Organisation for Economic Co-operation and Development

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Bulgaria

Country report

This report captures the main messages of a review of the state of play in Bulgaria with regard to compliance with the EU Directives on Drinking Water, Urban Wastewater Treatment and Floods, and to a lesser extent the Water Framework Directive. It reflects OECD analyses, and official and expert opinions expressed at a national workshop held in Sofia, 23 November 2018.
The workshop focused on financing compliance towards the EU water *acquis*. It was co-convened by the Bulgarian Ministry of Environment and Water, the OECD and the European Commission (DG Environment). It gathered approximately 45 delegates from national and local authorities, the regulator and financing institutions.

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1. Financing compliance with the EU water *acquis* - Recommendations

Significant investment is required for Bulgaria to reach compliance with the EU water *acquis* on water supply and sanitation and flood defence[1]. To date, the country has relied extensively on EU funds, but such funding is expected to cover only a portion of future investment needs. Bulgaria needs to greatly increase and accelerate the level of investment in order to reach compliance.

There have been some positive developments to strengthen the basis for financing and investment in the water supply and sanitation (WSS) sector. This includes a major sector reform to i) establish public ownership over the WSS assets for public services; ii) introduce contractual relations between the parties; and iii) plan the development and the needed investments in the WSS sector. However, multiple challenges remain that require further efforts to ensure that the significant investment needs can be met primarily with domestic financial resources.

Other positive developments for the water sector as a whole include the development of River Basin Management Plans (RBMPs) to comply with the EU Water Framework Directive requirements. There has also been a shift towards basin management of water resources in Bulgaria, including further strengthening of the monitoring system of surface waters. Financial challenges associated with implementation of the basin principle are significant, which implies that reforming economic instruments in the water sector may be required. In this context, Bulgaria is committed to move towards full implementation and enforcement of a fundamental WFD principle of recovery of costs of water services, including environmental and resource costs.

Complying with the EU water *acquis* delivers multiple benefits for society, the economy and the environment. While some measures can be costly, this report considers options to comply in cost-effective ways, taking account of distinctive capacities and challenges in Bulgaria.

This report identifies a number of recommendations to assist Bulgaria with closing the finance gap and managing the transition towards sustainable water management. Key recommendations include:

- Develop a **proactive approach to maintenance and renewal of the existing network** to improve operational efficiency of Water Supply and Sanitation Operators (WSOs), reduce non-revenue water and address the back-log of under-investment in maintenance of WSS infrastructure over the past decades. This includes i) improving the operation of the existing assets to reduce operational costs and avoid additional capital investments; ii) applying active leakage control in the water supply system and regularly maintain pipes of the collection systems; performance based contracts between owners and operators may be considered to strengthen incentives for investing in efficiency improvements; iii) reinforcing technical assistance for WSOs, including building capacity for financial and technical dimensions of operations.

[1] This includes the EU Drinking Water Directive (DWD), Water Framework Directive (WFD), Urban Waste Water Treatment Directive (UWWTD) and the Floods Directive.

- Lessons can be learned on the use and effectiveness of performance indicators included in the Regulation for the regulation of the quality of water supply and sewerage services (NRWCUU, SG No. 2016/2016) and on compliance with the requirements for efficiency of operators mandated by the Energy and Water Regulation Commission.
- This work could build on and scale up the technical assistance provided by the Managing Authorities of Operational Programme Environment (OPE). On-going technical assistance projects (with JASPERS, the World Bank and the Ministry of Regional Development and Public Works - MRDPW) go in the same direction.
- Due to the limited financing available, there is a need to develop a **consolidated vision of financing needs and priorities for compliance with the EU water *acquis.*** This could ensure a stronger policy coherence and alignment of priorities, as well as optimisation of limited resources use. The prioritisation of investments should systematically explore opportunities to combine funding to serve multiple objectives (water supply, flood risk management, pollution abatement, improving ecological status, etc.) to improve cost-effectiveness. Prioritisation should be considered in terms of policy objectives as well as geographies. Investment planning should factor in demographic trends, including depopulation of rural areas and smaller towns and economic trends (e.g. declining industrial use) to avoid over-investment in out-sized infrastructure that will be costly to operate and maintain in the future; in such a context, on-site or decentralised technologies, followed by real-time monitoring, have some value. Priorities should reflect cost-benefit analysis made for RBMP's programmes of measures, or explain why they do not.
- In anticipation of the decline of availability of EU funding in the next programming period, Bulgarian authorities need to **ensure that domestic financing** (from public budgets, WSO revenues and potentially commercial finance) **can be mobilised to reach the level of investment required** to achieve compliance. This includes continuation of the water pricing reform, combined with targeted social measures to address affordability constraints and solidarity mechanisms to help cover investment costs in communities where financing capacities are especially limited. Authorities should review existing provisions that allow for WSO profits to accrue to government budgets rather than Water Associations, which could use such resources to strengthen the financial sustainability of the sector and provide a basis for accessing commercial finance[2]. Building on efforts to develop the recently established Fund of Funds[3], in co-operation with European Bank for Reconstruction and Development (EBRD), explore options to attract commercial capital for creditworthy borrowers to finance water-related investments.

