

## *France*

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<sup>1</sup>. 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).

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<sup>1</sup> 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

- Connection rates and compliance with EU DWD and UWWTD are high but the performance of infrastructure is about average.
- Renewal of existing infrastructures is slow, and the business model to cover its cost is uncertain.
- Flash floods in (peri) urban areas are an issue, which deserves an adaptation of existing (grey and green) infrastructures.

### Key messages

French GDP per person is above average in the EU, as is future projected urban and total population growth. However, growth in economic output is expected to sit slightly below the EU average at marginally less than 2%. France spends a comparatively large amount per person on water supply and sanitation and achieves a high water supply connection rate, but approximately average levels of non-revenue water and wastewater treatment compliance. Nearly one in five French residents live in areas at risk of flooding, while the value of assets at risk from river flooding is expected to nearly double by 2030.

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

	Indicator	Value (rank if applicable)	Data Source	Year
<b>Economy and Demographics</b>	GDP per capita	EUR 33 300 (11/28)	Eurostat	2016
	Projected GDP growth	1.9% (16/28)	IMF	2016-2022
	Projected urban population variation by 2050	1.2x (7/28)	UN	2017-2050
<b>Water Supply and Sanitation</b>	Estimated annual average expenditure per capita <sup>(1)</sup>	EUR 250	Authors based on EUROSTAT	2011-2015
	Population not connected <sup>(2)</sup>	1%	EC	2015
	Annual domestic sector consumption per capita <sup>(3)</sup>	143.7 m3	<a href="#">EUROSTAT</a>	
	Leakage rate for public water supply	30%	EC	2017
	Non-revenue water	c.20%	EurEau	2017
	Compliance with UWWTD Art.3, 4 and 5 (Index)	96% (12/28)	EC	2014
<b>Flood Protection</b>	Estimated annual average expenditure per capita	EUR 5 (13/25)	<a href="#">EC survey</a>	2013-15
	Pop. potentially affected in flood risk areas	21%	<a href="#">EC report</a>	2015
	Value of assets at risk (rise 2015-30):	1.9x (18/28)	WRI	2015-2030

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

(1) France reports a slightly lower figure: 215 (SISPEA, 2015)

(2) France refers to 0.5%, based on latest estimates

(3) France signals the figure reflects consumption per household (not per capita)

## Main drivers and projections of future investment needs

### *Water supply and sanitation*

People in France enjoy good and reliable service. Water supply and sanitation services are fragmented in France: there are 35,000 of them. This limits the capacity to invest and innovate and to reap economies of scale. 1/5 of the population is connected to independent wastewater treatment facilities.

Table 2 projects future investment needs in water supply and sanitation. While more accurate projections may have been available for selected countries, proxies have been used which facilitate comparisons across countries. Other water-related investments could not be projected, due to lack of comparable data.

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

FRANCE		Baseline 2015	2020	2030	Total by 2030	2040	2050
BAU water supply and sanitation	CAPEX	9855	10167	10830	-	11454	11912
	TOTEX	16389	16915	18028	-	19079	19853
Scenario Compliance + for water supply and sanitation	ADD. CAPEX	-	1850	1871	20479	-	-
	ADD. TOTEX	-	3215	3252	35151	-	-
Compliance with DWD, access and efficiency (water supply)	ADD. CAPEX	-	170	170	1695	-	-
	ADD. TOTEX	-	419	419	4191	-	-
Compliance with UWWTD (sanitation)	ADD. CAPEX	-	1680	1702	18783	-	-
	ADD. TOTEX	-	2796	2833	30961	-	-

*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. Based on Swiss experience, the additional cost can be as high as EUR 20 per person and per year until 2040.

The main challenge remains the renewal of existing infrastructures. At current pace, the full replacement of water supply networks would take 160 years and that of wastewater collection and treatment would take 140 years (OECD, 2015), which by far exceeds the capacity of networks. Cador (2002) estimates the annual cost of renewal should be between EUR 600 million and 1 billion, with peaks in 2025 and around 2040. It is not clear whether the French business model, according to which revenues from water bills cover the full cost of service provision, is fit for the challenge.

### ***Flood risk management***

Table 3 projects 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).

Municipalities have been tasked with flood prevention since 2015 but can delegate this task to river basin authorities (EPTB).

Coastal and river floods are regular in several parts of the country. Climate change, degradation of wetlands and expansion of permeable surfaces in and around cities increase the risk of flooding.

