC efficiency are implemented. This leads to lower expenditures and thus a lower financing gap. As a result the WSSCs can finance more investments and leverage more debt. This enables strategy objectives to be met at a substantially lower cost to central government (*Table 14*)**.** The additional measures include:

- **Consolidation of WSSCs** to reap economies of scale and strengthen the technical, administrative and financial capacity of operators. The scenarios assumes consolidation of the existing WSSCs to one per region;
- **Enhanced use of tools that promote efficiency and competition.** Benchmarking and performance based outsourcing are two examples of tools that have been used internationally to this effect;
- **Systematic use of proactive maintenance to reduce NRW, energy efficiency and other operational efficiencies.** The strategy promotes use of a large number of tools aimed at increasing operational efficiency.

Increased WSSC efficiency may further reduce the need for government grant capital contributions to the WSS sector from BGN 1.3 billion to BGN 0.58 billion for the Strategy period. The increased WSS sector efficiency improves the financial situation of WSSCs enabling debt funding to increase from BGN 748 million to BG 1,422 million during the ten year period 2014-2023. The increased efficiency also lowers the needed tariffs making it possible to reduce the targeted government support for vulnerable households.

Table 14: Base policy, debt funding and increased efficiency scenario. Summary of results at national level, BGN million

Period	Investment needs	Investment financed	Investment cost of debt	EU co-financed projects		Government grant	WSSCs		Investment gap	Gov't Income Support
				Grant from EU funds	National contribution		Internal funds	Loans		
2014-2023	12,190.0	12,190.0	243.2	3,684.0	2,247.2	576.5	4,259.9	1,422.4	-	90.5
2024-2028	4,154.1	4,154.1	358.5	-	-	222.6	3,785.8	145.7	-	81.8
2029-2038	8,308.3	8,308.3	513.7	-	-	74.8	8,120.3	113.2	-	126.0
TOTAL, MBGN	**24,652.4**	**24,652.4**	**1,115.3**	**3,684.0**	**2,247.2**	**873.9**	**16,166.0**	**1,681.3**	**-**	**298.3**

Key indicators						
Key indicator, Unit	2011	2024	2028	2038	Target 2039	Gov't Income Support
NRW, %	60.0%	48.8%	43.4%	31.2%	30.0%	
population connected to WWC, % of water supplied population	66.0%	76.1%	76.3%	76.8%	75.3%	
population connected to WWT, % of water supplied population	50.0%	76.1%	76.3%	76.8%	75.3%	
National weighted average tariff (inc. VAT)	1.90	3.68	3.88	3.84		First year:
compliance with UWWTD, year: **2024**	last year of deferred investments:				**-**	**2014**
compliance with UWWTD, % of target	66.4%	101.1%	101.3%	102.0%	100.0%	Last year:
water supply (savings) / additional costs, MBGN since 2014	NA	(9.3)	(13.8)	(22.2)	NA	**2038**
wastewater collection (savings) / additional costs, MBGN since 2014	NA	0.8	0.8	0.7	NA	
wastewater treatment (savings) / additional costs, MBGN since 2014	NA	43.2	44.3	45.1	NA	OPEX reduction due to efficency
additional efficiency gains						
savings from personnel costs, MBGN since 2014	NA	(47.5)	(56.2)	(73.7)	NA	20%
savings from other costs, MBGN since 2014	NA	(18.6)	(20.5)	(24.3)	NA	

Source: Analysis prepared by the World Bank for the development of the Strategy.

Note 1: Data in million fixed price 2011 BGN.

Note 2: The increase efficiency of the WSSCs is leading to decrease in their operational expenditures mainly for personnel and other costs. At the end of the period these are expected to decrease with 20% compared to the expenditures in 2014.

Note 3: Compliance of 75.3% of the population = 100% of the population living in agglomerations above 2,000 PE (see Compliance with EU Directive, % of target)

3.4.4 Policy scenario: Base case, debt funding, increased efficiency and cost-effective compliance.

In this policy scenario, legal changes and other measures reduce the cost of compliance. This reduces the costs of achieving strategy objectives and may also reduce the time needed for compliance (*Table 15*). The reduced costs are achieved through a number of measures including:

- **Adoption of National Guidelines on "excessive costs" including a careful review and reconsideration of the spatial extent of agglomerations**. The current administrative definition of which parts of a settlement constitutes an agglomeration is replaced by a careful identification of the spatial scope of each settlement, reducing the sparsely built up areas that fall within each agglomeration;
- **Revisions to the legal framework in order to provide legal options for cost-effective individual and appropriate systems of wastewater collection and discharge.** This involves analysis of the relevance and applicability in Bulgaria of appropriate individual systems for wastewater collection and treatment and proposals for legislative amendments to the respective legal framework;
- **Improved feasibility studies** through the use of a regional approach and, improved mechanisms to ensure quality of feasibility studies.
- **Improved investment planning through applying mechanisms to ensure its quality.**

Reassessment of the spatial extent of agglomerations and the use of individual appropriate systems will contribute to avoiding excessive costs. As a result, this scenario requires less investment to achieve compliance and sustain services: an estimated BGN 11.7 billion over ten years reduced by at least BGN 0.5 billion from the original estimate of BGN 12.2 billion. Reduced investment costs have positive effects on the required tariff revenues and central government grants. In consequence it is likely that such policies will enable compliance to be achieved earlier than any other scenario.

Table 15: Base policy, debt funding, increased efficiency and cost-effective investments scenario. Summary of results at national level. BGN million.

Period	Investment needs	Investment financed	Investment cost of debt	EU grant		Government grant	WSSCs		Investment gap (postponement)	Gov't Income Support
				Grant from EU funds	National contribution		Loans	Internally generated funds		
2014-2023	11,734.0	11,734.0	238.6	3,684.1	2,247.2	390.7	1,271.1	4,141.0	-	91.2
2024-2028	4,157.9	4,157.9	327.2	-	-	163.9	262.2	3,731.8	-	79.2
2029-2038	8,315.7	8,315.7	472.9	-	-	70.3	50.0	8,195.5	-	117.1
TOTAL, MBGN	**24,207.6**	**24,207.6**	**1,038.8**	**3,684.1**	**2,247.2**	**624.8**	**1,583.3**	**16,068.3**	**-**	**287.5**

Key indicators

Key indicator, Unit	2011	2024	2028	2038	Target 2039	Gov't Income Support
NRW, %	60.0%	48.8%	43.4%	31.2%	30.0%	
population connected to WWC, % of water supplied population	66.0%	76.1%	76.3%	76.8%	75.3%	
population connected to WWT, % of water supplied population	50.0%	76.1%	76.3%	76.8%	75.3%	
National weighted average tariff (inc. VAT)	1.90	3.67	3.81	3.71		First year:
compliance with UWWTD, year: **2023**	last year of deferred investments:				**-**	**2014**
compliance with UWWTD, % of target	66.4%	101.1%	101.3%	102.0%	100.0%	Last year:
water supply (savings) / additional costs, MBGN since 2014	NA	(7.8)	(13.8)	(22.2)	NA	**2038**
wastewater collection (savings) / additional costs, MBGN since 2014	NA	0.7	0.6	0.6	NA	
wastewater treatment (savings) / additional costs, MBGN since 2014	NA	41.4	43.4	44.3	NA	OPEX reduction due to efficency
additional efficiency gains						
savings from personnel costs, MBGN since 2014	NA	(45.1)	(56.2)	(73.7)	NA	22%
savings from other costs, MBGN since 2014	NA	(24.1)	(26.9)	(30.8)	NA	

Source: Analysis prepared by the World Bank for the development of the Strategy.
Note 1: Data in million fixed price 2011 BGN.
Note 2: Compliance of 75.3% of the population = 100% of the population living in agglomerations above 2,000 PE (see Compliance with EU Directive, % of target)

Comparing the alternative scenarios illustrate the value of implementing the strategy including all the proposed policy measures. Measures that remove uncertainty and barriers affecting debt funding, increase efficiency and make investments more cost-effective all contribute to enhance value for taxpayers. At the same time, implementation of all measures provides greater resilience against unforeseen events and a greater likelihood that the strategic objectives will in fact be met. The relationship between the strategic objectives of the WSS sector strategy and each scenario is illustrated in *Table 16*.

Table 16: Overview of scenarios and their impact on the value key variables (organized by objective) at the end of the strategy period (end 2023)

Scenario/Objective	Compliance	Sustainability		Affordability		Value for Money
Scenario/Variable	**UWWTD compliance**	**Average age of network**	**NRW > 49 percent**	**Tariffs > max. affordable[a]**	**Targeted income support**	**Central govt. grant funding[b]**
	End of Year	**Years**	**No of districts**	**No. of districts**	**BGN Mill. total**	**BGN Mill total**
Business as usual	After 2038	40	25	4	0	0
Policy scenario: Base case	2023	36	16	25	132	1,997
Policy scenario: Base case and debt funding	2023	36	16	26	132	1,314
Policy scenario: Base case, debt funding and increased efficiency	2023	36	16	22	91	577
Policy scenario: Base case, debt funding, increased efficiency and cost-effective compliance.	2022 or earlier	36	15	22	91	391

Source: Analysis prepared by the World Bank for the development of the Strategy.