[2] Since the financial year 2015, and by derogation, WSS operators are not obliged to pay dividends to shareholders, including to the state. This exception aims to encourage re-investment of dividends for the construction and rehabilitation of infrastructure, as a condition for European Structural and Investment Funds provided for the 2014-2020. The mid-term budget forecast for the period 2020-22 projects that the exception will remain. A more definitive status would contribute to building trust and a sustainable financing source.

[3] On 04.10.2018, an operational agreement for implementation of a financial instrument for the development of the water sector was signed between Fund of Funds and EBRD. The instrument is funded by Operational Program Environment 2014-2020 and is operational.

2. Context

Bulgaria's level of per-capita GDP is the lowest in the EU, although its economy is expected to grow faster than the member state median over the next five years. While the rate of urbanisation is projected to rise from 75 to 80% by 2050, an overall population decline in Bulgaria implies falling absolute numbers of people in both rural and urban areas, except for the capital and for some of the larger cities.

Overall, Bulgaria is not considered to be a water-stressed country, and projected water demand does not exceed sustainable supply on an annual basis. Water abstractions for both agricultural and industrial purposes have significantly fallen since 1990. However, there are regions, suffering from water shortage for water supply needs in the summer months. The Black Sea River Basin faces the greatest pressure with both the lowest amount of available water resources and the increasing tourist activities (World Bank, 2018[1]). With climate change, projections indicated that groundwater availability is unlikely to be impacted. Although variation in the seasonal flow of surface water bodies are generally regulated by a sufficient number of reservoirs, efficient water use would help mitigate the impacts of climate change on water availability. (World Bank, 2018[1]).

Bulgaria has high connection rates by regional and European standards for piped water, at over 99% as of 2016 according to the National Statistics Institute (NSI) (NSI, 2019[2]). Bulgaria achieves nearly 100% compliance rate for the quality of its drinking water (EC, 2017[3]) for large water suppliers (delivering over 1000 cubic meters of water per day and / or supplying over 5000 people). In smaller areas, compliance is lower, and a significant part of the investment in improving the quality of drinking water need to be directed to those smaller areas.

Despite significant investment in sewerage connection and wastewater treatment, Bulgaria does not reach full compliance with the Urban Waste Water Treatment Directive (UWWTD). According to the National Statistical Institute (NSI), as of 2016, about 76% of the total population was connected to centralised collection system in 2016, of which 63% was connected to wastewater treatment prior discharge (NSI, 2019[2]). Access to sanitation services remains a problem for vulnerable populations. For example, the access rate for flush toilets is 50% for the bottom 40% of the population (World Bank, 2015[4])

Much of the water infrastructure in Bulgaria needs rehabilitation or extension. Most water and sanitation infrastructure was built in the 1960s and 1970s, and is in need of repair. Bulgaria has a higher level of nonrevenue water than most European countries, which is attributed to physical water loss from aging infrastructure as well as inefficient utility operation (World Bank, 2015[4]). The sum of technical and commercial water losses reaches up to 80% for some operators (EurEau, 2017[5]).

Flood events pose a significant risk for some regions in Bulgaria, with the country experiencing several significant floods over the past two decades. The most recent significant flooding was in mid-2014 when more than 10 major floods occurred in less than two months. Aid granted from the EU Solidarity fund for flood damages was EUR 10.5 million in 2014 and EUR 6.3 million in 2015. (EC, 2017[3]). Bulgaria developed its first flood risk management plans for the period 2016-21. Despite gaps, these plans are a good step towards improved flood management.