According to flood scenarios, direct damage from a major flood in Paris area (similar to the 1910 one) has been estimated to be between 3 to 30 billion euros, together with a significant

reduction in GDP which, over five years, could reach EUR 1.5 to 58.5 billion, i.e. a consolidated total of 0.1 to 3% (OECD, 2014).

The extension of permeable surfaces increases risks of flash floods in and around cities, degrading water quality when rainwater run-off washes pollution from the streets.

**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	
<b>France</b>	1,85	2,61	3,18	4

*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 pressures affecting water quality and compliance with the WFD***

France, as most EU member states, has not achieved good ecological status of water bodies. Effluents from agriculture and rainwater run-off contribute to diffuse pollution, which affects 39% of water bodies (DG ENV, 2017), with significant regional disparities.

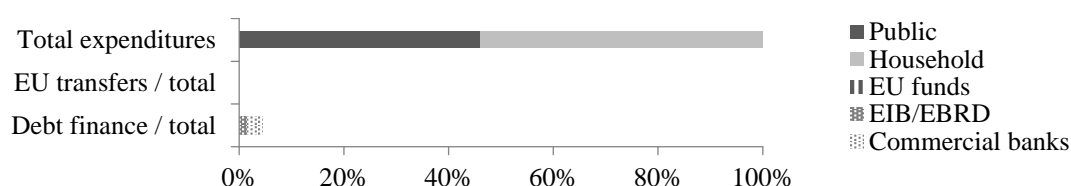
While some progress is being made as regards organic and phosphorous matter, France remains one of the largest users of phytosanitary products globally and the number of unit doses of pesticides used in France keeps growing. The presence of pesticides in surface and groundwater is a cause of concern and the situation has changed little since 2000 (OECD, 2016). This partly reflects the size and composition of the agriculture sector in France and weak incentives to improve farming practices.

## **Past financing strategies and room for manoeuvre to finance future needs**

### ***Water supply and sanitation***

As depicted in Figure 1, France has been relying slightly more on household than public expenditures to finance WSS-related capital and operational expenses. It has not benefited from EU transfers, and has only had limited recourse to debt finance.

WSS is considered foremost a local government responsibility. Revenues from water bills cover a vast majority of the investment and O&M costs of the provision of water supply and sanitation services. Stable revenue streams, even though not commensurate with the costs of renewal of networks, provide access to commercial finance to cover upfront investment costs.

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

Sources: 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 already high levels of both taxes and public indebtedness could constrain an increased reliance on public expenditures to finance WSS in France. On the other hand, the country may have the ability to further rely on pricing without facing significant affordability limitations. This in turn could strengthen the business case for financing WSS through debt financing, which the depth of the domestic banking sector should, in principle, allow.

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

	Indicator	Value (rank)	Year	Data Source	Assessment
<b>Ability to price water</b>	Water expenditures in lowest household income decile	1.17% (8/26)	2011-15	Authors based on EUROSTAT	High
	Full cost recovery equivalent in lowest household income decile	2.18% (6/28)	2011-15	Authors based on EUROSTAT	
	At-risk-of-poverty rate	13.6% (6/28)	2016	<a href="#">EUROSTAT</a>	
<b>Ability to raise public spending</b>	Tax revenue / GDP	47.6% (28/28)	2016	<a href="#">EUROSTAT</a>	Medium
	Government consolidated debt / GDP	96.5% (22/28)	2016	<a href="#">EUROSTAT</a>	
	Sovereign rating	AA	2017	<a href="#">Standard &amp; Poor's</a>	
<b>Ability to attract private finance</b>	Domestic credit to private sector / GDP	96% (15/28)	2015	<a href="#">World Bank</a>	High to Medium
	Ease of doing business global rank	31 (15/28)	2017	<a href="#">World Bank</a>	

### ***Flood risk management***

Expenditures on flood prevention in France may be assessed at between EUR 300 and 450 million euros, or about one third of the estimated damage (OECD, 2014).

In addition to national budget resources, France has established an original collective insurance mechanism, the CatNat insurance regime, based on a public-private partnership between insurance companies and the State and on the solidarity principle against the risks of natural catastrophes. This system makes it possible to make a large contribution to risk prevention funding, particularly for flood risks, without a direct impact on public finances (OECD, 2013, 2014). This system is faced with growing demands.

Additional resources come from local authorities, generally through contractual tools with the State or basin authorities (EPTB). Other sources of finance include the European Union.

Nature-based solutions are not fully exploited, while they could minimise the cost of protection and contribute multiple benefits.

## References

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