Lithuania

The European Commission and the OECD jointly review investment needs and financing capacities for water supply, sanitation and flood protection in each of the European Union's 28 member countries[1]. A fact sheet was developed for each country. Each fact sheet: (i) highlights the main drivers of future expenditure and quantifies projected investment needs; and (ii) analyses past sources of financing as well as capacities to finance future needs.

The analysis reflected in the fact sheets aims to support cross-country comparisons. For some indicators, trade-offs had to be made between reporting the most up-to-date and accurate data for each individual country and using data available for all countries in order to support such cross-country comparisons. The fact sheets were reviewed by country authorities and have been revised to reflect comments as much as possible. Inaccuracies on selected items may remain, which reflect discrepancies between national and international data sources.

A full methodological document will be published to explain in detail the sources, categories and methods used to produce estimates. In a nutshell:

- Current levels of expenditure (baseline) on water supply and sanitation are based on a range of data sets from Eurostat, which combine water-related public and household expenditures.
- Projections on future expenditures for water supply and sanitation are driven by the growth in urban population. Additional scenarios for water supply and sanitation were developed to factor in such drivers such as compliance with Drinking Water Directive (DWD), Urban Wastewater Treatment Directive (UWWTD) and emerging EU water directives.
- The paucity of data on current levels of flood protection expenditures did not allow for monetisation of projected future investment needs. Projections of growth rates of future expenditures for flood protection combine estimates of exposure of population, assets and GDP to risks of coastal or river floods.
- The characterisation of past sources of financing in each country is derived from baseline data on current levels of public and household expenditures, debt finance and EU transfers.
- Countries' future financing capacities are approximated by analysing room for manoeuvre in 3 areas: i) the ability to raise the price of water services (taking into account affordability concerns); ii) the ability to increase public spending; and iii) the ability to tap into private finance. Affordability analysis is based on water-related household baseline expenditures, not on average tariffs (which are highly uncertain, inaccurate and not comparable across countries).

[1] Further information and project outputs can be found on the websites of the European Commission and the OECD.

The future costs of diffuse pollution, compliance with the Water Framework Directive, adaptation to climate change, contaminants of emerging concern, urban floods from heavy rains, as well as the potential of innovation to minimise future financing needs are explored qualitatively and will be reflected separately. Costs related to water storage and bulk water supply are not considered.

Key messages

- Pending issues related to connection in rural areas
- Higher risks are expected for river floods and storm surges
- Pricing instruments are in place, but reliance on EU funding remains high.

Context

Lithuania's level of per-capita economic output sits below the EU member state average, although its forecast future economic growth is expected to be strong. Lithuania's urbanisation rate is expected to climb slightly by 2050, but in the face of a significant fall in the total population, the number of city and town dwellers will fall as well. Despite some coverage gaps in water supply, Lithuania performs well on wastewater treatment compliance. Flooding presents less of a risk than in most other member states.

Lithuania has abundant freshwater supply. It relies exclusively on groundwater for drinking water supply. Groundwater resources are generally of good quality (EC, 2009).

Table 1 presents a number of key indicators characterising the country context and features relevant to future expenditures for WSS and flood protection. These indicators are further discussed in the next sections, including those that underpin the projections of future investment needs.

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 13 500 (22/28)	Eurostat	2016
	Projected GDP growth	3.2% (4/28)	IMF	2016-2022
	Projected urban population variation by 2050	0.77x (28/28)	UN	2017-2050
Water Supply and Sanitation	Estimated annual average expenditure per capita	EUR 72	Authors based on EUROSTAT	2011-2015
	Population not connected to public water supply	19.76%	EUROSTAT	2015
	Annual domestic sector consumption per capita	50.9 m3	EUROSTAT	
	Leakage rate for public water supply	19%	EC	2017
	Non-revenue water	n.a.	EurEau	2017
	Compliance with UWWTD Art.3, 4 and 5	100% (1/28); 100% (1/28); 98.4% (8/28)	EC	2014
Flood Protection	Estimated annual average expenditure per capita	EUR 2 (23/27)	EC survey	2013-15
	Population potentially affected in flood risk areas	5%	EC report	2015
	Expected increase in urban damage	1,24	Authors based on WRI	2015-2030

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

Main drivers and projections of future investment needs

Water supply and sanitation

Lithuania demonstrates very high compliance (99-100%) with the Drinking Water Directive (DWD) and the Urban Waste Water Treatment Directive (UWWTD) (with rate of 100% for both collection and secondary treatment and 96.6% of wastewater collected subject to more stringent standards). Just over 10% of wastewater, however, is managed via individual or other systems. The adequacy of such systems to protect the environment might be questionable (EC, 2016a, EC, 2016b).