Key features relevant to future expenditures for water supply, sanitation and flood protection are presented in Table 1.

Table 1. Key features relevant to future expenditures for WSS and flood protection

	Indicator	Value (rank if applicable)	Data Source	Year
Economy and Demographics	GDP per capita	EUR 6 800 (28/28)	Eurostat	2016
	Projected GDP growth	2.7% (10/28)	IMF	2016-2022
	Projected urban population variation by 2050	0.9x (26/28)	UN	2017-2050
Water Supply and Sanitation	Estimated annual average expenditure per capita	EUR 66	Authors based on EUROSTAT	2011-2015
	Population not connected to piped water	0.8%	EC	2015
	Annual domestic sector consumption per capita	42.1m3	EUROSTAT	
	Leakage rate for public water supply	57%	EC	2017
	Non-revenue water	c.60%	WAREG	2016
	Compliance with UWWTD Art.3, 4 and 5	86.1%; 77.8%; 61.4%	MoWE	2018
Flood Protection	Estimated annual average expenditure per capita	EUR 2 (24/28)	EC survey	2013-15
	Pop. potentially affected in flood risk areas	n.a.	EC report	2015
	Value of assets at risk (rise 2015-30):	1.9x (19/28)	WRI	2015-2030

Note: Rank 1 implies best in class among the EU member countries for which data is available for each indicator.

3. Characterising the financing challenge

Estimates of investment needs for Bulgaria to reach compliance with the EU water *acquis* vary, but there is a clear consensus that Bulgaria needs to greatly increase and accelerate the level of investment in order to reach compliance. EU funds will only cover a portion of future investment needs in the next programming period. Securing the level of funding required is only part of the challenge; absorptive capacity must also be strengthened. This includes building the capacity of the sector through technical assistance to better position authorities to face future challenges.

According to the 10-year strategy for the sector (2014-23), rehabilitation and construction of water supply and sewerage networks will require BGN 12 billion (EUR 6 000 million), which amounts to 5% of the national GDP (World Bank, 2015[4]). The planned funds in the OPE 2014-20 for improvement of the water supply and sewerage infrastructure amount to EUR 1 196 million, thus EU funds will only cover about 20% of the total capital investments needed until 2020.

There have been some positive developments to strengthen the basis for financing and investment in the sector. A financing strategy for the sector has been developed with the support of the World Bank.[4] A major reform of the sector spurred by changes to the Water Act in 2009 has encouraged consolidation of water service providers to improve economies of scale and improve efficiency. Exploration of new financial instruments with development finance partners (such as a Fund of Funds[5] to leverage blended finance) are underway.

However, many challenges remain. The development of a sector financing strategy is a positive step forward, but does not guarantee that funds will be available to implement it. Bulgaria's non-compliance with the EU water *acquis* relates to a number of factors. These include:

- Severe constraints on the public budget, limiting domestic public finance available.
- Scope for tariff increases is limited due to affordability constraints set out in the current legislative framework.
- Existing infrastructure is aging and inefficient, with very high levels of non-revenue water (around 60% on average, reaching 80% for some operators).
- Lack of incentives for local authorities and water service operators to improve efficiency (operational and financial). Network failures typically addressed on a reactive, ad hoc basis, rather than a proactive approach to maintenance and renewal.
- Lack of clarity in terms of the allocation of roles and responsibilities between infrastructure owners and operators.

[4] It is pending review by the Ministry of Regional Development and Public Works.

[5] The Fund of Funds will aim to use guarantees to help mobilise additional sources of capital. Further efforts could be developed to explore how public and development finance and risk-mitigation instruments (e.g. guarantees, credit enhancement instruments) can be used strategically to improve the risk-return profile of investments to attract commercial finance.

- Limited capacity to prioritise investment on the basis of benefits in terms of compliance with EU water *acquis*. Weak institutional capacity for project preparation and implementation. Such capacity will benefit from a series of technical assistance projects (OPE, JASPERS, World Bank) and progress on this front should be monitored.
- Depopulation trends, in particular in rural areas, pose a risk of oversized infrastructure that will have a shrinking user and cost-recovery basis.
- The safety of some of the aging infrastructure (especially dams) are in question.

