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# The urban water sector as a vehicle for sustainable recovery post COVID-19

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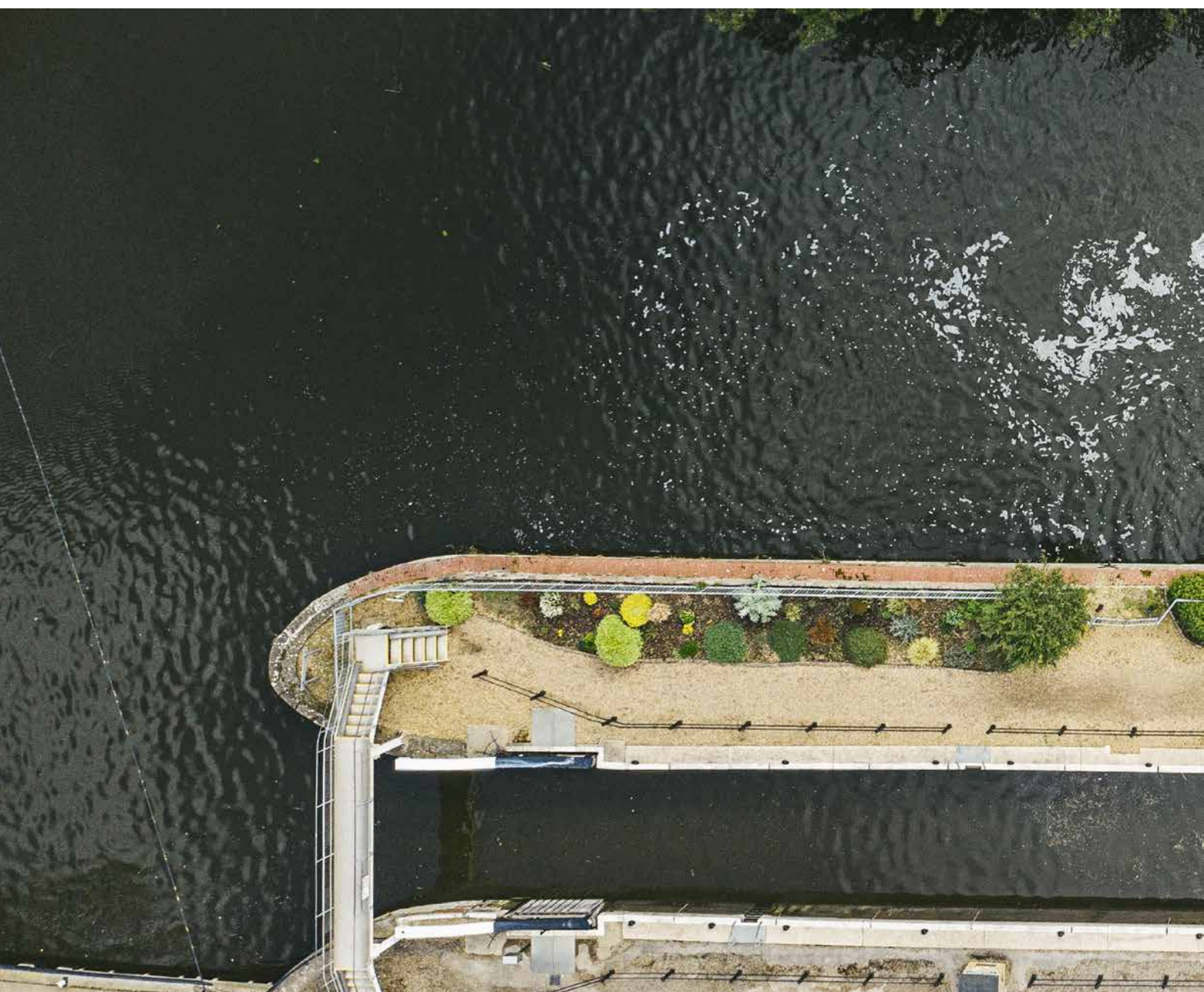
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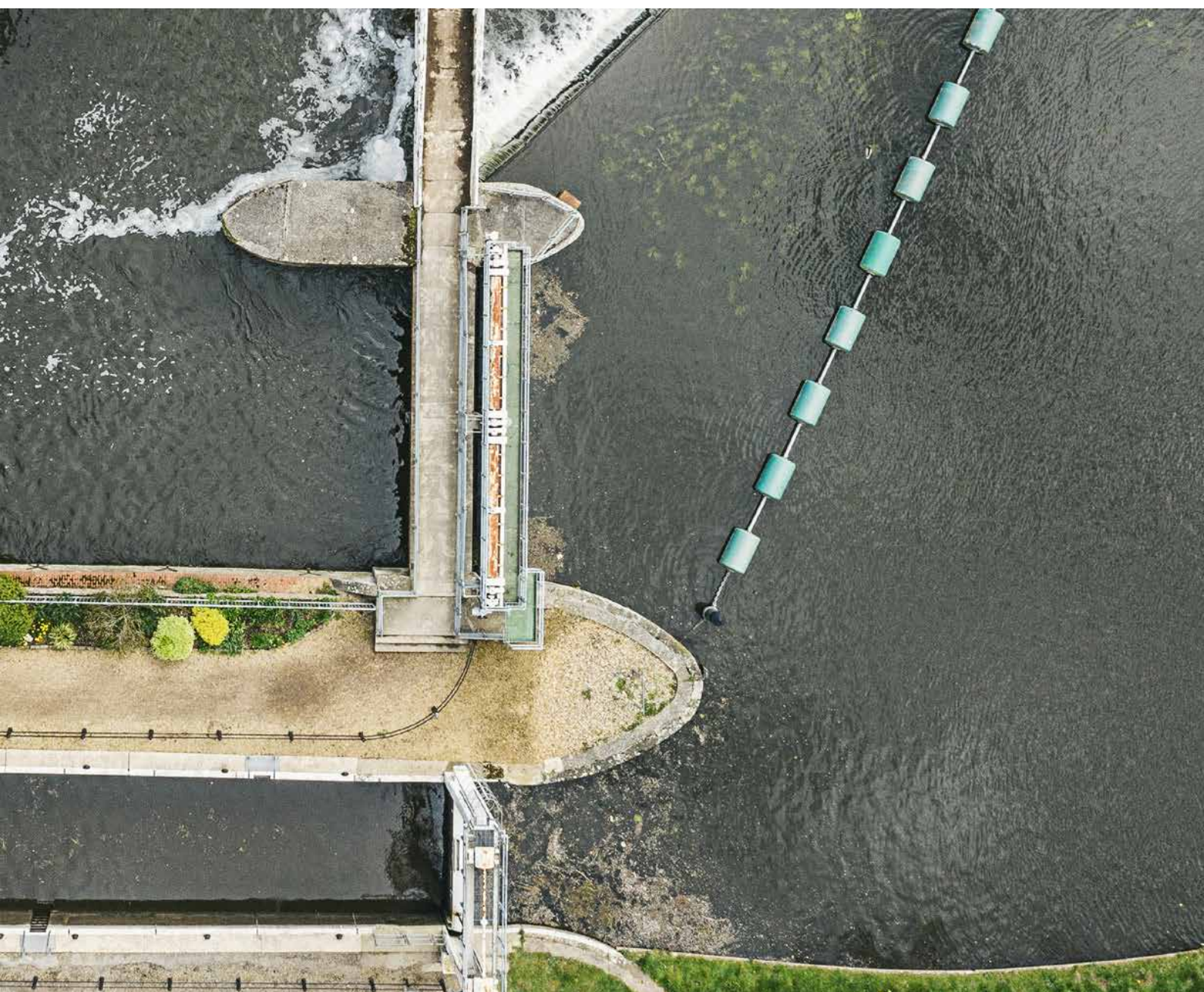
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# Context, scope and goals of the report

Water is an essential, scarce and valuable commodity for both citizens and the economic activity of any given sector, especially for water-intensive ones, such as tourism, agriculture & livestock, the food industry and energy. In addition, the UN General Assembly recognized the right to water supply and sanitation as a fundamental human right in 2010. Therefore, it is necessary to ensure a safe and reliable supply of water, which has to be primarily of high quality, but also sustainable over the long term.

For this purpose, a set of public services enabled by infrastructures to store, treat water for drinking purposes, distribute, treat waste water and reuse water is required, as is an integrated management model for such infrastructures. This set of infrastructures and its management model is what shall be called “integrated water cycle”.

Regarding the integrated water cycle, this report is focused on the urban water cycle, starting with the collection of water for its treatment (to make it drinkable) and subsequent distribution to residential consumers. Following its use, water is collected by means of the urban drainage and sewerage network and conveyed to waste water treatment plants, where it is treated so that its discharge into natural waterways is possible. In Spain, the urban water cycle falls within the competence of municipalities. However, regarding its management, the country is characterized by the coexistence of different models, from direct management ones (which nowadays are very much in the minority, due to their associated high qualification requirements), to public and private, as well as public-private, delegated management models.

The urban water cycle in Spain has undergone a major transformation over the past 20 years, with significant progress having been made in terms of waste water treatment, water reuse and water quality, or the proportion

of the population serviced with water supply and sanitation systems.

However, there is consensus on the fact that current investment levels are clearly insufficient to meet the major challenges facing the sector, such as the renewal of increasingly obsolete networks, or compliance with progressively more stringent regulatory requirements regarding waste water treatment, drinking water treatment, water quality, and those related to safety and resilience matters.

This report sets out to illustrate the growing relevance of the urban water cycle due to the current situation, in the midst of the COVID-19 crisis, since it becomes an essential element in guaranteeing the health and hygiene of citizens, promoting sustainable growth that helps improve the environment, as well as contribute to economic recovery by creating quality employment and strengthening the welfare state.