Regional disparities exist related to sustainable drinking water and sanitation services. An estimated 6% of the population lacks access to improved sanitation and 4% to improved drinking water. The majority of those lacking access to water and sanitation reside in rural areas (EBRD, 2016).

Table 2 projects future investment needs in water supply and sanitation for a business as usual and a compliance scenario. The compliance scenario consists of two dimensions (1) investments needed to comply with the revised DWD, extend access to vulnerable populations and improve network efficiency (reduce leakage); and (2) investments needed to comply with the UWWTD. A major caveat is the lack of accurate cross-country data on the state of the asset

and on whether the business as usual appropriately reflects the need to renew existing infrastructures.

Table 2. Water supply and sanitation: Projected investment needs to 2050 (million EUR)

LITHUANIA		Baseline 2015	2020	2030	*Total by 2030*	2040	2050
BAU water supply and sanitation	**CAPEX**	**151**	**139**	**120**	-	**106**	**97**
	TOTEX	**214**	**202**	**182**		**168**	**161**
Scenario Compliance + for water supply and sanitation	**ADD. CAPEX**	-	**84**	**72**	***861***	-	-
	ADD. TOTEX		**125**	**111**	***1283***		
Compliance with DWD, access and efficiency (water supply)	ADD. CAPEX	-	9	9	*94*	-	-
	ADD. TOTEX		16	16	*161*		
Compliance with UWWTD (sanitation)	ADD. CAPEX		75	62	767		
	ADD. TOTEX		109	95	1122		

Note: BAU projections on future expenditures for water supply and sanitation are estimated based on the growth in urban population. Additional scenarios for water supply and sanitation are based on drivers relating to compliance the DWD and UWWTD as well as (for water supply) the cost of connecting vulnerable groups and of reduced leakage. The projections do not take into account the age and pace of renewal of water supply and sanitation assets due to the lack of comprehensive and comparable data across EU member countries.
Source: OECD analysis based on Eurostat (water-related public and household expenditure data) for the baseline; United Nations and Eurostat (total and urban population statistics and projections); European Commission (estimates of costs of compliance with revised DWD and of connecting vulnerable groups, leakage rates, and distance to compliance with UWWTD).

New contaminants are likely to increase the costs of wastewater treatment beyond those presented in Table 2. As one of the Baltic countries, Lithuania has agreed to develop measures to address micro-plastics and urban and stormwater discharges to rivers, and to consider cost-effective mitigation measures to reduce legacy pollutants and contaminants of emerging concern, including pharmaceuticals (HELCOM, 2018).

Flood risk management

Flood risk typically stems from river flooding events, with 42 such events between 2000 and 2010. Significantly fewer flood events have occurred from coastal waters and dam failures (EC, 2015).

Lithuania has undertaken a preliminary assessment of the risk of flooding from all relevant sources (rivers, costal water, surface water flooding form heavy rainfall, dams and reservoirs and groundwater) (EC, 2015).

Analysis of historical data shows a significant decreasing trend in river flow during spring, summer and autumn with a significant increase in winter. The frequency of heavy rainfall is projected to increase. Flood risk is not systemically considered in spatial planning policies related to land use or infrastructure development (EC, 2015). Storm surges are projected to intensify due to reduction of sea-ice cover in winter and stronger winds (EC, 2009).

Table 3 highlights growth factors in future investment needs for protection against (riverine and coastal) flood risks. Urban floods from heavy rains will be discussed separately (not in the country fact sheet).

Table 3. Protection against coastal and river flood risks: Projected growth rates of investment needs to 2030

	Expenditures to protect against river flood risk			Expenditures to protect against coastal flood risk
	Total growth factors, by 2030			Categories (1-4), by 2030
	Expected urban damage	Expected affected population	Expected affected GDP	
Lithuania	1,24	0,74	1,32	1

Note: It was not possible to establish a robust baseline of current expenditures for flood protection due to the absence of comprehensive and comparable data across EU member countries. As a result, this table presents projected growth factors in future expenditures. A growth factor is defined as the factor by which current flood risk expenditures should be multiplied in order to maintain current flood risk protection standards in the future (by 2030). For coastal flood, countries were classified in one of four categories of projected coastal flood risk investment needs, in which 1 indicates very low growth of projected investment needs and 4 very high growth of projected investment needs by 2030.
Source: OECD analysis based on the Aqueduct Global Flood Analyzer of the World Resources Institute (river flood impacts by urban damage, affected GDP, and affected population), the global database of FLOod PROtection Standards (Scussolini et al., 2016) (for countries river flood-related protection level), the European Commission Joint Research Centre (change of build-up in areas vulnerable for coastal flooding), a 2010 study by Hinkel et al, (number of people exposed to coastal flooding, and damage costs in the case of a coastal flood event).

