Slovenia

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

- Relatively abundant water resources and low abstraction rates
- Strong performance on drinking water provision, but significant investment needed in sanitation infrastructure
- Ageing networks and connection challenges
- Significant future flood risks.

Context

Slovenia's level of GDP per capita is around the EU median, although its future economic growth is likely to be low. Investment will be required to extend drinking water supply to 12% of the population currently without it. Likewise, wastewater collection and treatment levels are below full compliance levels. Slovenia faces an increasing risk of flooding.

Slovenia is a relatively small country, with many hills and fast flowing rivers (OECD, 2012). About 81% of its territory lies in the Black Sea river basin, with the remainder draining into the Adriatic (Danube Water Program, 2015). Two of Slovenia's main rivers, the Drava and the Mura, flow into the country from Austria, while its third, the Sava, has its headwaters in Slovenia (OECD, 2012).

Slovenia is endowed with many rivers, abundant aquifers, and is largely able to draw water from natural springs (WWF, 2018). Groundwater provides as much as 97% of potable public water (Danube Water Program, 2015). Further, it has a relatively high and stable level of rainfall. Nonetheless, long-term trends suggest the quantity of water available for public use is falling and the spatial distribution of rainfall is changing (WWF, 2018). This will likely lead to a lower ability to store water, as well as increase the risk of both flooding and drought.

Slovenia's land area is about 58.3% covered by forestry (Slovenia Forest Service, 2017), with agriculture (25.3%%) the next largest land-use type (-Chamber of Agriculture and Forestry Slovenia)). Less than 5% of total land area is dedicated to residential and service uses, with as much as 9% classified as unused or abandoned. This allocation of land use is highly stable, with Slovenia's annual land cover change amongst the lowest in Europe (EEA, 2017).

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 19 600 (16/28)	Eurostat	2016
	Projected GDP growth	1.8% (21/28)	IMF	2016-2022
	Projected urban population variation by 2050	1.21x (8/28)	UN	2017-2050
Water Supply and Sanitation	Estimated annual average expenditure per capita	EUR 258	Authors based on EUROSTAT	2011-2015
	Population not connected to public water supply*	12%	EUROSTAT	2015
	Annual domestic sector consumption per capita	48 m3	EUROSTAT	
	Leakage rate for public water supply Non-revenue water	29% c29%	EC EurEau	2017 2017
	Compliance with UWWTD Art.3, 4 and 5	95.6% (24/28); 87.8% (21/28); 57.8% (23/28)	EC	2014
Flood Protection	Estimated annual average expenditure per capita	EUR 6 (11/27)	EC survey	2013-15
	Population potentially affected in flood risk areas	16%	EC report	2015
	Expected increase in urban damage	1,00	Authors based on WRI	2015-2030

Note: A rank of 1 implies best in class.
** The majority of the remaining population is connected to private water supply systems.*

Main drivers and projections of future investment needs

Water supply and sanitation

About 90% of Slovenia's population is connected to public drinking water supplies and the quality of water delivered is generally of a good standard, typically showing very high compliance with the parameters of the Drinking Water Directive (EC, 2017). However, some regions (e.g. the northeast) show below average rates of connection (OECD, 2012). Further, leakage remains elevated at around 25-30%. This is largely attributed to ageing infrastructure. Indeed, about 25% of the existing water infrastructure network is over 100 years old (Danube Water Program, 2015). This is evidence that the current asset renewal rate is insufficient to replace increasingly outdated infrastructure.

Only about 58% of the population have access to a piped sewer system, with much of the country still reliant on cesspools for wastewater treatment (Danube Water Program, 2015; OECD, 2012). Compliance with the requirements of the Urban Wastewater Treatment Directive remains a point of concern, with levels of secondary and more stringent treatment remaining well below required levels (EC, 2017).

Slovenia is forecast to undergo positive population growth over the next 20 years, a slight total population decrease afterwards (UN, 2017). Slovenia will also see an increase in its

urbanisation rate, up from a comparatively low 50% in 2017 to 60% by 2050 (UN, 2017). The high proportion of population living in rural areas may pose distributional issues.

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. Projected investment needs – Water supply and sanitation to 2050 (m. EUR)

SLOVENIA		Baseline 2015	2020	2030	*Total by 2030*	2040	2050
BAU water supply and sanitation	**CAPEX**	**436**	**421**	**403**	**-**	**396**	**386**
	TOTEX	**531**	**537**	**558**		**598**	**643**
Scenario Compliance + for water supply and sanitation	**ADD. CAPEX**	**-**	**89**	**72**	***894***	**-**	**-**
	ADD. TOTEX		**118**	**102**	***1193***		
Compliance with DWD, access and efficiency (water supply)	ADD. CAPEX	-	11	11	*107*	-	-
	ADD. TOTEX		17	17	*172*		
Compliance with UWWTD (sanitation)	ADD. CAPEX		79	61	787		
	ADD. TOTEX		100	85	1020		

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).

Of note, the 2nd Slovene River Basin Management Plan was adopted in October 2016 and contains data on financial needs for Programme of Measures for the period 2016-2021 (http://cdr.eionet.europa.eu/si/eu/wfd2016/documents/). Costs of water supply and sanitation measures (basic measures) from the 2nd Slovene River Basin Management Plan 2016-2021 were assessed for:

- Water Supply – 796 million EUR for the period 2016-2021
- Waste Water Treatment – 1.059 million EUR for the period 2016-2021.

Flood risk management

About 15% of Slovenia's territory is at risk of flooding, primarily in the Sava river basin (OECD, 2012). Flash floods in Slovenia's hilly areas are a particular point of concern.