Notes: a. Maximum affordability is calculated as WSS expenditures higher than 4 percent of the income for the average household in the poorest thirty percent of the population. This differs from the current legal maximum tariff which requires WSS expenditures to be less than 4 percent of the income for the average household.

b. The national co-financing of EU Grants is not included in the amounts

4 Objectives, Measures, and Actions for Implementation

4.1 WSS Sector Vision

The vision for the WSS sector is: A financially, technically and environmentally sustainable water supply and sanitation sector, providing value for money and affordable services to customers.

4.2 Strategic Objectives for the WWS Sector

Table 17: Strategic Objectives for the Water Supply and Sanitation Sector

Strategic Objectives	
Compliance	Water supply and sanitation stakeholders meet all national/European regulatory requirements
Sustainability	Water supply and sanitation services are environmentally, technically and financially viable
Affordability	Water supply and sanitation services are affordable for all consumers
Value for money	Bulgarian water supply and sanitation companies have efficiency and service quality performance equivalent to good European practice

To meet the strategic objectives of the sector (*Table 17*), this strategy identifies a number of specific objectives to be achieved through fully financed measures. These specific objectives and the measures to achieve them are presented in the following sections.

4.3 Compliance

4.3.1 Specific objectives for compliance

Bulgaria has fully transposed all EU regulation. With regard to 91/271/EC as amended, the Accession Treaty provides a transition period and assigns December 31, 2014 as the final date of compliance. The strategy includes specific objectives that are relevant to achieve compliance in the WSS sector:

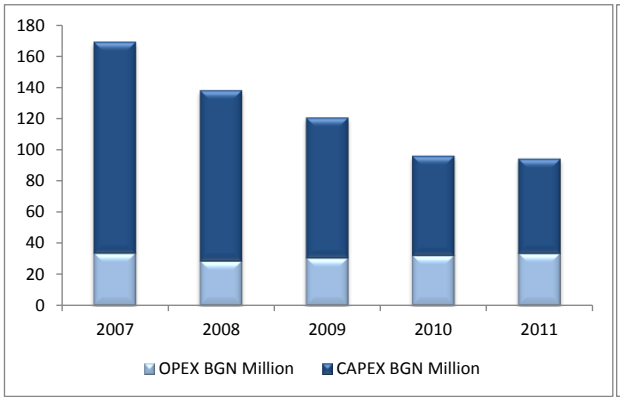
- Compliance with Directive 98/83/EC on the quality of water intended for human consumption;
- Compliance with Directive 91/271/EC on the urban wastewater treatment as amended;
- Compliance with the Water Framework Directive (Directive 2000/60/EC); Availability of financing for WSS system expansion as required for compliance;
- Avoidance of delays in project implementation.

The strategy sets a realistic deadline for meeting all these requirements; if measures proposed in this strategy are implemented, in particular with regard to the different components of the financing plan, it is foreseen that final compliance can be achieved in or before 2023.

4.3.2 Key issues in compliance

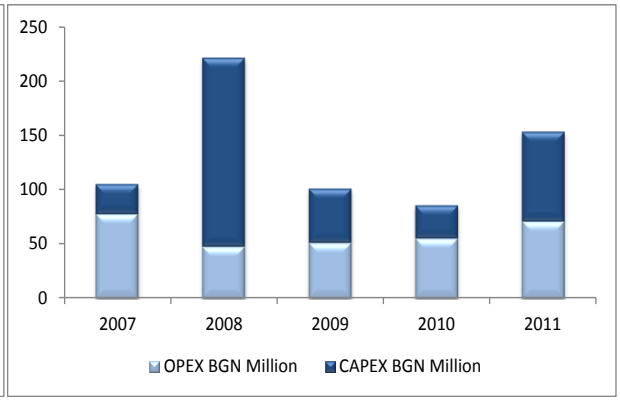
Expansion of wastewater collection and treatment systems is behind schedule. Bulgaria missed the interim deadline to provide wastewater collection and treatment to all agglomerations above 10,000 PE by the end of 2010 and will miss the final deadline to provide wastewater collection and treatment to all agglomerations above 2,000 PE by the end of 2014. Less than BGN 200 million annually has been spent on wastewater collection and treatment since 2007 (*Figure 20* and *Figure 21*). During 2012 only one wastewater treatment plant was completed, Targovishte.

Figure 20: Wastewater Collection Expenditures by type



Source: NSI, Eurostat, SEWRC and World Bank staff estimates.

Figure 21: Wastewater Treatment Expenditures by type



Source: NSI, Eurostat, SEWRC, World Bank staff estimates.

Sludge management is deficient and needs improvement. At the moment, sludge management is dealt with on an *ad hoc* basis by treatment plant. Furthermore, sludge management involves not only sludge disposal but also utilization thereof.

There is limited institutional correspondence between the responsibility to meet discharge requirements and access to the means to secure compliance. While the WSSCs are responsible to meet the discharge requirements, they are constrained in their ability to make the necessary investments (due to lack of access to funds, mainly from the EU) to enable them do so.

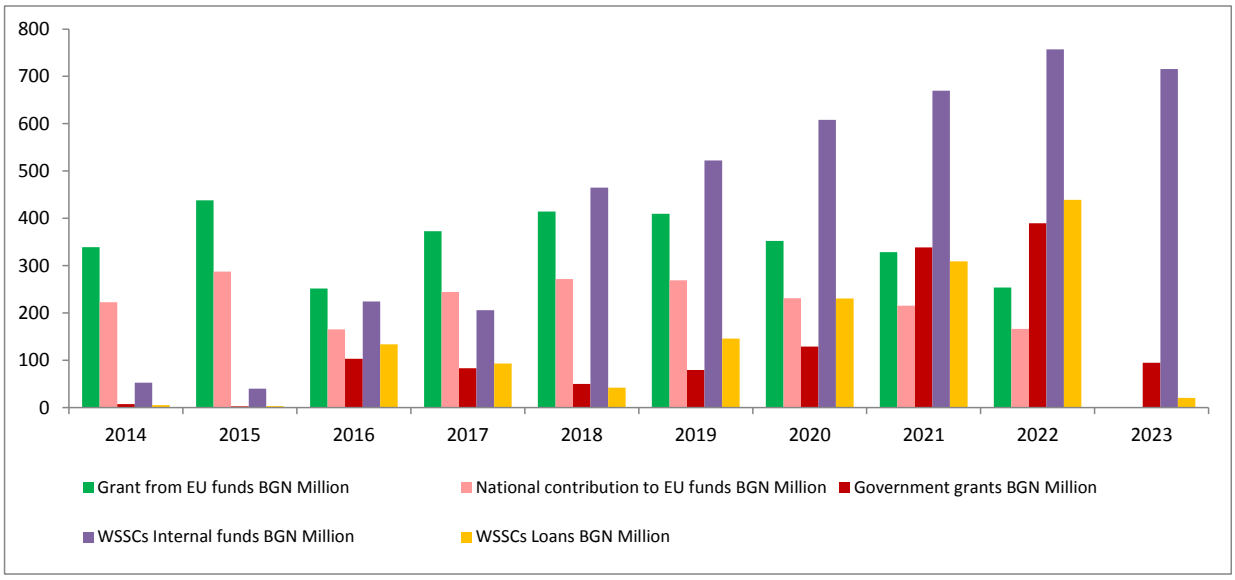
Water supply also needs some investment for compliance. With regard to the implementation of Directive 98/83/EC no deterring clauses have been agreed and the Directive should be implemented in full as regards requirements for water quality, as well as frequency and volume of the monitoring undertaken as of the time of accession to the EU. Water supply deviations can be done only with the permission of the competent national authorities and the European Commission for a fixed period of time. There is a need to create opportunities for connectivity of water supply in some regions, for water treatment plants in a few water-supply

systems, where surface water is supplied with just disinfection as treatment (for example Shumen), and for treatment/alternative sources in (relatively few) smaller water-supply zones with water-quality problems.

Financing for compliance will require substantial central government grant allocations in the coming years in particular for poorer districts and districts with many smaller agglomerations. This is illustrated in the district specific expenditure tables in *Appendix 3*.

Assessment of the source of finance for future WSS investment needs at the national level indicates that the EU grants can cover less than half of the needed expenditure (*Figure 22*). Under this scenario, the EU co-funding is equivalent to 31 percent of the estimated total capital expenditure needs and 49 percent of the capital expenditure needs for compliance investments.

Figure 22: Estimated sources of finance for the future WSS investment needs as per the policy scenario with use of debt funding and increased WSS sector efficiency.



Source: Analysis prepared by the World Bank for the development of the Strategy.