For this purpose, it is necessary to seize any public investment opportunities that may arise, while boosting the mobilization of private financing and stimulating efficient economic and financial measures. In addition, the urban water sector may be a centerpiece for the European “exit strategy” for the COVID-19 crisis. This European strategy focuses on promoting the circular economy and ecological transition, within what has come to be known as the European Green Deal.

Promoting the urban water sector would result in a fairer and more sustainable recovery that would generate high added value activities, while helping create quality employment.

This report was commissioned by the Spanish Association of Water Supply and Sanitation (AEAS) and the Spanish Association of Managing Companies of Urban Water Services (AGA), and drafted by PwC.





Spanish society has been deeply impacted by the health and economic crisis prompted by COVID-19. A record economic downturn, more significant than the one recorded during the financial crisis of 2008, is expected to take place in 2020. In this context, unemployment and poverty are projected to increase significantly in the country.

Faced with this unprecedented situation, recovery demands fostering collaboration mechanisms among public authorities and economic stakeholders that would contribute to a fair and sustainable exit from the crisis. In fact, the European Commission has conceived its budget 2021-27 based on the European Deal, that focuses on promoting environmental sustainability and preventing climate change. Taken together with the European reconstruction fund, this budget results in a mobilization of resources that could amount to € 1.85 trillion.

Besides, in January, the Spanish Government already announced an infrastructure renovation and rehabilitation plan worth € 80 billion, and, post-COVID-19, executive authorities hope to support this plan further by attracting up to € 140 billion, complementing it with European recovery funds.

In this context, the urban water cycle has several specific features that make it an ideal lever for recovery and a driver of the Green Deal:

- It can **generate quality and equal employment**: with a higher percentage of permanent contracts (85% vs. 74% of the Spanish average), lower gender pay gap (38% lower than the Spanish average) and high level of training.
- It promotes **environmental sustainability**: Spain is the country with the second highest percentage of water reuse globally. In addition, the carbon footprint associated with the urban water cycle sector is lower than the average of the Spanish industrial sector (it generates 28% of the energy consumed compared to 6% of the industrial sector) and the former encourages responsible water use by means of tariff escalation and awareness campaigns. Furthermore, this sector actively invests in maintaining ecosystems, and minimises pollution by means of water sanitation.
- It is a **socially responsible sector** that protects vulnerable groups: it offers discounts and solidarity funds to protect low income groups, pensioners and large families, which benefit 4.7% of customers, by creating an average reduction of over -50% in the amount invoiced.
- **It supports depopulated areas** in their fight against the demographic challenge, by requiring a greater

investment in infrastructure in smaller municipalities (an investment per capita that is 36% higher in municipalities with less than 20,000 inhabitants compared to those with larger populations).

- **It can immediately channel investments in the short term, and sustain them in the medium and long term**, thus invigorating the economy. In fact, there is consensus on the fact that the urban water sector is among those with the highest infrastructure deficit. Prior to the COVID-19 crisis, these additional investment needs totalled € 2.5 billion annually over the next 10 years.

Therefore, **the urban water sector shall necessarily become one of the priority services or sectors on which to base recovery**. Adopting a strategy built on these foundations would have multiple benefits for the whole of Spain:

- **It is estimated that the equivalent of over 43,000 full-time jobs would be created annually in Spain by covering the existing investment deficit concerning the urban water cycle**. In fact, investing in water infrastructure is one of the most employment-intensive activities at the local level.
- Additionally, this line of action would entail a **positive impact on economic growth, amounting to approximately 0.15% of the annual increase in GDP (gross domestic product)**.
- Finally, it would produce substantial **environmental benefits** that would allow Spain to align with international best practices in terms of water management and to advance towards the attainment of the UN SDGs (Sustainable Development Goals) and the four objectives set out in the European Green Deal. Specifically, it would provide the following benefits:
  - Promoting **effective water use**. Reducing water losses within the distribution network, from 22% to 14%.
  - **Improving the status of water bodies**. Achieving full compliance with the Directive on urban waste water treatment and treatment of discharges under heavy rain conditions.
  - **Guaranteeing supply**, by incorporating new resources. **Furthering water reuse development**, positioning Spain as a tech hub for this technology that would promote a strategy based on the circular economy.
  - **Fulfilling decarbonisation goals**, further strengthening the link between water and energy.

- **Reducing the risk of floods and other extreme weather events**, thus mitigating their impacts.

However, while European funds can be partly targeted at covering investments in the urban water cycle, these are far from sufficient to address the investment deficit facing the sector, whose resolution is to cover all necessary measures to meet sectoral targets.

Therefore, as a long term solution, in order to ensure investment and promote employment and environmental sustainability, the measures below are necessary:

- Reviewing the structure of sectoral tariff models, as an essential complement of attracting funds to cover the investment efforts required, in accordance with the

principle of adequate user contribution set out under the WFD (Water Framework Directive).

- Encouraging partnerships to fulfil the objectives. Promoting the various, and very successful, public-private / public-public partnership models that have a long and positive track record in Spain, especially at the municipal level, in order to greatly increase public funds by providing responsible financial resources. Leading service providers can contribute their extensive experience and demonstrated capacity to build this type of partnerships internationally.
- Reviewing existing regulation, bringing about any legislative change<sup>1</sup> necessary to boost investment.

<sup>1</sup> Detailed information on specific tariff and legislative proposals within the AEAS-AGA study “Moving towards a more efficient financing of urban water cycle infrastructures in Spain”

“In this context, the cycle of urban water has a series of factors that make you ideal for being a lever recovery and a Green-Deal driver.”





# 1

## Assessment of impacts of the COVID-19 crisis in Spain

Spanish society has been deeply impacted by the health and economic crisis prompted by COVID-19 and recovery looks set to be slower nationally than in other countries. Structural changes in society, to which companies and social actors shall need to adapt, are expected. The urban water cycle, given its status as a stakeholder in Spanish society, has also been negatively impacted, although the sector has managed to maintain the provision of quality services during these times of crisis.

### 1.1. Impacts of the COVID-19 crisis on Spain's economic and social reality

Main estimates of the impact of COVID-19 on Spain's GDP anticipate a decline of 8%-15% in this value during 2020, which would increase the government deficit from 2.8% in 2019 to 9%-12% in 2020. In addition, Spain is expected to display a somewhat slower pace of recovery compared to other countries, reaching pre-crisis 2019 levels in 2022-23, while in other nations, like China and most EU countries, recovery is projected for late 2020-early 2021<sup>2</sup>.

**Figure 1**  
**Economic impact of**  
**COVID-19 in Spain**

Year 2020

**Projected decline in GDP 2020**  
[%: range of estimates]

**Projected public deficit**  
[%: range of estimates]



**Source:** Bank of Spain (BoS), International Monetary Fund (IMF), Goldman Sachs

<sup>2</sup> Bank of Spain, IMF

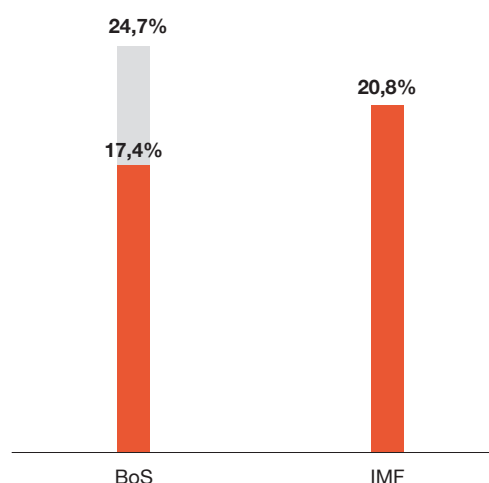
This COVID-19 crisis will seriously impact social indicators:

- The Bank of Spain (BoS) and the International Monetary Fund (IMF) estimate that unemployment is to reach a figure between 17.4% and 24.7% in 2020 and 2021, reaching levels similar to those of the financial crisis of 2008.
- These effects will have particularly dire consequences on vulnerable groups. The number of people at risk of poverty in Spain is expected to increase from 12 million pre-COVID-19 to approximately 18 million by the end of this year<sup>3</sup>. The aforementioned would be the highest risk-of-poverty rate in recent years, even surpassing the figures recorded during the financial crisis of 2008.

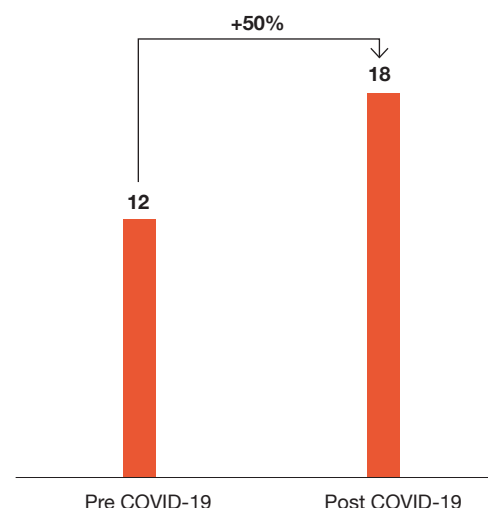
**Figure 2**  
**Social impact of**  
**COVID-19 in Spain**

Year 2020

**Projected unemployment progression for 2020t**  
[%: range of estimates]



**People at risk of poverty**  
[million people]



**Source:** Bank of Spain, IMF, Caritas Spain

The situation created by COVID-19 (increased unemployment and government deficit, higher numbers of vulnerable people) will require closer public-private and public-public partnerships within the urban water sector, in order to promote job creation, ensure sustainable investment and guarantee support for vulnerable groups.