Further, as ongoing urbanisation leads to increased population in towns and cities located in valleys and low reaches of rivers, about two-thirds of the country's inhabitants will be exposed to flood risk. The risk and scale of flooding is expected to increase in the future due to climate change (Danube Water Program, 2015).

Slovenia is among the countries most exposed to extreme flooding (for instance, 1-in-500 year floods) in the event of a severe future climate change scenario (EEA, 2017). Slovenia's exposure to more frequent (1-in-10 year) floods entails roughly a doubling in the value of assets at risk, among the highest in the EU (WRI, 2017).

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	
Slovenia	1,00	1,00	1,00	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).

Of note: costs of flood protection measures from the Slovene Flood Risk Management Plan 2017-21 were assessed at approximately 540 million EUR for the period 2017-2021 (in constant prices).

Other selected pressures affecting compliance with the WFD

Around 59% of surface water bodies meet the standard of "good ecological status" or better required by the EU Water Framework Directive (EC, 2017). However, 96% of all surface water bodies, not taking into account mercury in biota, and 86% of all groundwater bodies reach good chemical status. All groundwater bodies attain good quantitative status. The speed of river flows helps maintain good oxygen levels and flushes out nutrients (notably nitrates). Slovenia's lakes are more likely to suffer from nutrient contamination (OECD, 2012). Indeed, diffuse and point source pollution from agricultural production are the major sources of non-compliance with water quality standards, affecting 46% of water bodies (EC, 2017).

Past financing strategies and room for manoeuvre to finance future needs

Water supply and sanitation

Water supply and sanitation are managed at the local government level through 98, mostly publically owned, water and sanitation utilities (Danube Water Program, 2015). A little over half the population relies on one of 15 public utilities, with 12% of the population self-reliant. Seven municipalities, representing about 4% of the population, are served by three private providers.

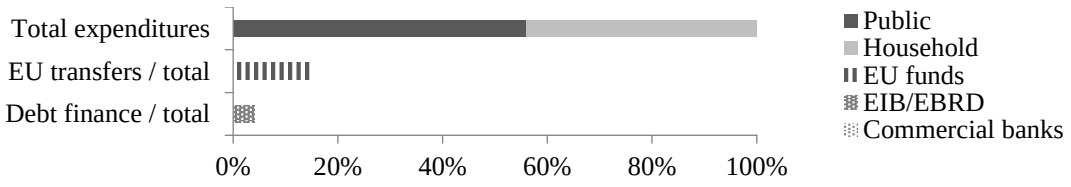
Water regulation is set by central government agencies, notably the Ministry of Environment and Spatial Planning, which is responsible for water policy, regulatory monitoring, and financing of water investments, and the Environment Protection Agency, which is charged with allocating water abstraction rights via permits, monitoring water quality and quantity, and collecting water use/pollution levies (Danube Water Program, 2015) Furthermore, the Slovenian Water Agency and the Slovenian Environment Agency are in charge of allocating water abstraction rights via permits, monitoring water quality and quantity, and collecting of water use fees. Environmental tax for waste water is collected for municipalities by the Financial Administration of the Republic of Slovenia

The national government has promulgated a compulsory methodology for pricing water, but delegates the actual setting of tariffs to the local government-owned utilities, although municipal councils must approve the annual rate changes (Danube Water Program, 2015). These comprise of fixed and variable prices, with a uniform rate applied regardless of user type (i.e. households, industrial users, and agricultural producers all face the same rates). Some exceptions may apply for large industrial users when negotiating prices directly.

According to the law, all regions should practice full cost recovery for drinking water supply. However, prior to 2013 central government had set the level of water tariffs at a low level, thus bearing much of the cost of providing water sanitation services through taxes and transfers. This set a low bar for tariffs, which has persisted to this day, with only about 55% of total expenditure, representing operation and maintenance costs only, covered by utility-collected tariffs (Danube Water Program, 2015). Investment has thus been funded mostly by EU transfers, with taxes representing a small proportion of total sector financing.

As depicted in Figure 1, Slovenia has been relying evenly on public than household expenditures to finance WSS-related capital and operational expenses. Only a limited part of public expenditures have been dependent on EU transfers. Debt finance does not appear to have played a significant role.

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



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

Table 4 indicates that Slovenia faces some financing challenges, though possibly manageable ones. Current price levels area relatively higher than in other new member states.

Affordability may become a concern if prices would further increase. The country has leeway to increase public spending thanks in particular 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	Country-level average price for water supply and sanitation / m3 (PPP)	1.5 EUR (12/27)	2010	EC Joint Research Centre (forthcoming)
	Water expenditures in lowest household income decile	1.78% (13/26)	2011-15	Authors based on EUROSTAT
	Full cost recovery equivalent in lowest household income decile	4.04% (22/28)	2011-15	Authors based on EUROSTAT
	At-risk-of-poverty rate	13.9% (7/28)	2016	EUROSTAT
Ability to raise public spending	Tax revenue / GDP	37.1% (15/28)	2016	EUROSTAT
	Government consolidated debt / GDP	78.5% (18/28)	2016	EUROSTAT
	Sovereign rating	A+	2017	Standard & Poor's
Ability to attract private finance	Domestic credit to private sector / GDP	50% (23/28)	2015	World Bank
	Ease of doing business global rank	37 (17/28)	2017	World Bank

Flood risk management

Existing flood defences are primarily implemented by government, with more investment planned in line with the EU Directive on floods. Given the nature of Slovenia's river system, this will require international cooperation. It is also likely to require international transfers to fully meet its flood protection needs (OECD, 2012).

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