4.3.3 Possible solutions to compliance issues

A number of steps have already been taken to address the challenges identified. Regional master plans including short-term investment programs will be completed during 2013. Project proposals have already been written for most of the needed projects. The volume of capital investments in water and wastewater will be much higher in 2013–2015 than it was from 2007 to 2011.

Additional measures and additional financing are needed. This strategy argues that central government must commit to allocating additional budget for the water supply and sanitation sector in the coming years, and follow the proposed financing plan.

A national sludge management master plan is needed. Decentralized sludge management typically entails high operational costs. Preparation and adherence to a master plan would serve the dual purpose of enhancing compliance and reducing the costs of sludge management.

The main measures to improve tap-water quality, **where it does not meet the norms**, are the establishment of drinking water treatment plants and improving connectivity of small isolated systems. It has been preliminarily assessed, as part of the preparation for the WSS strategy, that BGN 400 million is needed to construct the missing drinking water treatment plants. Additional funds are needed to address the other major compliance problems mentioned in section 4.3.2, as well as the failure of the WSS sector to conduct the necessary monitoring and the lack of sanitary protection zones around many of the water sources used for drinking and household needs. In this regard, some of the funds provided for the implementation of the strategic goal for water supply sustainability (about BGN 4.6 billion) will be used to achieve water supply compliance.

There must be institutional correspondence between the responsibility to meet discharge requirements and access to the means to secure compliance. One option would be to make additional legal and regulatory changes to ensure that WSSCs have access to sufficient financial and technical means to implement the investments needed for compliance. Alternatively, municipalities could be made responsible for meeting discharge requirements. However, this raises a number of questions in cases where a WSSC is responsible for more than one municipality. Finally, the WSSAs could be made responsible for the discharge requirements and could be provided the means (such as becoming direct beneficiaries of the respective programme, providing EU funding) to secure compliance. In the longer term this may be the logical option, but in the short term there are issues related to the capacities of the WSSAs that are yet to become functional. On the other hand, WSSCs could be made direct beneficiaries of the programmes providing EU funding in the next programming period. The European Commission has indicated that VAT will no longer be considered to be eligible expenditure. If WSSCs were direct beneficiaries this would not present a major issue since they (unlike municipalities) would be able to recoup VAT through their sales. However, having WSSCs as direct beneficiaries raises a number of other issues which are being considered by the Managing Authorities in deciding which solution to suggest. The present strategy suggests retaining the WSSCs as the institutions responsible for compliance, but also providing them with access to the financial and technical means needed for compliance, and ensuring that their technical expertise and knowledge is utilized in project preparation and implementation also for EU co-funded projects.

Regional solutions, including consideration of various options and systemic decision making at regional level, are essential to achieve cost-effectiveness. The regional master plans are an important starting point. Ideally, consolidation of WSSCs should lead to one WSSC per district as described in Section 2.2. In this case the master plans prepared for the "designated territories" should be consolidated at district (oblast) level. It should be noted that most districts already have just one service provider. Detailed high quality regional feasibility studies and economic assessments of alternative solutions are needed. In other words

consolidated cost-benefit analysis covering all needed investments, income, costs and benefits on the territory of one WSS company should be carried out, and as an important part thereof an option analyses should be conducted for alternative solutions in terms of integration of networks, extent of coverage with sewers versus individual and other appropriate solutions.

Project preparation, including design and approval procedures, should be enhanced to secure high-quality projects and best-practice technologies, where appropriate. The establishment of one or more centralized units, whose primary function is to support the development of quality designs, feasibility studies, and tender documents—and to support beneficiaries in their tendering process—may contribute hereto. Review practices of the MOEW may also need to be updated in view of their optimization for the next programming period. A number of contractors have remarked that authorities in charge of WSS project control are reluctant to accept solutions other than those that have been tried and tested in Bulgaria for a long time. For example, authorities have been reluctant to approve separate (rather than combined) wastewater collection, and to accept proposals for wastewater treatment technologies that have not already been tested in Bulgaria. In this connection it is necessary to carry out analyses and undertake legislative changes in order to create conditions for the implementation of alternative approaches and innovative solutions that lead to more effective planning and implementation of interventions in the sector.

The WSS strategy and documentation of progress in implementation will be very important in the dialogue with the European Commission to avoid infringement procedures and penalties. Bulgaria will miss the final deadline in the Accession Treaty related to the Urban Wastewater Directive (UWWTD). In doing so, Bulgaria will not be the first country to miss the UWWTD deadline(s). Infringement procedures have been initiated against a number of countries and Belgium and Luxembourg were the first countries to be fined for non-compliance. In this sense, a credible strategy and concrete implementation steps would be important tools in this dialogue between the European Commission and the Government of Bulgaria.

4.4 Sustainability

4.4.1 Specific objectives for sustainability

The strategy includes specific objectives that are relevant to achieve a compliant WSS sector that remains financially, technically and environmentally viable:

- Coverage of piped water supply remains at 99 percent of the population;
- Seasonal water rationing is experienced by less than 2 percent of the population;
- WSSCs are technically capable of meeting future WSS service requirements;
- Financing is available for WSS system renewal and replacement;
- Required operational expenditures can be fully financed by revenues for all WSSCs;
- Efficient use of natural resources is in line with Bulgarian and EU policies;

- Established sustainable technologies mechanisms in the design, construction and operation of WSS systems and facilities.

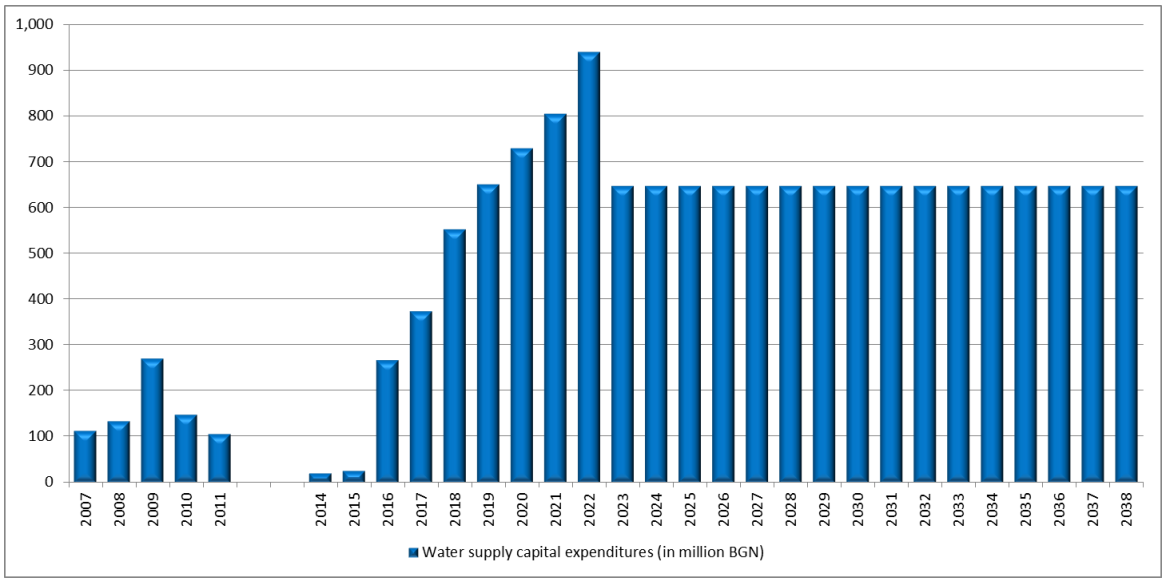
The strategy includes a number of measures aimed at achieving these specific objectives.

4.4.2 Key issues in sustainability

The water supply network in the country is approximately 75,000 kilometres long and is around 36 years old on average and non-revenue water is reported to be 60 percent. Such a long and old network needs constant renewal and replacement. Since most of the water mains as well as the distribution system are asbestos-cement pipes their useful life is coming to an end. National NRW water at 60 percent as reported by the NSI in 2011, as well as specific data on specific transmission lines and district areas from selected water utilities both indicate that there is a large need for replacement, renewal and introduction of automatic monitoring and control systems. In addition, a share of this long network has very few customers, who often have a low annual consumption. This creates additional sustainability challenges.