<sup>3</sup> Caritas Spain



## 1.2. The new reality: a picture

Structural changes in society, which shall now extend beyond these times of crisis, are expected as a result of the recent social and health emergency. Serious concerns, both over health and the economic situation, have had a major impact on CCI (Consumer Confidence Index), which has decreased by 50%, compared to 2015-19 levels, and is approaching levels like those recorded during the financial crisis of 2008<sup>4</sup>). The crisis has also substantially changed user behavior patterns:

- The number of users using online channels for the first time has risen by 10-15%.
- Teleworking has increased sevenfold, amounting to 32% of workers.
- Consumption of local products has grown by 30-50%, which raises questions about the current model of globalization.

**Figure 3**

**Main socio-economic consequences of the COVID-19 crisis**



### Effects of the health emergency

Concerns over health and safety have dramatically increased following the health emergency prompted by COVID-19. Preventative measures such as the use of masks or hand sanitiser are just a few examples reflecting the concern of the population, which is expected to extend into the medium term

#### Main trends:

- Contact-free services
- Online channel development
- Preference for brands that convey safety and build trust with consumers
- Curbing risks

**Companies shall need to take further measures and learn to build trust with users**



### Effect of the economic crisis

The economic downturn, along with the increase in unemployment, will result in inequality, reduced consumption capacity and changes in user behaviour patterns, such as teleworking, travel bans and other restrictions

#### Main trends:

- Increased digitalisation (e.g. teleworking)
- Marked preference for local consumption
- Collaborative solutions
- Increased importance of the public sector
- From globalisation to protectionism

**Companies shall need to adapt to new restrictions and the new demand situation**

Source: PwC

These trends arising from the new reality have a direct impact on companies, organizations and the remaining social actors, which shall need to adapt to citizens' new needs and behavior patterns. Given their essential nature, ensuring continuity of water services is now more relevant than ever, with increased requirements in terms of different aspects, such as safety, digitalization, operational resilience and cycle efficiency.

<sup>4</sup> Sociological Research Centre (CIS)

“Ensuring continuity essential service such as water will be more relevant than ever before, increasing the demand for aspects such as operational resilience and efficiency of the cycle.”

### 1.3. Impacts of the COVID-19 crisis on urban water cycle service providers

Urban water services, including water supply and sanitation, are basic and essential for citizens, the environment and economic development.

During the COVID-19 crisis, the provision of these services has been adapted to the circumstances shaped by the state of alarm<sup>5</sup>, being delivered offering safety and continuity guarantees, as is appropriate in the case of essential services.

However, like many other activities, the urban water sector has been negatively impacted by the crisis. This fact may jeopardise the existing model, since economic balance is an absolute prerequisite for the proper provision of this essential service, as laid down in the EU WFD.

In particular, this sector has experienced a decline in revenue for two main reasons:

- a) **A decline in consumption brought about by reduced demand from commercial and industrial consumers, and by a falling residential consumption in tourist locations.**



Source: La Vanguardia (newspaper), ABC (newspaper), iAqua, Diario de Ibiza (newspaper)

<sup>5</sup> In Spain, there are three degrees of state of emergency (estado de emergencia in Spanish): alarma (alarm or alert), excepción (exception [al circumstance]) and sitio (siege). They are named by the constitution, which limits which rights may be suspended, but regulated by the "Ley Orgánica 4/1981" (Organic Law). Other countries only specify "State of Emergency"; podría clarificarse.

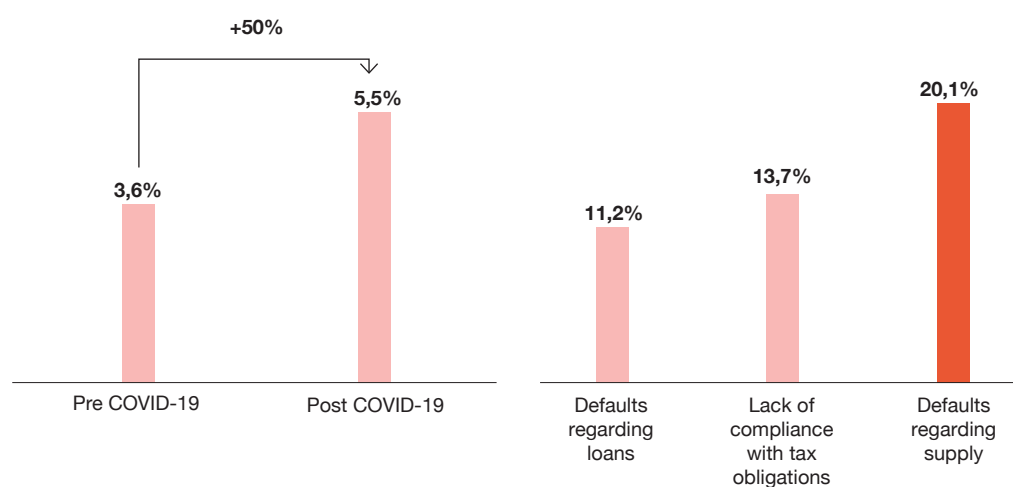
**b) Increased rate of delayed and default payments as a result of the economic crisis prompted by COVID-19.**

**Figure 4**  
**Projected increase in the rate**  
**of delayed payments and**  
**SMEs' planned measures**

Year 2020

**Projected increase in the rate of delayed payments**  
 [% delayed payments; BoS]

**Measures taken by SMEs due to COVID-19**  
 [% survey respondents, CEPYME]



**Source:** Bank of Spain, Confederation of Small and Medium-Size Enterprises (CEPYME)

In addition, urban water service providers will have to deal with a growing number of people belonging to vulnerable groups that need to be provided with solutions.

In this context, it would be advisable to develop a tariff policy that would protect the most disadvantaged groups (the affordability of water is an inherent condition set out in the human right to water), while guaranteeing all necessary resources to sustain the system (principle of cost recovery, laid down in the WFD).

In fact, in its recent report “Study on water supply and sanitation services”, the National Commission on Markets and Competition (CNMC) highlights that urban water cycle services are provided through a fixed network, characterized by high fixed and sunken costs, since infrastructure requires very investment-intensive assets, thus justifying public sector intervention in the provision of these services, either by means of intervention in the provision of services itself or through regulation, by promoting service excellence and its economic sustainability.



# 2

## The European Green Deal as a lever for recovery

The European Commission defined the European Green Deal, with 4 objectives, focused on promoting environmental sustainability and preventing climate change, on the basis of the UN SDGs<sup>6</sup>.

Two European funds have been established, amounting to €1.85 trillion (equal to approximately 1.6 times the Spanish economy), in order to promote the Green Deal and reverse the COVID-19 crisis. Given the close link between environmental sustainability and the urban water cycle, and the fact that this sector has been adversely affected by COVID-19, it is considered that part of the funds granted to Spain should be invested in promoting the sustainability of the urban water cycle.

2.1. Consistency between the European Green Deal objectives and the UN SDGs

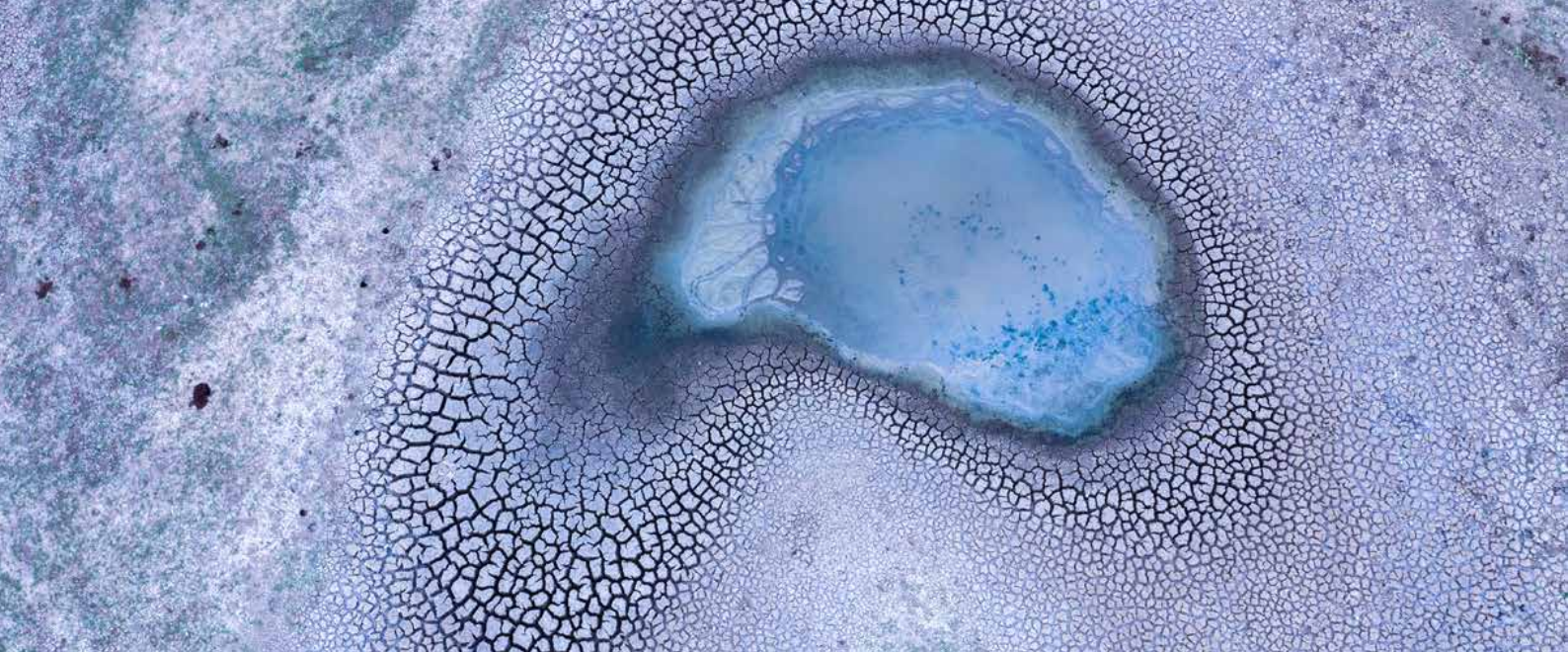
In 1992, 178 countries took the first step towards what are now known as the Sustainable Development Goals (SDGs<sup>7</sup>). Following successive negotiations and agreements over the years, the 2030 agenda was established in 2015; this agenda comprises several agreements and commitments, designed to achieve the proposed targets and assumed by the various signatory countries, and sets out the Sustainable Development Goals.