Other selected pressures affecting compliance with the WFD

According to the 1st generation of RBMPs, 50% of natural surface water bodies achieve a good or high ecological status, while only 37% of heavily modified or artificial water bodies do so. Although all groundwater bodies are in good quantitative and chemical status, 5 are classified as "at risk" due to mineral water intrusion to drinking water (EC, 2017).

The main pressure on surface water is diffuse pollution, mainly from agriculture. Low levels of nitrates are reported in surface water and groundwater, but there are high levels of eutrophication in rivers and protection of the Baltic Sea is an issue (EC, 2017).

Past financing strategies and room for manoeuvre to finance future needs

Water supply and sanitation

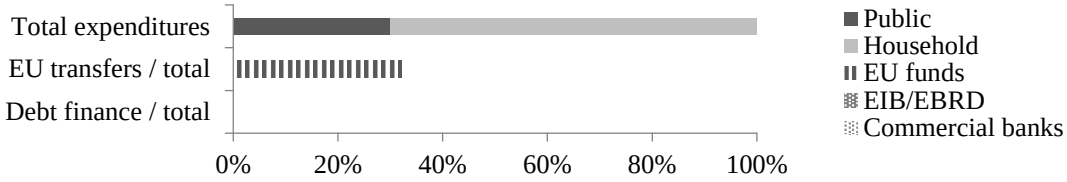
EU structural and investment funds are an important source of funding for the water sector. Around EUR 570 million were invested into wastewater collection and treatment systems. For the period 2014-20, around EUR 125 million are planned for water management measures to further develop wastewater collection and treatment and improve the environmental status of at least 20 surface water bodies (EC, 2017).

A number of environmental taxes and charges relate to water in Lithuania, some of which are earmarked for the Lithuanian Environmental Investment Fund and municipal environmental programmes (abstraction and pollution charges, water supply and wastewater discharge charge). (OECD, 2018). Revenues from the water supply charge are earmarked for the recovery of costs relating to water supply (OECD, 2018).

A financing plan is in place for most WASH activities. However, there are some reported difficulties with the capacity to absorb funding for wastewater investments (WHO-UNICEF, 2014).

Figure 1 highlights that Lithuania has been relying slightly more on household than public expenditures to cover WSS-related costs. Public expenditures have on the other side been heavily reliant on EU transfers. Debt finance has played no role.

Figure 1. Share of annual average expenditure on WSS, by source (2011-15 average, %)



Source: Eurostat (for public and household expenditures), European Commission (for EU transfers), European Investment Bank, IJ Global, Thomson Reuters, Dealogic (for debt finance).

Table 4 highlights affordability constraints, especially given Lithuania's already low current level of WSS expenditures per capita (Table 1). Authorities may have some leeway to increase public spending thanks to a healthy fiscal condition.

Table 4. Indicators of future financing capacities for water supply and sanitation

	Indicator	Value (rank)	Year	Data Source
Ability to price water	Water expenditures in lowest household income decile	2.43% (22/26)	2011-15	Authors based on EUROSTAT
	Full cost recovery equivalent in lowest household income decile	3.47% (18/28)	2011-15	Authors based on EUROSTAT
	At-risk-of-poverty rate	21.9% (24/28)	2016	EUROSTAT
Ability to raise public spending	Tax revenue / GDP	30.2% (4/28)	2016	EUROSTAT
	Government consolidated debt / GDP	40.1% (7/28)	2016	EUROSTAT
	Sovereign rating	A-	2017	Standard & Poor's
Ability to attract private finance	Domestic credit to private sector / GDP	42% (26/28)	2015	World Bank

Flood risk management

Responsibilities for coastal protection are shared between national and sub-national authorities. National programmes and EU funds provide financial support for coastal protection. EU and national funding of EUR 5.8 million was provided to support the Programme for the Lithuanian Coastal Strip Management for the period 2008-13. Over the 1998-2015 period, an estimated EUR 10.45 million was spent on coastal protection (EC, 2009).

The Klaipeda County Head Administration is responsible for the operations and maintenance of protection structures and receives an annual budget from the national government. Local municipalities and the administrations of two state parks share responsibility for the maintenance of coastal dunes and forests (EC, 2009).

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