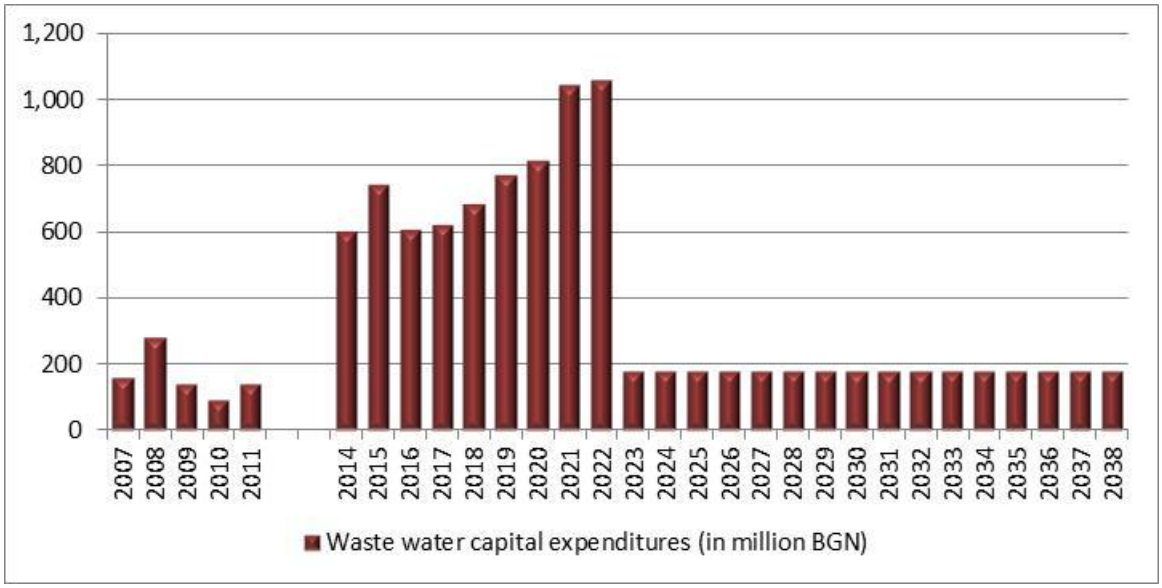
A preliminary cost assessment carried out for the WSS strategy indicates that on average more than BGN 800 million annually is needed just to maintain the length and average age of the network and the current condition of the WSS facilities. The average annual investment in water supply for 2007–2011 was about BGN 160 million. This can be compared with future capital expenditure needs (*Figure 23*). Similar issues exist in wastewater (*Figure 24*). The future capital expenditure needs have been computed by taking into account the backlog of needed investments in replacement and renewal.

Figure 23: Capital expenditure for water supply. Historic expenditure and expenditure needs.



Source: Analysis prepared by the World Bank for the development of the Strategy.
Note: The small amount of water supply investments are due to prioritization of wastewater collection and treatment investments as well as the lack of available projects for compliance with water requirements.

Figure 24: Capital expenditure for wastewater. Historic expenditure and expenditure needs.



Source: Analysis prepared by the World Bank for the development of the Strategy.

Adequate and predictable financing is a prerequisite for the sustainability of the WSS system. Currently such adequate and predictable financing is constrained by the lack of clarity with respect to ownership and management of WSS systems, the lack of transparency and predictability in sector regulation, and the need to fully develop key sector institutions in particular the WSSAs.

4.4.3 Possible measures to solve sustainability issues

To enhance certainty by resolving the issue of asset ownership and management is non-controversial. The resolution to the accounting issues was included in the proposed Amendments to the Water Act. These non-controversial articles of the WA could be amended early by Parliament. The duration of the required steps for full implementation is around 16 months as described in detail in Appendix 6.

A company-specific approach to regulation will be important to achieve greater sustainability. The master plans of the WSSAs are likely to suggest different schedules for service-level achievements in different districts. Ideally, SEWRC will need to focus on specific indicators for each district to meet these goals. Such a process will require additional resources and will require additional input of SEWRC staff who are knowledgeable about utility operations in practice.

A regulatory approach that considers the impact of WSSC behavior and works to make WSSCs work with, not against, regulatory objectives has a better chance of success. Such mechanisms will include public disclosure of selected regulatory information, establishment of a system of benchmarking of WSS operators, and enforcement of penalties for not meeting

water quality and discharge criteria. The systematic introduction of automated systems for performance monitoring and reporting and continuous control to enhance the WSSC effectiveness is also important.

Enhanced autonomy of SEWRC could contribute to an improved regulatory approach and practice. Currently SEWRC commissioners are selected on term-limited basis, but many do not serve their full term for political reasons. Steps to remove the political pressure on the commission, for example by letting the commission be funded from their regulatory revenues (at present SEWRC is one of the few net budget donors), rather than being funded from the budget, could contribute to a commission with a longer and more professional perspective and thus an improved regulatory approach and practice. A number of other steps could be taken to ensure greater independence of the regulator in determining the tariffs of water and sewerage services.

Consolidation is important to achieve economies of scale and strengthen the technical, administrative, and financial capacity of WSSCs. Pressures for efficiency in the form of competition, regulation, and benchmarking are likely to complement consolidation to achieve economies of scale. At the same time, company managers must have the autonomy and resources to manage their companies professionally.

WSSAs need to become fully functional. This requires completion of the ongoing administrative steps such as the preparation of an ordinance for the rules and procedures to be followed by WSSAs, and adjustment to regional specifics and signing of the so-called "model agreement" between the WSSAs and the extant WSSCs in the respective districts.

4.5 Affordability

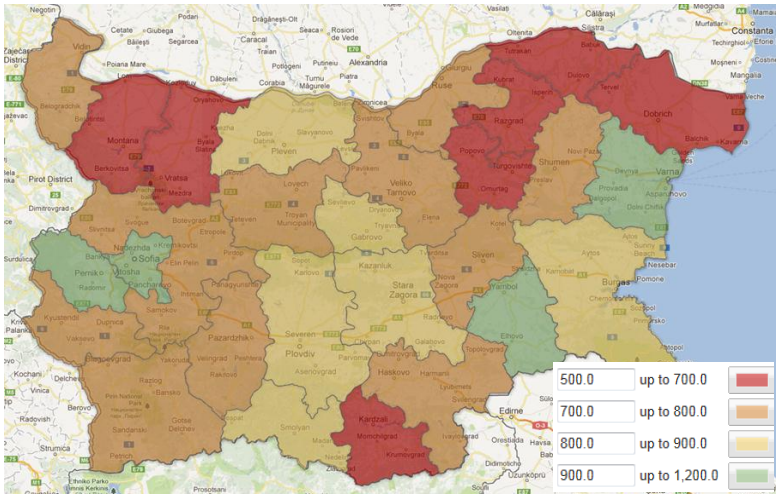
4.5.1 Specific objectives for affordability

There is a potential contradiction between financial sustainability and ensuring that water supply and sanitation services are affordable for consumers. This is addressed through the specific objective under affordability:

- Mechanisms are in place that enable cost recovery tariffs to be charged by WSSCs while protecting vulnerable consumers.

The price of water in Bulgaria is not high in a European context, even when adjusted for income and purchasing power. But water bills are still not affordable for vulnerable households. There are also large differences in average household incomes between districts as illustrated in *Figure 25*. Unfortunately, there is no reason to believe that the costs of providing water and wastewater services will be lower in districts with lower income and affordability issues are more likely to be found in these districts.

Figure 25: Average per capita income per district. BGN per month in 2009



Source: National Statistical Institute 2012.

4.5.2 Key issues in affordability

At less than BGN 2.00 per cubic meter, average water and wastewater tariffs in Bulgaria are lower than in most other European countries. Taking into account however the lower purchasing power of incomes in Bulgaria as compared to other EU countries, Bulgarian water prices are closer to the average price in the EU. With an assumed consumption of 90 liters per capita per day the annual cost of WSS services in Bulgaria is equivalent to less than 0.3 percent of GDP at the purchasing power standard of EUROSTAT, while, for example, in Poland, France and Germany the annual cost is equivalent to between 0.3 and 0.4 percent of GDP.

There are large regional differences in water tariffs, and the legal maximum water tariff may not be affordable for poor households. Current monthly water and wastewater expenditures are typically less than 2 percent of average monthly household incomes, but in order to finance operation and maintenance costs for a system that meets the objectives of this strategy, water tariffs will have to increase. According to current law, WSS expenditures cannot exceed 4 percent of the average monthly household income at the district level. However, if a household with an average income pays 4 percent of its monthly income, the same water bill for a household in the poorest quintile will constitute more than 10 percent of income, and a household in the poorest decile will pay more than 15 percent. This is not likely to be affordable for these vulnerable groups.

Municipal companies tend to have lower tariffs and to be reluctant to request tariff increases irrespective of the income level of customers. In municipal companies there is a closer link between a politically responsible owner and the utility; tariffs are lower, and they increase less frequent. This endangers the long-term sustainability of these companies.

At present WSS customers are not well informed about services and costs of service provision. According to a customer survey prepared as part of the background for the National

Strategy for Management and Development of the WSS Sector, a third of customers expressed a need for additional information about water supply and sanitation. At the same time a majority expressed willingness to pay more for better WSS services. WSSCs should better inform customers about their services, the improvements that take place, and the cost of providing improved service.

4.5.3 Possible measures to solve affordability issues

All measures that reduce the cost of service provision will also make services more affordable. This includes consolidation of WSSCs, reducing capital investment costs, and enhanced efficiency. Increased leverage of debt financing will enable WSSCs to enhance services now and increase tariffs later, when incomes are likely to be higher. However, these measures are insufficient to deal with affordability issues and the strategy therefore includes specific policy measures in this regard.