Figure 5  
Sustainable development goals



Source: United Nations

<sup>6</sup> The Sustainable Development Goals, which were agreed upon by the United Nations Member States in 2015, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030  
<sup>7</sup> United Nations



Among all SDGs set out in the UN 2030 Agenda, some are of more relevance to the urban water cycle than others (the former have been highlighted with a more vivid colour in Figure 5):

- **SDG 1 No poverty:** Concerning the urban water cycle, there is still room for considering tariffs and discounts that take account of vulnerable groups, ensuring all citizens have access to such an essential resource as water.
- **SDG 3 Good health and well-being:** The condition in which waste water is discharged into rivers and natural waterways is critical to maintain clean water sources and a wholesome environment, as well as to ensure public health.
- **SDG 6 Clean water and sanitation:** Achieving good quality of both drinking and waste water is essential in order to prevent disease transmission and reduce pollution; thus, having a well-maintained water infrastructure is critical.
- **SDG 7 Affordable and clean energy:** Hydro-power generation and the recovery of sludge and residues resulted from drinking and waste water treatment processes are major sources of renewable energy.
- **SDG 11 Sustainable cities and communities:** The water cycle plays a big role in the creation of sustainable communities, for example, by means of the circular economy and water reuse for city cleaning purposes or even those related to food production and consumption. Therefore, having waste water treatment infrastructures that remove all pollutants that pose health or environmental risks is crucial.
- **SDG 14 Life below water:** Avoiding untreated waste water discharge into rivers, lakes, seas and oceans is pivotal for the sustainable use of marine resources.
- **SDG 15 Life on land:** Proper waste water treatment is imperative to preserve the good status of biosphere, since waste water contributes to ecosystem and land degradation, desertification, biodiversity loss and groundwater contamination, among others, when not appropriately treated.
- **SDG 17 Partnerships for the goals:** Partnerships among all stakeholders involved in the Urban Water Cycle, strengthening public and public-private partnerships, building on legal certainty and appropriate regulation and controls.

In this context, based on the UN SDGs, in December 2019, the European Commission presented the European Green Deal, conceived as a response to environmental and climate challenges and introduced as a strategy aimed at transforming the European Union by focusing on four major objectives:

**Table 1**  
**European Green Deal Objectives**

<b>European Green Deal Objectives</b>	<b>How do these relate to the water cycle?</b>
<b>1. Net-zero greenhouse gas emissions by 2050</b>	Activities conducted as part of the water cycle contribute to greenhouse gas emissions due to electricity consumption; more efficient consumption, on the one hand, and increased production and consumption of renewable energies (such as hydro-power, biogas, cogeneration and recovery of resources from residus of waste water treatment), on the other, may have a positive effect on progress towards the above objective
<b>2. Achieving economic growth that is decoupled from resource use, by promoting a climate-neutral and circular economy</b>	The circular economy is especially relevant in the water cycle, since water is a limited resource and an essential commodity; more efficient water use, along with its reuse (e.g. in agriculture, city cleaning, grey water, etc.), can help reduce pressure on this resource. Urban water service providers also contribute to the circular economy by recovering sludge and other residues
<b>3. Protecting, maintaining and enhancing Europe's natural capital, restoring biodiversity and reducing pollution</b>	The most advanced waste water treatment techniques help both reduce pollution from uncontrolled discharges and increase its potential reuse to restore biodiversity
<b>4. Protecting the health and well-being of citizens from environment-related risks and impacts, and ensuring that no one is left behind by means of an inclusive transition</b>	Keeping water infrastructure in good condition is essential to meet this objective, since it reduces health risks for citizens and ensures proper hygiene. Well-maintained infrastructure also improves the system's capacity and resilience to adapt to extreme weather events, forecasted by climate change experts. In addition, it is crucial that populations further away from the main urban centres have access to quality water and proper sanitation

**Source:** European Commission, PwC assessment

A roadmap setting out next short and medium-term measures was also established to achieve these four objectives. This roadmap includes new initiatives, defines these objectives and establishes time frames for the implementation of the above measures. Achieving these four objectives and compliance with the European Green Deal is based on 6 main lines of action: (i) investing in environmentally friendly technologies, (ii) promoting industrial innovation, (iii) setting up cleaner, cheaper and healthier public and private transport systems, (iv) decarbonising the energy sector, (v) ensuring buildings are more energy efficient and (vi) collaborating with international partners to improve global environmental standards.



**Table 2**  
**European Green Deal Measures**  
**related to the water cycle**

<b>European Green Deal Roadmap - Measures</b>	<b>How does the European Green Deal relate to the water cycle?</b>
Investing in environmentally-friendly technologies	Spain is one of the European countries where compliance falls shortest on waste water treatment targets (only 38% and 85% of waste water undergoes tertiary treatment <sup>8</sup> and secondary treatment, respectively). Investing in technologies and infrastructure is essential to enhance compliance/increase waste water treatment rates
Promoting industrial innovation	Innovation in the water cycle is a main focus for improving waste water and residues reclamation technologies, enhancing detection techniques for water leaks and losses, etc, among others. Spain presents one of the highest water stress indicators in Europe (31%); thus, establishing the country as a hub for reuse technologies could be a solution for the above issue
Decarbonising the energy sector	Energy recovery from hydraulic, biogas and other renewable potential, as well as of residues from waste water and drinking water treatment plants, to be used as energy for self-consumption purposes, is a key factor in the urban water cycle

**Source:** European Commission, PwC assessment

Thus, the European Green Deal constitutes an integral part of the European strategy to implement the 2030 Agenda and meet the SDGs. In this regard, the European Commission will re-orientate the European Semester of macroeconomic coordination (cycle of economic and budgetary policy coordination within the EU), to include SDGs, place sustainability and citizen well-being at the core of economic policy and position the SDGs as the primary vehicle for EU policy development and action<sup>9</sup>.

The water cycle is a key part of the European Green Deal and is closely related to its objectives, as well as to some of the measures it is founded upon.

<sup>8</sup> AEAS

<sup>9</sup> Communication from the European Commission "European Green Deal"

## 2.2. European Green Deal and COVID-19 Recovery and Reconstruction Plan

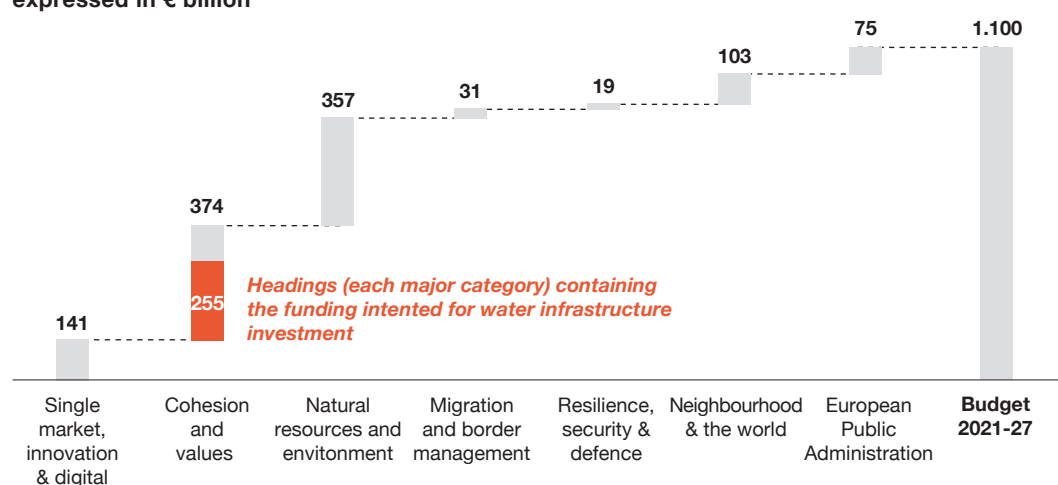
### 2.2.1. European Green Deal

The European Green Deal, presented in December 2019, consists of a reorientation of European budgets by emphasising headings (each major category) aimed at stopping climate change and mitigating its effects, as well as at protecting the environment. In May 2020, the European Commission submitted a new proposal for the EU budget 2021-27, which amounted to € 1.1 trillion. The Green Deal is widely supported, as proven in the March open letter by 17 EU Ministers or the Green Recovery Alliance<sup>10</sup>. In July 2019, Ursula von der Leyen, current President of the European Commission, said:

*Our most pressing challenge is keeping our planet healthy. This is the greatest responsibility and opportunity of our times. I want Europe to become the first climate-neutral continent in the world by 2050. [...] To make this happen, I will put forward a Green Deal for Europe in my first 100 days in office.*

The amounts allocated to water infrastructure within the budget 2014-2020 were contained in the Cohesion Fund, the ERDF<sup>11</sup> and the IPA<sup>12</sup>. These amounts are included in the Cohesion and Values heading of the EU budget 2021-27 and amount to € 255 billion.