An overview of the challenges, current financing strategies and factors driving future investment needs are examined in the following subsections, on water supply and sanitation services, flood protection and the WFD (water quantity and quality).

3.1. Water supply

Inefficient and aging infrastructure is a major problem. Water transmission and distribution networks are aging and poorly maintained. An estimated 40% of the 75 000 kilometre water transmission and distribution network dates prior to 1970 (Ministry of Regional Development, 2014[6]). Levels of non-revenue water average around 60%, reaching 80% for some operators (EurEau, 2017[5]).[6] More than one third of the population consider water quality to be poor on a frequent basis (Ministry of Regional Development, 2014[6]). Incentives for water supply operators to improve operational and financial efficiency appear limited. The level of compliance for drinking water is relatively high. In some areas, there are permanent deviations for nitrates due to intensive agriculture.

The regionalisation process spurred consolidation of the sector to reap economies of scale. Although the recent sector reforms sought to provide greater clarity on the allocation of roles and responsibilities between owners[7] (public authorities, represented by Water Associations) and operators (Water and Sanitation Operators [WSOs]), overlaps and inconsistencies among territories remain and must be clarified. This would enhance the consistency and effectiveness of operators' business plans and expenditure programmes.

Further clarity is also required in terms of the allocation of roles and responsibilities of asset owners and asset managers. Contracts between Water Associations and WSOs need to clearly distinguish between OPEX and CAPEX. This would improve information sharing on additional investment needs. Further, contracts with WSOs could stipulate requirement to reach compliance with the EU *acquis*, in particular as regards maintenance and exploitation of the WSS assets; they should be backed by a realistic financial strategy.

Several elements of a robust regulatory framework are in place. New water supply services quality and price regulation ordinances were adopted in 2016. The legal basis for regulating the prices of water supply and sewerage[8] allows for cost recovery.[9] The cost of depreciation of assets can be included in the cost basis. Key performance indicators (KPIs) are in place to measure water services quality. Water operators

[6] In November 2019, 13 WSS projects were signed, with focus on reduction of water losses.

[7] The Ministry of Regional Development and Public Works are the asset owners according to the Water Act. Water Associations represent the Ministry as owners in their interactions with Water and Sanitation Operators.

[8] Ordinance regulating the prices of water supply and sewerage in effect from 01.22.2016 adopted by Decree No 8 on 01.18.2016.

[9] In the first regulatory period (2006-08) a "cost plus" approach to tariff setting was followed. In the 2nd regulatory period (2009-16), the regulator shifted to a "price cap" approach. The third regulatory period (2017-21) will be based on the new ordinances (options of "cost plus" or "price cap" approach).

are required to prepare 5-year business plans. Previous business plans did not include OPEX, but new business plans will. The regulator has the authority to impose penalties on water operators.

The tracking and reporting of KPIs is a positive development and should be continued. Authorities should consider establishing benchmarking and public reporting of KPIs of WSOs to increase accountability, transparency and incentives to improve operational efficiency and financial sustainability. Further, the establishment of tracking and reporting of asset management would improve the information basis provided to the sector regulator EWRC. It will help to adjust WSS tariffs for newly connected customers in a timely and efficient manner, and form a more accurate information basis for development of new investment projects and their further submission to financing organisations.

Despite these elements, bottlenecks to improve the financial sustainability of operators remain. Water tariffs cover a little over half of the total financing for the sector, and just cover operational costs (WB, 2017). Willingness to pay for water services is rather low. Weak operational and financial performance of WSOs undermine their creditworthiness, thus limit access to commercial finance.

3.2. Wastewater collection and treatment

The estimated investment needs (reported under article 17 of the Urban Waste Water Treatment Directive in 2014) to reach full compliance with the Directive in Bulgaria amount to EUR 2 969 million (EC, 2017[3]). Most of the existing systems are combined sewers and monitoring of performance is lacking. There is high infiltration (in some cases reaching 200% of the domestic wastewater flow) nearly everywhere, undermining the performance of the sewerage systems and wastewater treatment plants.