Affordability is related to incomes and must largely be addressed through economic and social policies. Government policies aimed at restoration of high economic growth will make water services more affordable. In the short and medium term these will have to be supported by social policies to protect vulnerable groups. Such policies have broad popular support and are necessary to reduce the pressure on other stakeholders such as mayors and SEWRC to artificially lower tariffs and expenditures. Such pressure has long-term detrimental effects on WSS sector sustainability. A special focus shall be laid on persons and families from vulnerable groups by seeking financial opportunities to extend the coverage of such social protection programs as well as the amount of benefits.

The solidarity principle is an important factor for addressing the affordability issue and consolidation would enhance solidarity. Provision of water supply and wastewater in remote and smaller settlements is more costly than in larger or more central settlements. There are large differences in cost between designated territories and even within a territory. To be "fairer to customers", currently SEWRC requests from the WSSCs to apply different water tariffs depending on the way the water is produced and supplied to the population (gravity, pumping, or combined supply); this contradicts the solidarity principle laid down in the Water Act. This strategy recommends instituting a single water tariff per WSSC.

This strategy includes preferential access to WSS capital investment grants to poorer districts for WSS investments. The two poorest NUTS2 regions in the EU are on the territory of Bulgaria (Northwest and North Central). They need special attention and preferential treatment due to the WSS tariff affordability issues. In addition to preferential access to capital investment grants the strategy includes social policies that support poor households and these will also benefit a larger share of households in poor districts.

4.6 Value for Money

4.6.1 Specific objectives for value for money

The strategy considers value for money to be achieved when Bulgarian water supply and sanitation companies achieve efficiency and service performance equivalent to good European practice, and when this results in public satisfaction with services and tariffs. This strategic objective may be supported by the following specific objectives:

- Cost-effective compliance with regulations;
- Bulgarian WSSCs achieve efficiency performance equivalent to good European practice;
- Value for money is enhanced through greater involvement of WSSCs in planning and implementation of WSS investments;
- Value for money is enhanced through greater involvement of WSSCs in financing of investments;
- Public satisfaction with services and public acceptability of tariffs is improved.

4.6.2 Key issues in value for money

The current extent of the agglomerations has been determined administratively, and it is likely that the agglomerations include sparsely populated areas designated for urban use. A thorough verification of the true extent of each agglomeration in Bulgaria in accordance with EC guidelines could potentially reduce the number and extent of agglomerations and thus the cost of compliance. The European Commission guidelines do not specify required connection rate to sewers, but "comprehensive" connection is assumed for agglomerations. Where there are no sewers, individual or other appropriate solutions must be put in place. Again it must be noted that the River Basin may require construction of sewage network and securing of treatment, whenever that is necessary to achieve good water condition.

Opportunities must be created for cost-effective individual and other appropriate solutions that achieve the same environmental impact in areas without centralized wastewater collection. The current requirements are more stringent than in, for example, the Netherlands and Denmark. A range of technical options for individual and other appropriate solutions exist and have been tested in other countries. Specific suggestions for how best European practice could be implemented in laws, ordinances, guidance, and practice could contribute to significantly reduce costs of compliance. Preliminary cost estimates indicate that cost saving compared to the current wastewater collection and treatment calculations can be decreased by BGN 450 million.

Achievement of environmental objectives will suffer in practice, if compliance cannot be enforced. It is difficult to enforce costly requirements. Concerns about affordability are a main driver behind the lack of a mandatory legal requirement for existing households to connect to sewers. Similarly, the law requires that in settlements without sewers household wastewater must be discharged in watertight septic tanks that are regularly emptied. In practice this

requirement is not, and cannot be, enforced. In the latter case, environmental objectives may be better achieved with legal requirements that could be met with more cost-effective solutions. The use of appropriate solutions (other than watertight tanks) increases value for money, but also improves sustainability, and compliance.

A system whereby one authority, such as the municipality, designs, procures and implements a WSS project and another authority (the WSSC) accepts the infrastructure and is responsible for operating is not optimally efficient and is likely to give rise to value for money issues. While such distribution of responsibility has historic roots and is also used in other countries, it often leads to insufficient consideration of operational expenditures and technical requirements and thus possibly to selection of projects that do not have the lowest total lifetime expenditure.

4.6.3 Possible measures to achieve value for money

There is an urgent need to revisit the specific list of agglomerations and their spatial extent in order to achieve compliance without unnecessary costs. *Table 18* shows that the number of agglomerations reported to the European Commission fell by 72 - from 430 agglomerations in 2003 to 358 agglomerations in 2010 and that the projected decrease in population will reduce the number further.

Table 18: Number of agglomerations by size in 2003 and 2010 and projected for 2035

Agglomerations	2003	2010	2035
> 2,000 PE but < or = 10,000 PE	309	273	226
> 10,000 PE	121	85	72

Sources: For 2003 and 2010: Ministry of Environment 2012; Projection for 2035 based on most recent population projection by district from National Statistical Institute.

Concurrently, there is a need for national guidelines on what constitutes excessive costs. Most countries have formal or, more often, informal guidelines, but as yet there is no guidance on when to provide for centralized solutions and what the interpretation of excessive cost is in Bulgaria.

Table 19: Guidelines for excessive cost /threshold for comprehensive connection. Selected countries

Country	Benchmark for excessive cost / threshold	Comment
Poland (excessive cost)	At least 120 PE per 1,000 meter sewer	Applied for the whole agglomeration, not to sections within. Exemptions for certain areas (e.g., water sensitive).
Poland (threshold)	95–100 percent	Sewer network OR individual appropriate solution OR closed tank
Hungary (excessive cost)	At least 168 / 200 inhabitants per 1,000 meter sewer without/with main collector	Applied for the whole agglomeration, not to sections within. Defined in national legislation.
Hungary (threshold)	Not defined	Sewer coverage after project typically more than 90 percent.
Czech Republic (excessive cost)	Capital cost more than EUR 3,400 per PE OR distance between buildings more than 200 meters AND compared to cost of individual system	
Czech Republic (threshold)	Not defined	Sewer coverage after project typically more than 90 percent.

Source: Based on JASPERS 2013.

Measures to update construction standards to take full advantage of best European practice will contribute to cost-effectiveness, quality, and technical sustainability. A number of ordinances have recently been revised to meet good European practice, most lately the "Ordinance on the design, construction and operation of drain and sewer systems" (promulgated in SG Issue 49 of 2013). There are however a number of construction standards in place that do not provide options for cost-effective compliance and technical/financial sustainability of the WSS systems and facilities. According to the WSS strategy some of the standards need to be reviewed and, when necessary, updated to reflect good European practice.

In the future, capital investments should be compliant with the regional WSS master plans. These regional WSS master plans have considered the legal compliance requirements as well as cost-effectiveness, sustainability, and affordability in their analyses of infrastructure options. They provide blueprints for the types of infrastructure solutions to be used in different areas.

To achieve the most efficient operations of new infrastructure it is important to give the WSSCs a more active and prominent role in project preparation and implementation. Currently, the Managing Authority of the respective programme, providing EU funding, requires from municipal beneficiaries of EU co-funded projects to sign a partnership agreement with the WSSCs that will operate and maintain the asset. As a result the WSSCs play a role in

project preparation and implementation. Since WSSCs have the technical expertise and shall operate and maintain the resulting infrastructure it is essential that they actively influence the choice of technology and materials, location, and other issues of importance to achieve effective and cost-efficient operations. Life cycle costs should be part of the evaluation when selecting the winning tender for pumping stations, wastewater treatment plants etc.

Enhanced WSSC autonomy may be supported through institutional arrangements. The new water supply and sanitation associations will have strong political control. This is important for their credibility in making strategic decisions. At the same time, the WSSAs and the WSS companies will need institutions that provide the WSSCs with the necessary autonomy and curtail direct political influencing of operational decision making. Managerial autonomy will allow the WSSCs to avoid a short-term, reactive approach to management.

Enhanced WSSC autonomy must be supplemented by minimum requirements for capacity and qualifications. The Water Act requires an ordinance on minimum requirements to WSS operators to be prepared. This should ensure minimum levels of WSSC capacity and staff qualification. It may tie license renewal to effective plans for continuing education, training, certification, or replacement of WSSCs staff. A specially created independent committee/board to select the WSSC director and/or legal guarantees for WSSC executive staff are two options for increased autonomy. Anecdotal evidence from other countries suggests that an independent committee may be an important ingredient for giving sufficient managerial autonomy and for making a public-sector-owned utility company function well. These appointments need to be open and transparent and based on merit. In addition, the contracts between WSSCs and WSSAs should provide legal guarantees promoting the stability of the executive staff.

Clear operational targets and systematic monitoring of operators' activities will also contribute to more professional management of WSSCs. While WSSCs provide/deliver an essential public service, they do so in a cost-recovery environment. Thus effectiveness and quality (as perceived by customers) in service provision and efficiency in production are essential criteria for good performance. The MRD (in its capacity of principal) shall introduce operational targets (financial, technical and service quality) and systematic monitoring hereof similar to best European governance practice. The Ministry may specify the details in an ordinance or guidelines and monitor the implementation thereof.