**Figure 6**  
**Composition of the**  
**European Green**  
**Deal budget,**  
**expressed in € billion**



**Source:** European Commission

<sup>10</sup> Manifesto promoting the mobilization of green recovery investment packages that can push the transition towards climate neutrality and healthy ecosystems, signed by 12 Environment EU Ministers, 37 CEOs, 79 Members of the European Parliament from across the political spectrum, 28 business associations, the European Trade Union Confederation (ETUC), 7 NGOs and 6 Think Tanks

<sup>11</sup> ERDF (European Regional Development Fund)

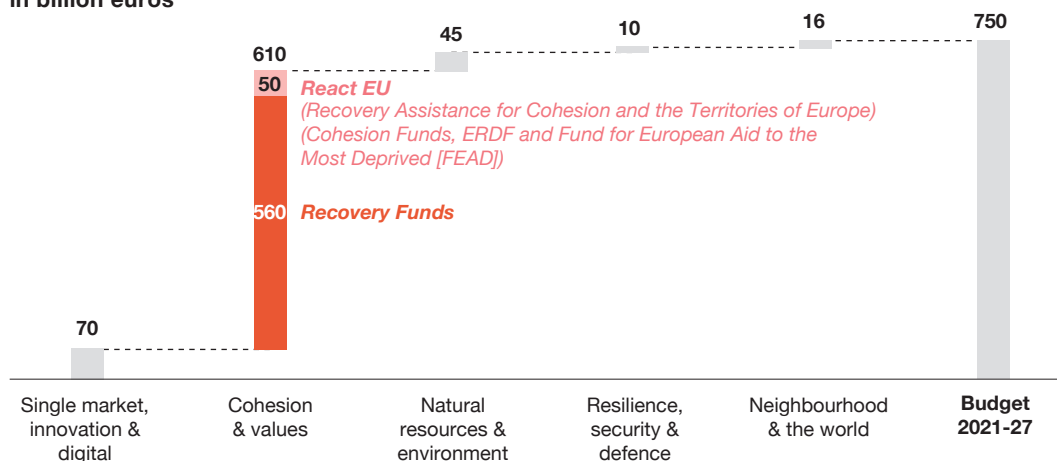
<sup>12</sup> IPA (The Instrument for Pre-Accession Assistance) is a fund aimed at cross-border cooperation among EU Member States, and EU candidate and potential candidate countries)

### 2.2.2. Recovery and Reconstruction Plan: Next Generation EU

In addition to the EU budget, a recovery package related to the COVID-19 crisis was submitted on May 27, 2020. This recovery and reconstruction package is called Next Generation EU and comprises a fund amounting to € 750 billion.

Of this total, € 560 billion, contained within the Cohesion and Values heading, correspond to Recovery Funds (€ 310 billion in transfers and € 250 billion in loans) that will be used to finance investment and reform projects, at the request of the different Member States to mitigate the economic and social impact of the crisis. Additionally, REACT EU, a stimulus amounting to € 50 billion, has also been included to strengthen the Cohesion Fund, the ERDF and the FEAD<sup>13</sup>.

**Figure 7**  
**Composition of the**  
**recovery fund Next**  
**Generation EU, expressed**  
**in billion euros**



Source: European Commission

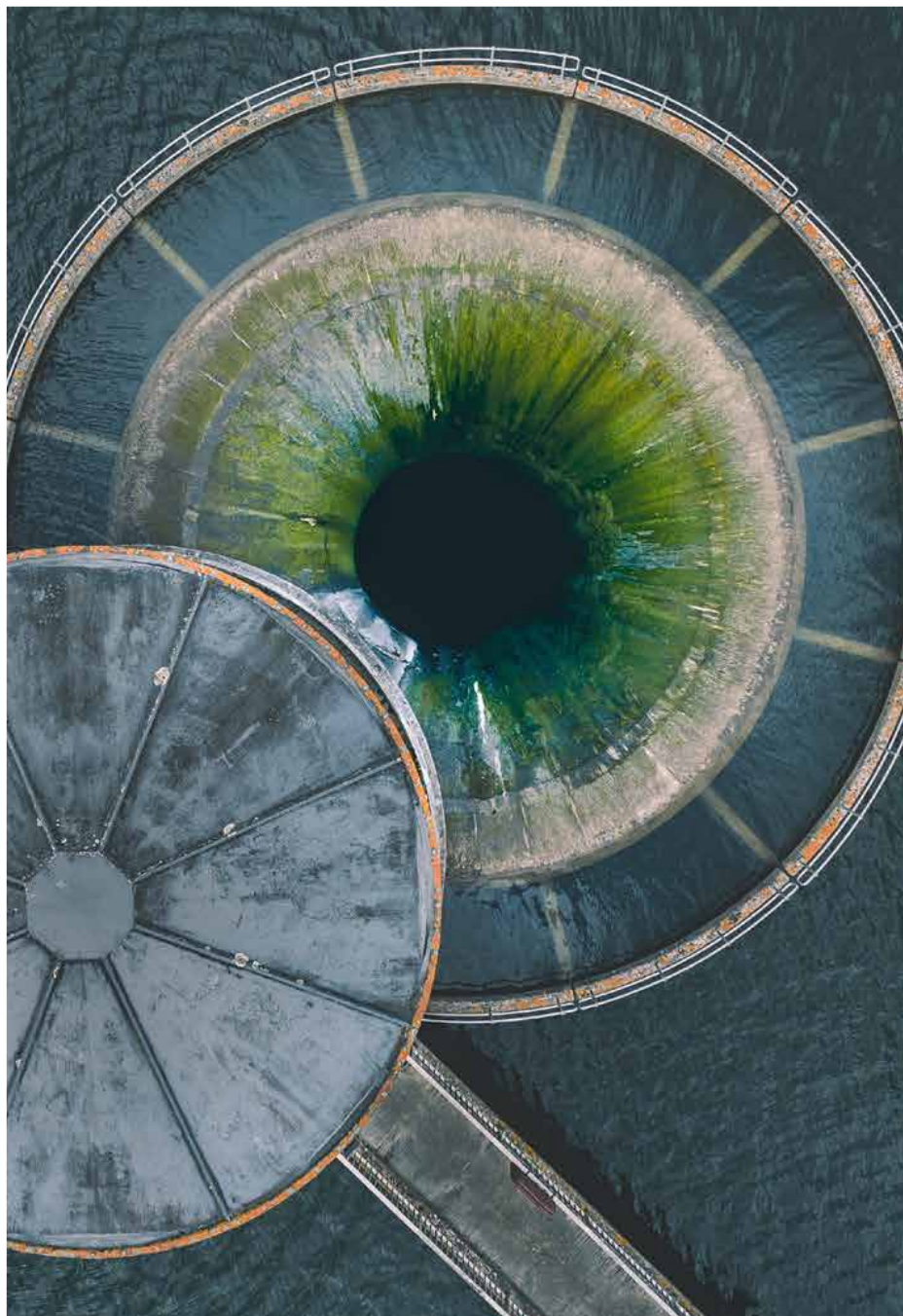
Altogether, the Green Deal budget and recovery package amount to € 1.85 trillion, which, according to European Commission estimates, would have a total impact on the EU economy worth € 3.1 trillion, when coupled with their leverage effect on private investment, and other aid granted by this body<sup>14</sup>.

<sup>13</sup> FEAD (Fund for European Aid to the Most Deprived), unrelated to water infrastructure

<sup>14</sup> A third additional package, worth € 540 billion and in principle having no relevance to the urban water cycle, has also been defined. This comprises aid intended to mitigate unemployment risks and cover guarantee funds, loans for companies and support loans for Member States



Together, the budgets of the Green Pact and the package of Recovery amount to a joint amount of 1.85 trillion euros which, together with the lever effect that these have about investment private, as well as other aids offered by the European Commission

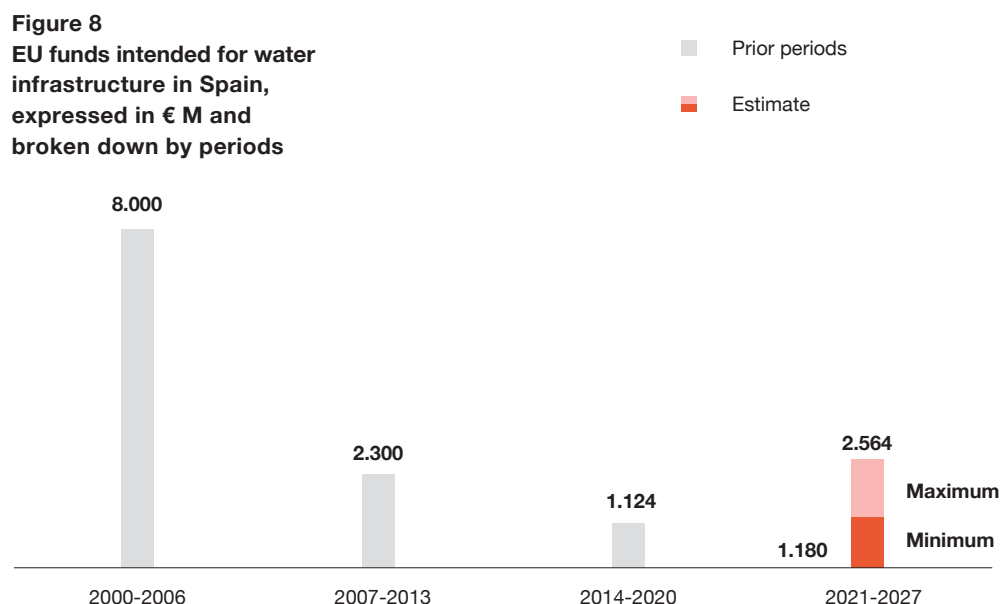


### 2.3. Assessment of potential financing that may be available to Spain, specifically to the water cycle

In the most recent EU budget 2014-20, of the total € 262,533 M, which was the combined amount of the Cohesion Funds plus the ERDF and the IPA, only €1,124 M was earmarked for financing water infrastructures in Spain.