Capital investments are below the level needed to maintain the existing infrastructure. EU grants have been the main source of funding to date. In the Operational Programme “Environment” (OPE) 2007-2013, investments were predominantly focused on constructing sewage collection systems and wastewater treatment plants. In some cases, municipalities prepared and constructed inefficient projects. In OPE 2014-20 funding sources aim at ensuring environmental protection, efficient use of the resources and reaching compliance with the EU Directives. Priorities for new investment should be set taking into account the total cost for operational and maintenance costs (OPEX) over the lifetime of the investment and the tangible benefits in terms of compliance with the EU acquis and improved services for communities. Cost-Benefit Analyses (mandated for projects financed under the OPE, contribute to that. They could be supplemented by other analyses, such as an assessment of the opportunity for the investment.

Opportunities to achieve economies of scale through the regionalisation process have not been fully exploited due to overlaps and inconsistencies regarding the roles and responsibility among territories. Territories are determined in accordance with the Water Act and typically, but not always, coincide with the district boundaries. In principle, there should only be one operator per territory. Some territories are not viable, however, with less than 300 000 – 400 000 consumers in the service area.

Authorities should continue to review the boundaries of agglomerations to mitigate costly implications, e.g. over-investment in construction of collection network where not needed. The use of decentralised solutions should be systematically explored where appropriate and in cases where their compliance with standards can be ensured. The new organizational structure - which gives Water Associations the overall responsibility over both urban and rural areas of a region - should be effectively conducive to integrate piped and on-site sanitation approaches.

Wastewater discharge standards take an “end of pipe” approach. Over-investment can happen when decreasing population was not anticipated. Quality monitoring of water bodies requires improvement and would need to be very robust to inform any adjustments in discharge standards. Work is underway, with financial support from OPE, on improving the monitoring of quantitative status of water bodies and enhancing and extending monitoring network of chemical quality of water bodies (with focus on underground bodies).

3.3. Flood risk management and the Water Framework Directive

The OPE 2014-20 set out a number of priorities, which can assist Bulgaria in improving compliance with the Floods Directive and Water Framework Directive. Notably priorities include:

- The establishment of a National Real Time Water Management System
- Measures related to flood risk prevention and management, including ecosystem-based solutions
- Establishment of 6 centres to increase the preparedness of the population for an adequate response to floods
- Conducting studies and assessments in relation to the 2nd Flood Risk Management Plans 2021-27
- Implementation of measures for landslide risk prevention and management
- Demonstration projects and information campaigns for flood and landslide risk prevention and management

Bulgarian authorities in co-operation with the World Bank are currently developing the 3rd River Basin Management Plans as well as conducting studies and assessments in relation to the 2nd Flood Risk Management Plans 2021-27.

To improve flood risk management and reduce overall investment needs, authorities should ensure the enforcement of legal restrictions related to building in flood prone areas to reduce exposure and vulnerability to flood risk. Risk-adjusted standards of flood protection could help minimise investment needs. Improved co-ordination between land use planning and flood management is also required.

Only a fraction of the programme of measures in the River Basin Management Plans can be implemented by the Ministry of Environment and Water, or the Ministry of Regional Development and Public Works. Other measures require decisions outside of the water sector. Policy coherence among water, agriculture, energy and other relevant sectors is essential. Thus, co-ordination across ministers and policy coherence are paramount to the effective implementation of measures. As part of the Danube Basin, co-operation with other countries (Austria, Czech Republic, Hungary, Romania, Slovenia and Slovakia) is vital for managing water resources and address substantial pollution in coastal water.

There is continued progress on improving monitoring status of water bodies, but major gaps remain. Quality monitoring should be strengthened and the results made available for decision-making and better planning across different sectors and levels of governance. Such information can inform setting treatment priorities on the basis of water quality modelling at the river basin level. Recent tariffs adjustments aim at better reflecting the Polluter Pays Principle, yet is it unclear whether tariffs provide any effective incentive to reduce pollution. More modern approaches to measuring water abstraction are underway, which could strengthen water allocation arrangements.

Authorities could consider potentially new economic instruments to raise additional revenue for water management and internalise negative externalities. This may include stormwater taxes on property developers for impermeable surfaces, for example, or surcharges on tourism to raise revenue for measures to improve water quality. Clearly, introducing new taxes requires an in-depth analysis of the effects of the tax on the budget and on tax payers.

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