Benchmarking may contribute to improved performance as companies learn from their peers. A number of countries have introduced systematic benchmarking. Using a set of similar indicators for all WSSCs enables company managers to identify possible areas for improvement. Benchmarking indicators may be publicly shared. If shared with the public, benchmarking emulates competitive pressure as consumers are able to compare companies. At the same time, this may provide a disincentive to honest reporting. In systems where company indicators are not public, voluntary action by company managers must be the main driver for efficiency improvements. Globally, both types of systems exist. A decision on what system to use in Bulgaria should involve representatives of the sector. Voluntary benchmarking should be

complemented by reporting by SEWRC on utility performance in accordance with the WSSSRA.

Outsourcing of specific tasks and performance based contracts may improve efficiency. Tasks such as meter reading and collection, as well as technical tasks such as non-revenue water reduction, can be outsourced. With performance-based contracts, it may be possible to link costs and efficiency gains. Outsourcing of specific tasks may also enable WSSCs to focus more on provision of services to consumers, while seeking support for specialized technical tasks. In Bulgaria in the energy sector there are examples of performance contracts that enhance energy efficiency through the use of so-called ESCO contracts, where the financial, technical and commercial risk of achieving the agreed performance (enhanced energy efficiency/reduced energy consumption) is retained with the service provider. However, difficulties to have such contracts financed and insured in Bulgaria have limited their use. Similar contracts could be envisaged for the WSS sector, say for NRW reduction. However, this would require: 1) Specific legal basis, for example codification in the Water Act; 2) Steps to address the constraints on the financing and insurance aspects.

4.7 Public acceptance is key to the WSS strategy

Public understanding of the challenges to the sector may be crucial to the implementation of the Strategy. Recent events in the energy sector of Bulgaria have clearly illustrated that the public acceptance of tariffs, awareness of services provided and understanding of the service-tariffs correlation are all of vital importance for the implementation of a rational sector strategy. A survey carried out in support of the National Strategy for Management and Development of the Water Sector finds that the population feels a need to be better informed about the sector. The same survey indicates that the public often perceive the water supplied to be of poor quality, whereas tap-water quality monitoring indicates that Bulgaria has above-average water quality compared to European peers, especially in large water supply zones.

Improved customer satisfaction requires a large number of initiatives. As already noted, low customer satisfaction is partly linked to objective problems, such as turbidity and frequent breakages, that will be resolved as part of the implementation of the water sector strategy, and partly linked to issues, such as poor internal plumbing, that are under the control of the customers or real estate managers. The strategy includes a number of initiatives that will directly and positively influence the service experienced by customers.

The strategy includes a communication plan to inform users about the WSS sector strategy and action plan. Traditionally, WSSCs have done a poor job of explaining what they are responsible for and the quality of the service they deliver. This could, and should, be addressed by WSSCs.

4.8 The WSS sector strategy builds on a complete package of measures

The WSS sector strategy stresses the importance of implementing a complete package of policies in compliance with the basic principles. Each measure will contribute to the strategic

objectives in different ways and has different consequences for public finances. *Table 20* assesses how each of the key measures would contribute to public finances (net cost or net benefit) and to the achievement of each of the strategic objectives (positively or negatively). The table clearly illustrates that different measures have different impacts. Implementing only a sub-set of measures may not lead to similar (or partial) achievement of all strategic objectives and could even have negative impacts on a particular objective.

Table 20: Probable impacts of selected measures on strategic objectives as well as on public finances relative to business as usual

Measures	Sustainability	Affordability	Value for money	Compliance	Public finances
A realistic and approved WSS financing plan which specifies sources of finance and timing of budget	+	+	+	+	NA
Approx. BGN 7.5 billion for investments in water supply and wastewater from 2014 to 2023	+/?	-	?	+	-
Make connection to existing sewers mandatory combined with a mechanism to enable customers to pay the initial expenses	+	-	+	+	0
High quality regional master plans are completed and approved	+	?	+	+	NA
Approx. BGN 600 – 800 million in annual investments in renewal and replacement of networks and water treatment plants	+	-	+	+	-
Regulatory Act revised to have sustainability as the primary objective	+	-/?	+	+	0
Enhance de facto independence of SEWRC through direct funding from their regulatory revenues	+	-/?	+	+	0
Amend Water Act to achieve clear roles for asset owners (municipality, state), utilities and WSSAs	+	NA	+	+	NA
Amend Water Act to consolidate utilities to enhance efficiency	+	+/?	+	+	+
Ability of WSSCs to enforce collection is strengthened	+	0	?	+	0
Autonomy of WSSCs enhanced through changes in contracts and procedures	+	?	+	+	0
Investments in energy and resource efficiency based on life cycle costs analysis	+	+	+	+	-/?
Social policies to address the affordability issue	+	+	0	+/?	-
National "excessive cost" guidelines and reconsideration of spatial scope of "agglomerations"	+	+	+	+	+
A regional approach to compliance investments, active involvement of WSSCs, and improved quality feasibility studies	+	+	+	+	+
Legal revisions to regulations in order to provide options for cost-effective, appropriate systems that secure environmental compliance	+	+	+	+	+
Benchmarking among Bulgarian WSSCs leading to greater efficiency and customer orientation	+	+	+	+	+
Deliberate communication policy to enhance public understanding of the WSS sector.	No direct impact, but key to enable other policy options to be effective. In particular, WSS sector sustainability will depend on an enhanced public understanding of the challenges to the sector.				

Source: Authors.

Notes: + Positive impact; ? Uncertain impact; - Negative impact; +/? Uncertain but likely positive impact; -/? Uncertain but likely negative impact. 0 = no impact
All impact assessments represent qualitative judgments rather than quantitative calculations.

5 Strategy Implementation and Action Plan

5.1 "Big Bang" versus gradual improvements

Two basic options exist for implementation of the WSS Sector strategy: (i) A Big Bang in the form of a new and comprehensive Water Supply and Sanitation Act or (ii) a gradual approach. The Big Bang approach would combine many of the proposed policy actions into one new Water Supply and Sanitation Act. This new Water Supply and Sanitation Act would combine the relevant parts of the current Water Act and the current Regulation of the Water Supply and Sanitation Services Act.

A new and comprehensive WSS Act is a long-term solution. However, a comprehensive act will require several years: first for detailed preparation of the text (plus necessary revisions in other laws), for stakeholders to reach consensus, and for Parliament to discuss and approve the new act.

Water sector reform requires immediate action and a gradual approach. In particular, the compliance and affordability objectives require immediate action. The strategy assumes that the amendments to the Water Act will be implemented in shortest of terms. At the same time, the responsible ministries and institutions will start to act on a wide range of changes in policies and practice.

5.2 Action plan for implementation

This section presents an action plan for implementation of the measures identified by this WSS strategy as a condition to achieve the strategic objectives. The following issues are addressed:

- **what** is required for implementation (for example: a new law, ordinance or changed practice);
- **who** is responsible for the measure; and
- **when** should (and can) the measure be implemented.

Table 21 links the specific objectives with the main measures, responsible authorities, and timing. This table is tightly linked to the monitoring of implementation table (*Table 22*).

Some of the proposed measures are very specific (for example, the proposal to prepare national guidelines for what constitutes excessive costs); **whereas other proposed measures are less specific** (for example, to strengthen the ability of WSSCs to enforce collection of bills through changes in legal framework and practice). Implementation of the less specific measures are likely to require action by several institutions and additional work is needed to identify both the specific steps that need to be taken and the responsible institutions.

Some measures are fundamental (for example amendments to the Water Act and allocation of sufficient government budget); whereas other proposed measures may not be essential.

However, the problems encountered in implementing the current Water Act illustrate that any strategy's action plan will need to be revised regularly in order to identify and address obstacles to strategy implementation, which were not foreseen at the time of adoption of the strategy.

To avoid any possibility of infringement procedures or financial sanctions by the European Commission, it is necessary prior to the application of the proposed strategy measures to assess the related proposals, mechanisms, subsequent acts and documents for compliance with the **state aid legislation**.