Prospects of receiving transfers from the EU were limited under the pre-COVID-19 scenario, since few Spanish regions were eligible for funds, such as the ERDF and the Cohesion Fund.

However, in view of the current situation, given that Spain is among the countries hardest hit by the crisis and that the national investment deficit is still very high, it is considered reasonable that these headings could be increased up to approximately € 2.5 billion, a more similar figure to that brought up by the funds granted to Spain in the cycle 2007-13.



Source: European Commission, PwC assessment

In conclusion, Spain could attract capital from the EU totalling €1.180-2.564 M, over 2021-27, to finance water infrastructure.

However, this amount is nowhere near enough to finance the investment needed in the urban water cycle<sup>15</sup>. Therefore, accommodating additional headings in state, regional and municipal budgets, and fostering public-private partnerships within the context of the urban water cycle would be indispensable to ensure the supply of such an essential resource as water, guaranteeing environmental sustainability and securing the contribution of this sector to economic recovery.

<sup>15</sup> See Section 6



In this regard, the Spanish Government has already confirmed its intention to begin mobilising investments in infrastructure. In January, the Minister of Transport, Mobility and Urban Agenda announced an investment and reform plan amounting to € 80 billion; this amount would be mainly intended for transport infrastructure, but also for housing and a Rehabilitation Plan, which includes measures to promote building rehabilitation and enhance urban and rural regeneration and renovation.

Due to the COVID-19 crisis, this plan has been further strengthened and is expected to be increased to € 140 billion. A large part of this funding is likely to be attracted from the EU reconstruction fund. Besides, the Minister works in close cooperation with the private sector and major infrastructure groups, which will be essential to provide part of the necessary financing. This sector has already confirmed its interest in providing capital for such investment projects. This figure, € 140 billion, could be partly earmarked for renewing water cycle infrastructures and increasing their efficiency, thus supplementing EU funds.

“The minister counts clear with the collaboration of the private sector and large infrastructure groups, that will be indispensable to contribute some of the financing.”

# 3

The urban water sector  
potential to become a  
vehicle for recovery  
and a driver of the  
European Green Deal

The urban water cycle has several specific features that make it an ideal lever for recovery post-COVID-19 and driver of the European Green Deal: It generates quality and equal employment, promotes environmental sustainability, is a socially responsible industry that supports vulnerable groups, and can immediately channel investments in the short term, thus invigorating the economy.

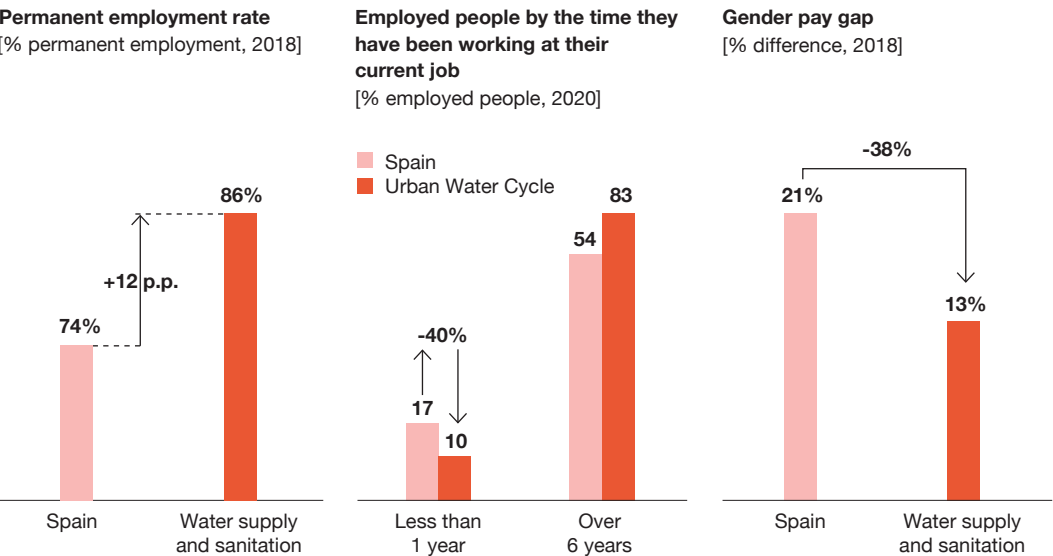
3.1. The urban water cycle generates quality and equal employment

Employment created within the urban water cycle is more stable than related to other sectors. This is evidenced by the fact that in Spain only 74% of jobs are permanent, while this figure increases to 85% in relation to the urban water cycle. In addition, 54% of Spanish workers have worked at the same job for over 6 years, while this figure rises to 63% within the water supply and sanitation sector. Besides, the number of workers who has been at the same post for less than a year is 40%, which is a lower figure than the Spanish average.

Furthermore, gender equity is more widespread in this sector, as demonstrated by the reduced gender pay gap in the urban water cycle, which is 38% lower than the Spanish average.

Lastly, this sector invests in expertise (qualified staff) and promotes ongoing training for its workers, which can be clearly observed in the higher rate of water sector employees who have completed higher education studies (44.2%) vs the Spanish average (30.4%)<sup>16</sup>.

Figure 9  
Employment and salary data  
related to the urban  
water cycle<sup>17</sup>



Source: Spanish National Statistics Institute (INE); sector comparisons based on the annual accounts of the main sector service providers

<sup>16</sup> Data by the Spanish National Statistics Institute (INE) in 2003; Data for the water sector also includes those for electricity and gas.  
<sup>17</sup> It includes waste management; the average of the 6 largest companies in the urban water cycle, amounting to 57% of the population served, was taken as the basis for the calculation of the permanent employment rate

### 3.2. The urban water cycle protects vulnerable groups

Spain has developed several policies to ensure the most vulnerable groups can have access to such an essential resource as water.

As can be seen in Figure 10, when compared to service providers in northern Europe, it is clear that Spanish ones have implemented more measures to protect vulnerable groups. This fact underlines the willingness and abiding social commitment of the sector.

**Figure 10**  
**Protection policies**  
**aimed at vulnerable**  
**groups**

	Spain	Italy	Portugal	Belgium	France	Denmark	Ireland
Are there appropriate regulations in place to ensure access to water?	✓	✓	✓	✓	✓	✓	✗
Are there regulations in place to protect vulnerable groups?	✓	✓	✓	✓	✓	✓	✗
Are there access criteria according to income?	✓	✓	✓	✓	✓	✗	✗
Are rules ensuring access being monitored?	✓	✓	✓	✗	✓	✓	✗
Are clients unable to pay differentiated from those unwilling to pay?	✓	✓	✓	✓	✗	✗	✗

**Source:** Organization for Economic Co-operation and Development (OECD)

This is reflected in the social action mechanisms of the urban water cycle, which are implemented by virtually all service providers in Spain (93%). These mechanisms are discounts mainly aimed at specific groups, such as pensioners, large families or vulnerable and impoverished households.

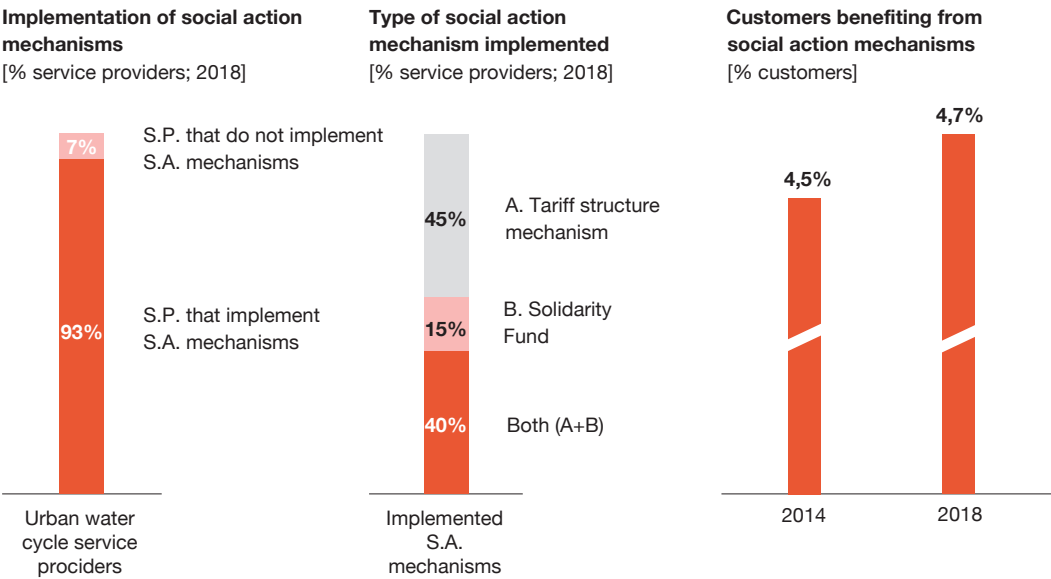
As indicated in the FEMP-AEAS<sup>18</sup> report, there are mainly two mechanisms that ensure basic access to water for vulnerable groups and their implementation is based on three criteria: income (NMW<sup>19</sup>, below the poverty line, etc.), indirect criteria and social elements or policies (the unemployed, pensioners, people with disabilities, etc.) and territorial criteria (areas or neighbourhoods with a higher propensity towards social vulnerability). These mechanisms are as follows:

- **Discounts in the tariff structure:** discounts are set along with the water price defined under the tariffs or rates approved, as laid down in governing regulations or tax ordinances. These entail an average reduction of 53 % in the amount invoiced.
- **Solidarity Funds:** these are implemented independently from service prices, and fundamentally based on income criteria; besides, these can attract money from different budgetary sources. These entail an average reduction of 55% in the water bill.

As can be seen in Figure 11, 45% of service providers include discounts in their tariff structure, 15% uses solidarity funds and 40% implements both mechanisms.

Finally, the number of customers benefiting from social action mechanisms has increased compared to 2014, reaching 4.7% in 2018.

**Figure 11**  
**Implementation of social action mechanisms in the urban water cycle in Spain**



Source: AEAS-AGA National Study

<sup>18</sup> Spanish Federation of Municipalities and Provinces (FEMP) /AEAS. Study on Water, Law and Responsibility: Guide to the implementation of social action mechanisms in the urban water sector.

<sup>19</sup> National Minimum Wage



On another note, as can be observed in Figure 12, Spain is one of the European countries where efforts made by citizens to pay for water consumption, when considering their available income, are (on average) the lowest, along with Portugal, Italy, Greece and Belgium; thus, ensuring affordable access for the entire population to such an essential resource as water.

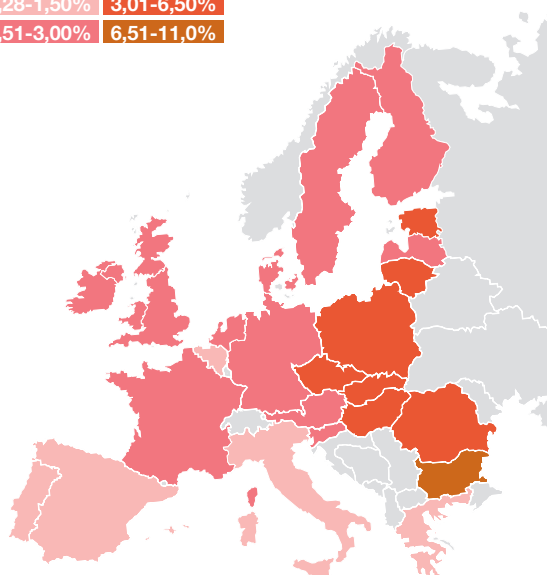
In addition, an analysis of the percentage of income spent on the water bill by low-income groups shows that Spain is also below the European average regarding this aspect, ranking 7th in the list of best positioned countries, thanks to policies and regulations aimed at protecting vulnerable groups.

**Figure 12**  
**Income spent on water**  
**consumption in the**  
**European Union**

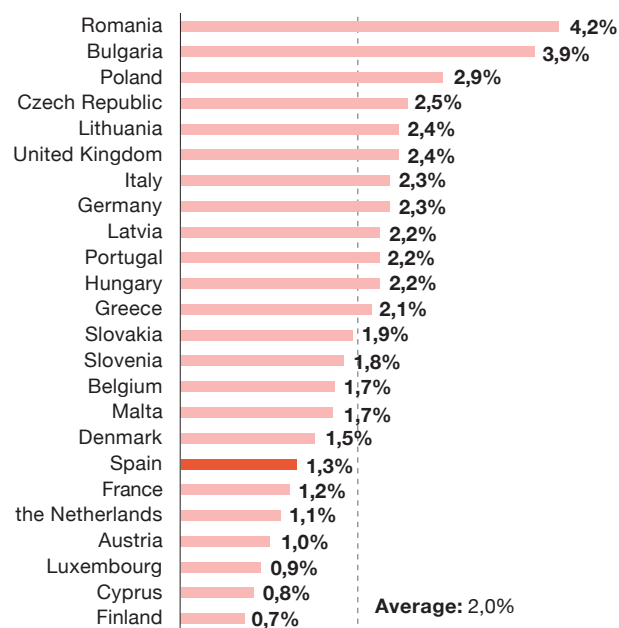
**Available income spent on water consumption**  
[2018]

% average available income

0,28-1,50%	3,01-6,50%
1,51-3,00%	6,51-11,0%



**Available income spent in water consumption by 10%**  
**of the country's population with the lowest income**  
[2019, % available income]



**Source:** European Water Regulators (WAREG), OCDE

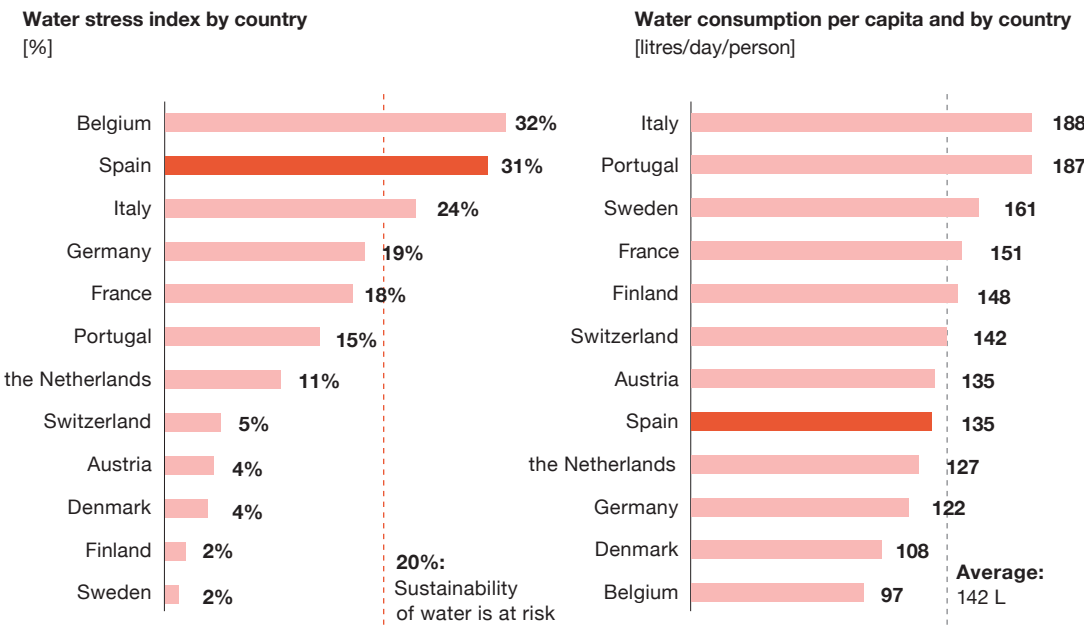
Therefore, it can be concluded that the urban water cycle is a socially responsible sector, since it guarantees the most vulnerable groups can access such an essential resource as water and sets more affordable tariffs than the European average.

3.3. The urban water cycle promotes environmental sustainability and encourages the circular economy

Spain is a water-scarce country, taking into account its water needs and available reserves. Its water stress index is high (31%<sup>20</sup>), which threatens the future sustainability of the resource.

Water consumption per capita in the urban cycle is slightly below the average in the countries analysed, as can be seen in Figure 13.

Figure 13  
Water stress index and water consumption by country



Source: EurEau, Eurostat. Domestic water consumption per capita

<sup>20</sup> The water stress index is calculated taking into account water demands and total available reserves within the integrated water cycle, as well as water quality therein. When this indicator is over 20%, it is considered that the concerned country or region puts the sustainability of the resource at risk



The sector is promoting various initiatives to ensure the sustainability of the resource, including:

**a) Promoting responsible water use:**

For this purpose, in line with the recommendations of the EU WFD<sup>21</sup>, progressive tariff schemes have been adopted, by consumption blocks, so that the higher the consumption, the greater the contribution to the full cost recovery. Besides, outreach initiatives are plenty, by means of saving campaigns and rational water use, with the involvement of service providers, local governments and Autonomous Communities<sup>22</sup>.

However, the European Commission<sup>23</sup> notes that cost recovery is insufficient and there is still room for encouraging responsible consumption by increasing tariffs for water-intensive users and those who pollute the most.

**b) Promoting the circular economy, water reuse and efficiency in the water cycle:**

In Spain, 10.74% of waste water that is treated in the 2,000 plus waste water treatment plants (WWTP) available is reused, thus putting Spain at the forefront in terms of water reuse when compared to the European average of 2.4 %<sup>24</sup>. In particular, Spain is the country with the second highest rate of water reuse worldwide, surpassed only by Israel.

However, increasing the rate of tertiary-treated waste water<sup>25</sup> is necessary to optimise water reuse, since Spain is far from the European average regarding this essential aspect (39% in Spain vs 58% in the EU), as can be seen in Figure 14.

In addition, old water supply and sanitation infrastructures and underinvestment in water supply and sanitation infrastructures in Spain results in inefficiencies, contributing to water losses or leaks<sup>26</sup>, which are at 22% in Spain, thus increasing the amount of water abstracted and the water stress index.

Finally, investment in water infrastructure would reduce the risk of floods, thus mitigating their negative impacts.

<sup>21</sup> Spanish Federation of Municipalities and Provinces (FEMP) (Guide on Water Supply and Sanitation Service Tariffs)

<sup>22</sup> Autonomous Communities is the name given to the different Regions in Spain.