Table 21: WSS sector strategy main policy measures, organized by objectives, responsible authority and timing

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
STRATEGIC OBJECTIVE: COMPLIANCE					
Specific objective: Required capital expenditure are financed					
Council of Ministers	Plan and commitment	Approved WSS Strategy and a draft realistic WSS sector financing plan which specifies sources of finance and timing of resource allocations	31/12/14		
Parliament, Council of Ministers, MRD, Managing Authority of the respective programme providing EU funding, Municipalities and WSSCs	Budget Act, Funding	Approx. BGN 7.5 billion funding for investments in water supply and wastewater to achieve compliance by 2023 of which BGN 3.7 billion are EU grants, BGN 3.0 billion are EU co-funding and central government grants mainly targeted for poorer districts, the rest is funded by WSSCs			
Specific objective: Compliance with wastewater treatment regulations					
Municipalities and WSSCs	Project implementation	All practical steps for investments (wastewater collection and treatment) for compliance carried out with speed and quality in implementation			
MRD; SEWRC, WSSCs	Ordinance	Legal revision to make connection to existing sewer mandatory for customers while putting a mechanism in place enabling instalment plans for payment of investment expenditure	01/01/15		
SEWRC, WSSCs	Procedure	A mechanism to enable customers to pay for their sewer connections in instalments over a period of time.	01/01/15		
MOEW	Study	Preparation of a national sludge management master plan		30/6/15	
Municipalities and WSSCs	Project implementation	Implementation of regional sludge treatment facilities in accordance with the national sludge management plan			
Specific objective: Compliance with water supply regulations					
Municipalities and WSSCs	Project implementation	All practical steps for investments in potable water treatment plants and connectivity of networks where needed carried out with speed and quality in implementation			
MoH	Amendment and	Enforcement of Ministry of Health ordinance No. 9 of March 16, 2001			

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
	Enforcement	as amended			
WSSCs	Implementation	WSSCs perform the necessary monitoring (frequency and scope): Covers 100% of all tap water quality parameters according to Ministry of Health ordinance No. 9 of March 16, 2001	Start: immediately		
SEWRC and WSSCs	Monitoring and operation	To provide improved services, WSSCs avail of the needed funds and perform proper monitoring and asset operation			
Specific objective: Avoidance of delay in project implementation					
MRD, WSSCs, Municipalities	Procedures	High quality regional master plans are completed and approved	31/03/14		
Ministry of Finance, MRD, WSSCs, the Managing Authority of the respective programme providing EU funding	Procedures, funding	Measures to reduce risk that VAT and/or state subsidy issues delay absorption, for example: WSSCs to implement projects, facilities to reimburse municipalities for incurred VAT, public service contracts between WSSAs and WSSCs signed	31/12/14		
Council of Ministers	Procedures, funding	Bridge lending facility (FLAG) maintained and expanded in support of all beneficiaries of EU co-funded projects to avoid delays in absorption			
Parliament	Legislative amendment	Revisions to Public Procurement Act to reduce delays in absorption, for example by reducing number of possible appeal steps from 3 to 2.	31/12/14		
STRATEGIC OBJECTIVE: SUSTAINABILITY					
Specific objective: Water supply coverage remains at 99 percent of the population					
Council of Ministers	Plan and commitment	A realistic and approved WSS financing plan which specifies sources of finance, budget allocations, timing and reforms to enhance tariff revenues		01/01/16	
WSSCs	Procedures and project implementation	Annual investments in renewal and replacement of networks and plants in the BGN 800 million per year range			
WSSCs	Procedures	Proactive asset management program prepared by each WSSC		31/12/15	
Specific objective: Seasonal water rationing is experienced by less than 2 percent of the population per year					
WSSCs	Project implementation	Investments in connectivity of water supply, where water supply is at risk of seasonal scarcity and rationing.			

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
Specific objective: Regulation is perceived as predictable and in support of sustainability					
Parliament	Act	Regulatory Act revised to have sustainability as the primary objective.		31/12/15	
Parliament, MRD, SEWRC	Act and ordinances	New regulatory period to start from 1 January 2016 to enable changes in Water Act and ordinances for service level and tariff regulation to take effect and be considered from start of period		31/12/15	
Parliament	Act or procedures	Ensure sustainability of SEWRC Commissioners for the full duration of their appointed terms		31/12/15	
MRD, SEWRC	Funding, Study, Implementation	Analysis of the ability of SEWRC to attract and retain qualified staff. Capacity building of SEWRC	31/12/14		
SEWRC	Ordinance	Ordinances on long term service levels, terms and procedures of setting the annual target levels of WSS service quality indicators and on the tariff setting methodology for the water supply and sanitation services to be revised in accordance with new Regulatory Act with a focus on sector sustainability		01/7/15	
SEWRC	Procedures	SEWRC to change procedures for the implementation of the regulatory framework in accordance with revised Regulatory Act. SEWRC to emphasize predictability and transparency in regulation and to provide company specific levels of service		01/01/16	
WSSCs, Municipalities, MRD	Procedures	WSSCs to prepare business plans and tariff proposals in line with the revised guidelines and meeting the requirements for compliance and sustainability			
Specific objective: WSSCs are financially capable of meeting future requirements					
Parliament	Act	Water Act is amended to remove obstacles to taking assets off the balance sheets of WSSCs and assigning WSS assets first to WSSAs and then to operators for operation and maintenance.	01/01/14		
Parliament	Act	The Water Act is amended to require consolidation of WSSCs		31/12/15	
MRD	Ordinance and implementation	Required steps taken for practical implementation of the amended Water Act to complete the sector reform		01/01/16	
MRD	Ordinance and procedures	Establishment of guidelines (ordinance) for functioning of WSSAs in line with the requirements set in the amended WA	01/07/14		
Parliament, Council of	Act on municipal debt;	Amend the Municipal Debt Act (to raise the ceiling) in light of needed	01/01/15		

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
Ministers	guidelines and procedures	investment in municipal infrastructure for compliance. Revised dividend policy for profit deductions from the state and majority state owned WSSCs.			
SEWRC	Ordinance, procedures	Revise tariff setting practice to enhance ability of WSSCs to incur debt			
WSSAs	Procedures	Adapt the "model contract" between WSSAs and existing WSSCs to the specific needs of the designated territories.		01/1/16	
MRD, Municipalities, WSSAs		Autonomy of WSSC management enhanced through appropriate contracts between WSSA and WSSC and between owners' representative and managers as well as appropriate WSSA procedures			
MRD, WSSCs	Ordinance, Procedures	Ability of WSSCs to enforce collection is strengthened through changes in legal framework and practice	31/12/14		
Specific objective: WSSCs are technically capable of meeting future requirements					
Parliament	Act	The Water Act is amended to require consolidation of WSSCs		31/12/15	
MRD	Ordinance	Ordinance on minimum requirements to WSSCs to ensure that WSSCs are capable of meeting future technical, financial & environmental requirements	31/12/14		
SEWRC	Procedures, Implementation	SEWRC control compliance by WSSCs with the ordinance on minimum requirements		01/01/16	
Specific objective: Environmental sustainability through efficient use of resources					
WSSCs	Procedures, funding	Extend metering at the level of the consumer and at key points in system in order to enhance optimal use of resources and environmental sustainability		01/01/16	
WSSCs, IFIs	Procedures, funding, project implementation	Investments in energy and resource efficiency (for example targeted NRW reduction program, pump replacement) based on life cycle costs analysis			
MRD	Study	Cost-benefit analysis of the introduction of a mandatory system of preferential tariffs for minimum consumption, including analysis of the potential impact on water resource use, consumer affordability and WSSC financial management		/31/12/15	
STRATEGIC OBJECTIVE: AFFORDABILITY					
Specific objective: Mechanisms are in place that enable cost-recovery tariffs to be charged by utilities while protecting vulnerable consumers					

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
Parliament, Council of Ministers, MLSP, MRD	Mechanism development and adoption	Ensuring investment and cost recovery while respecting the principle of affordability of WSS service tariffs			
Parliament, SEWRC	Act, Procedures	Water Act amended to include uniform tariff structure at district level (along with consolidation of WSSCs). SEWRC to regulate tariffs by utility regardless of the water extraction system	01/01/15		
STRATEGIC OBJECTIVE: "VALUE FOR MONEY"					
Specific objective: Cost effective compliance with regulations					
MRD, MOEW	Study	National guidelines for "Excessive Cost" and reconsideration of spatial scope of "agglomerations" in order to achieve cost-effective compliance		31/12/15	
MRD and the Managing Authority of the respective programme providing EU funding	Study, Procedures	A regional approach to compliance investments based on regional master plans		31/12/16	
The Managing Authority of the respective programme providing EU funding	Procedures	Regional approach clearly defined and included in the requirements for WSS project funding under the respective programme providing EU funding in order to improve quality of EU co-funded projects	01/07/14		
Municipalities, WSSCs	Implementation	Investments in accordance with new guidelines and definition of "agglomerations"			
Parliament	Act	Legal revisions aimed at appropriate use of individual wastewater collection and treatment systems in order to achieve cost-effective compliance		31/12/15	
MOEW, MRD, MIP	Ordinance	Legal revisions aimed at appropriate use of individual wastewater collection and treatment systems in order to achieve cost-effective compliance		Before 01/01/15	
MRD	Ordinance, procedures	Analysis of the relevance and applicability in Bulgaria of appropriate individual wastewater collection and treatment systems and proposals for amendments to the respective legislation. A new ordinance shall provide options for cost-effective individual and appropriate systems (possibly as part of the MRD Ordinance No. 2 of (June 17, 2005 on the		Before 01/01/15	

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
		design, construction and operation of WSS systems in buildings) in order to achieve cost-effective compliance			
MRD and the Managing Authority of the respective programme providing EU funding	Procedures, training	Quality of feasibility studies enhanced by: 1) ensuring consistency with the regional master plans; 2) enhanced requirement for quality of the cost-benefit analysis/cost effectiveness analysis in feasibility studies; 3) training of staff in performing economic analyses and 4) training of staff in performing technical analyses.		31/12/15	
MRD, WSSAs, Municipalities, WSSCs and the Managing Authority of the respective programme providing EU funding	Procedures	WSSAs undertake a prominent role as representatives of asset owners. WSSCs contribute to project preparation and implementation of all WSS investments including EU co-financed investments	31/12/14		
Specific objective: Bulgarian WSSCs achieve efficiency performance equivalent to good European practice					
MRD, WSSCs	Ordinance, procedures	The MRD (in its capacity as principal of WSSCs) shall introduce operational targets (financial, technical and service quality) and systematic monitoring thereof similar to the best European governance practices		31/12/15	
WSSCs, MRD, Bulgarian Water Association	Procedures	Benchmarking by majority of Bulgarian WSSCs leading to greater efficiency and customer orientation (voluntary if possible, otherwise mandatory).		31/12/15	
Parliament, MRD	Act, Ordinances	Enable performance based service contracts to contribute to WSSC efficiency. Revise Public Procurement Act, the Public-Private Partnership Act or the Water Act as required		31/12/15	
MRD, WSSCs	Procedures	The MRD to encourage the use of performance-based service contracts when economically and financially beneficial, to enhance WSSCs effectiveness.		31/12/15	
MRD, Municipalities, WSSAs	Ordinance, Procedures	Autonomy of WSSC management enhanced through appropriate clauses in the contracts between WSSA and WSSC and between WSSC and managers ,as well as appropriate WSSA procedures		31/12/15	
MRD, WSSCs	Ordinance, Procedures	Ability of WSSCs to enforce collection is strengthened through		31/12/15	

Responsible authority	Type of measure	What is required? (measure / action)	2013-2014	2015-2016	2017-2023
		changes in legal framework and/or practice			
Specific objective: Public satisfaction with WSS services and improved public acceptance of tariffs					
WSSCs	Procedures	Strengthened capacity of WSSCs to understand themselves as "service providers" rather than as "infrastructure operators"		31/12/15	

5.3 Monitoring of strategy implementation

Table 22 provides a framework for monitoring of the results of the WSS strategy. Results have been organized by objective, namely: compliance, sustainability, affordability and value for money. For each objective the expected result has been provided along with the indicators that can be used to assess achievement of the results. For each of the indicators the baseline has been given as well as the specific target values by year. Achieving these target values will indicate whether the strategy has been implemented and whether that has lead to the expected results. Where possible, the target values are consistent with the underlying scenario calculations for the respective scenario that includes debt funding, increased efficiency and cost-effective compliance. Finally, the table shows which institution is responsible for collecting the data needed to monitor results.

Table 22: Results framework for Water Supply and Sanitation Sector Strategy

Expected result	Indicator	Baseline Value (end 2011)	Target value—End of year										Data Collection and Reporting	
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Data Collection Instrument	Responsibility
COMPLIANCE														
Required capital expenditure s are financed	Existence of a realistic and agreed WSS financing plan	None	Exists					Updated					WSS strategy as updated	Council of Ministers
	Annual central govt. budget allocation* in million BGN		>0	>0	>0	>18	>32	>50	>62	>84	>132	>103	Annual Budget	Ministry of Finance / Parliament
Compliance with wastewater treatment regulation	Coverage of wastewater collection in percent**	66	67		67		78		84		95	100	Article 17 reporting to the European Commission	Ministry of Environment and Water
	Coverage of wastewater treatment in percent**	50	51		55		65		80		93	100	Article 17 reporting to the European Commission	Ministry of Environment and Water
	National sludge management master plan	None	Exist									Regional facilities established	Ministry of Environment and Water data	Ministry of Environment and Water
Compliance with water supply regulation	Percent of large water supply zones with no lasting deviations established in the physico-chemical properties of the	>95%			>99%			>100 %			>100 %	>100%	Article 13.2 reporting to the European Commission	Ministry of Health

*these funds do not necessarily include national co-financing of projects co-financed with EU grants
**corresponds to Compliance with EU Directives, target % = 100% of the population residing in agglomerations with more than 2000 PE (see Tables 12,13, 14, 15)

Expected result	Indicator	Baseline Value (end 2011)	Target value—End of year										Data Collection and Reporting	
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Data Collection Instrument	Responsibility
	water supplied for drinking and household needs													
	Percent of small water supply zones with no lasting deviations established in the physico-chemical properties of the water supplied for drinking and household needs	> 95			>97%			>98%			>100 %	>100%	Article 13.2 reporting to the European Commission	Ministry of Health
	Percent of water quality compliance under each of the microbiology indicators for monitoring in the large water supply zones	>95%			>99%			>99%			>99 %	>99%	Ministry of Health questionnaire	Ministry of Health
	Percent of water quality compliance under each of the microbiology indicators for monitoring in the small water	> 95%			>97%			>98%			>99 %	>99%	Ministry of Health questionnaire	Ministry of Health

Expected result	Indicator	Baseline Value (end 2011)	Target value—End of year										Data Collection and Reporting	
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Data Collection Instrument	Responsibility
	supply zones													
Avoidance of delays in project implementation	Project implementation in accordance with approved regional master plans	No RMP	RMPs exist	Implementation as planned				RMPs updated	Implementation as planned				Monitoring of progress on regional master plans	Ministry of Regional Development
	Absorption in percent of EU funds under the programme, providing EU funding (for WSS sector)					>35		>50		>90	>99		Reporting on the programme to the EU Commission	The Managing Authority of the respective programme providing EU financing
SUSTAINABILITY														
Coverage of piped water supply	Coverage of piped water supply remains	99%	99%	99%	99%	99%	99%	99%	99%	99 %	99%	99%	National Statistical Institute Questionnaire	NSI / NSI publication
Seasonal rationing is reduced	Seasonal rationing in any year percent of population	6	6		6		5		3		2	< 2	National Statistical Institute Questionnaire	NSI / NSI publication
Regulation is perceived as predictable and in support of sustainability	"Perception Index" according to survey results	Baseline survey		+5%		+5%		+5%		+5 %		More than 65%	Specific survey questionnaire	MRD

Expected result	Indicator	Baseline Value (end 2011)	Target value—End of year										Data Collection and Reporting	
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Data Collection Instrument	Responsibility
WSSCs are technically capable of meeting future WSS requirements	Asset transfers have taken place	WSSCs own assets		In 2015 WSSCs have no WSS infrastructure assets on their balances									WSSCs reporting to MRD	MRD
	Contracts between WSSCs and WSSAs have been signed	WSSCs generally do not have contract		In 2015 all WSSCs have contracts with WSSAs									WSSCs reporting to MRD	WSSAs
	Working ratio for each and all WSSCs	5 of 51 <0.90			50% <0.90			100% <0.90				100% <0.90	Reports to SEWRC	SEWRC
Environmental sustainability through efficient use of natural resources	Non-revenue water (NRW)	60%			59%			55%			50%	49%	NSI questionnaire	NSI
	kWh for water supply	0.49 kWh/m^3			0.49 kWh/ m^3		0.47 kWh/ m^3		0.44 kWh/ m^3			0.41 kWh/ m^3	Reports to SEWRC	SEWRC
AFFORDABILITY														
Mechanism are in place that enable cost recovery tariffs to be	Specific indicators to be determined based on baseline survey												Surveys	MRD

Expected result	Indicator	Baseline Value (end 2011)	Target value—End of year										Data Collection and Reporting	
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Data Collection Instrument	Responsibility
charged by utilities while protecting vulnerable consumers														
VALUE FOR MONEY														
Cost-effective compliance with regulation	National guidelines for excessive costs exist	No guideline		Exists									MOEW reporting	The Managing Authority of the respective programme providing EU funding
	A regional approach to compliance investments	No Master Plans, no programme requirement		Exist									Guidelines of the programme providing EU funding	The Managing Authority of the respective programme providing EU funding
WSSCs achieve efficiency performance equivalent to good European practice	Non-revenue water (NRW)	60%			59%			55%			50%	49%	NSI questionnaire	NSI
	Average collection rate	79%	80%		85%		90%			95 %		>95%	Reports to SEWRC	SEWRC
	Staff productivity	7.7			5.0		4.5			3.5		2.5	Reports to SEWRC	SEWRC

Expected result	Indicator	Baseline Value (end 2011)	Target value—End of year										Data Collection and Reporting	
			2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Data Collection Instrument	Responsibility
Public satisfaction with services improved	Share of population that considers water quality be poor very often or constantly	35%		30%		20%		10%			5%	<5%	Survey of public satisfaction	MRD (Baseline by MOEW)

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