<sup>23</sup> EU water legislation - Fitness Check

<sup>24</sup> AQUAE Foundation and National University of Distance Education (UNED), Water Economy Aquae Professorship [Cátedra Aquae de Economía del Agua] (Study on Water and the Circular Economy)

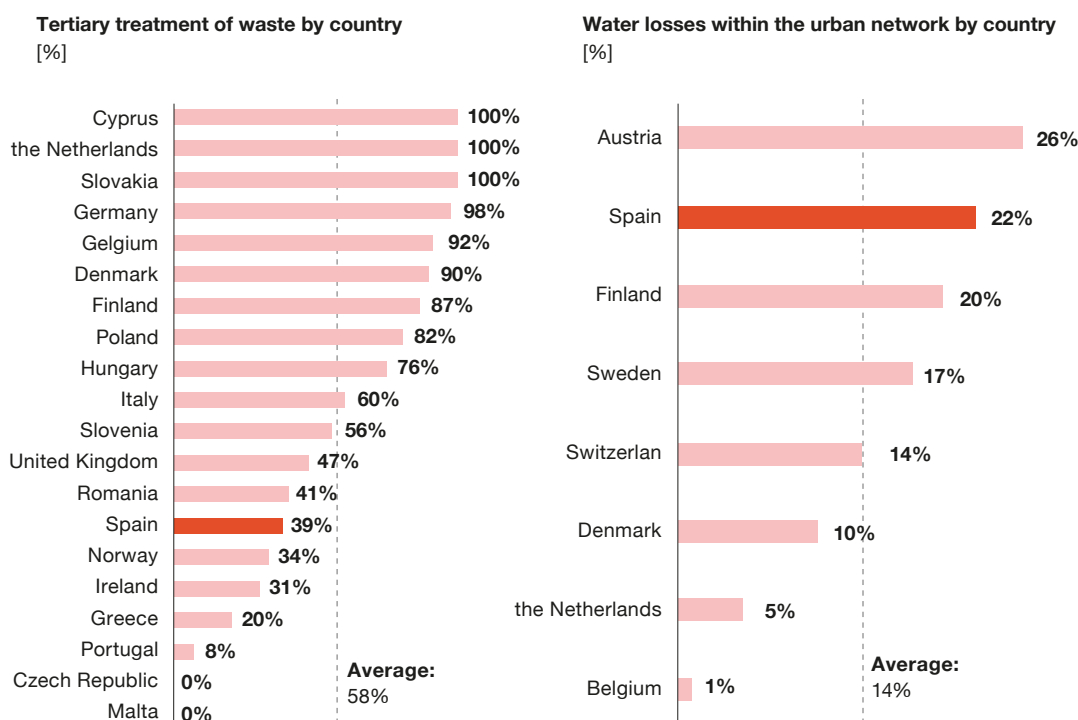
<sup>25</sup> The aim of tertiary treatments is to remove the waste water organic load/suspended solids and other pollutants that were not removed during secondary treatment processes, such as nutrients, phosphorous and nitrogen

<sup>26</sup> AEAS-UNED (Analysis of renewal investment needs of urban water cycle infrastructures)





**Figure 14**  
**Tertiary treatment and**  
**water losses in the urban**  
**water cycle**



Source: EurEau

In conclusion, renewing urban water cycle infrastructure and investing in infrastructure that enables sustainability is crucial to ensure supply and guarantee the continuity and safety of services provided. These investments are essential levers for increasing environmental protection and water reuse and for promoting network efficiency and, thus, meeting the UN SDGs and the objectives of the European Green Deal.

For this purpose, an adequate regulatory framework and partnerships among involved stakeholders, both public bodies and private sector companies, would be necessary to secure financing for investments concerning infrastructures of the urban water cycle.

### c) Promoting the reduction of emissions from the urban water cycle:

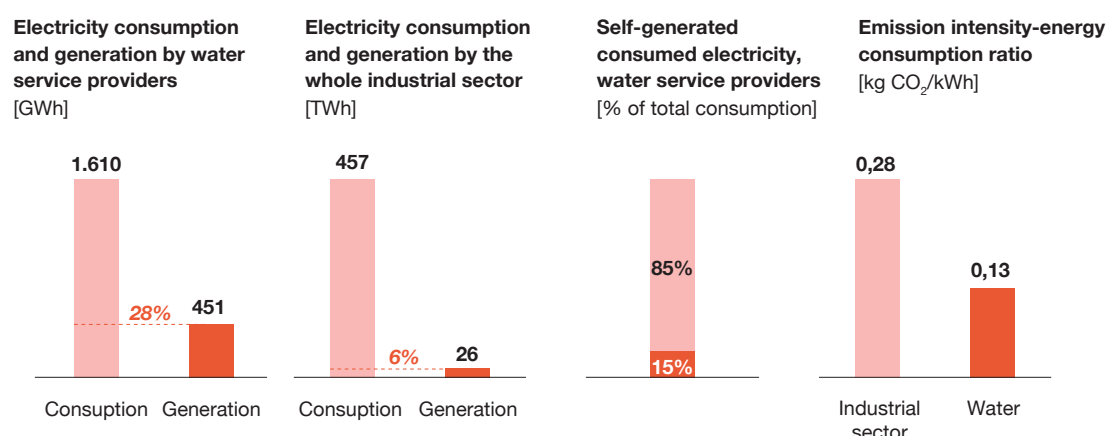
Urban water cycle service providers pursue climate neutrality, therefore using renewable energy vs other polluting energy sources is prioritised, by using hydraulic potential and biogas generated from anaerobic digestion of sewage sludge in WWTPs, introducing solar, wind or thermal technologies (even surface run-off) as part of the national infrastructure set up and, in short, promoting green energy self-consumption instead of energy purchasing.

Compared to the rest of the industrial sector in Spain, water service providers generate 28% of the electricity they consume, while this figure only amounts to 6% regarding the industrial sector as a whole (see Figure 15). In addition, water service providers self-generate 15% of their total electricity consumption.

Finally, 52% of electricity consumed by water service providers is covered by Renewable Energy Certificates (RECs); therefore, carbon emissions from water service providers are less than half of those from the rest of the industrial sector.

This has a positive impact on emission intensity: the urban water cycle releases 0.13 kg CO<sub>2</sub>/kWh, on average, while this figure reaches 0.28 kg CO<sub>2</sub>/kWh for the rest of the industrial sector.

**Figure 15**  
**Green energy used in relation**  
**to total energy consumption by the**  
**urban water cycle and to overall**  
**industrial energy consumption**



**Source:** National Commission on Markets and Competition (CNMC), Institute for Energy Diversification and Saving (IDAE), Annual Accounts of some of Spain's main urban water cycle service providers



“The urban water cycle is find yourself in a position advanced with respect to rest of the Spanish industry in terms of reaching the neutrality of the footprint of carbon, being a sector benchmark in sustainability energy in Spain and promoting the neutrality of carbon footprint.”

Despite good progress being made by service providers related to the urban water cycle, they are still a long way from achieving carbon neutrality.

In conclusion, the urban water cycle is in a leading position in terms of achieving carbon neutrality, compared to the remaining Spanish industrial sector; thus, it acts as a point of reference for energy sustainability and carbon neutrality promotion in Spain. However, increased investments in this sector are needed in order to implement the necessary measures that would allow service providers to better use sewage sludge and operate with greater energy efficiency to achieve carbon neutrality.

### 3.4. The urban water cycle as an element for reducing demographic disparities in sparsely-populated areas

The urban water cycle is a key element for the promotion of investment in smaller municipalities and rural areas, thus further stimulating the local economy in these communities.

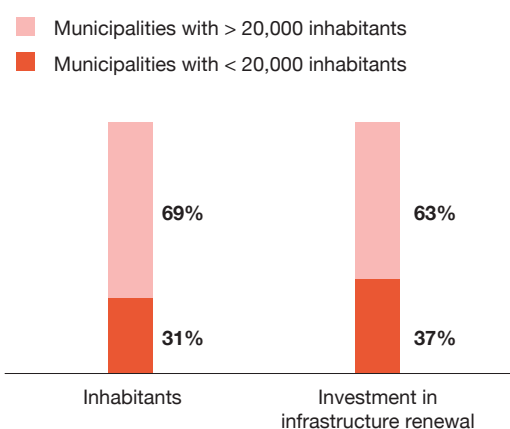
On the basis of population size and investments in infrastructure renewal, investment is higher in smaller municipalities (see Figure 16), since investment per capita figures are greater in these municipalities (€ 579/inhabitant vs € 426/inhabitant), unlike other types of infrastructure investment (e.g. airports, ports, motorways, etc.), which are generally concentrated in major urban centers.

Municipalities with less than 20,000 inhabitants account for 31 % of the Spanish population; however, these are entitled to 37% of investments in the renewal of identified water supply and sanitation infrastructures.

**Figure 16**  
**Investment needs concerning water infrastructures according to municipality size in Spain**

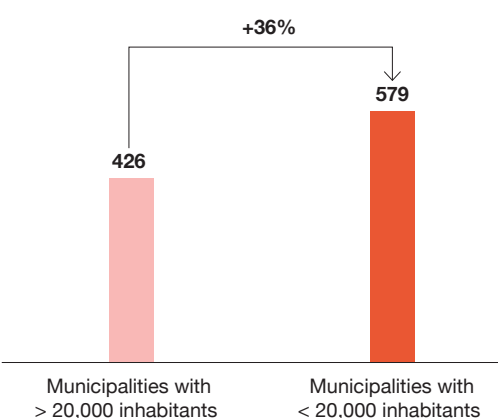
**Comparative analysis between inhabitants and investment needs by population size**

[% population, % investment; 2019 population data, 2020-2030 investment data]



**Required investment in water infrastructure renewal per capita according to population size**

[€ investment/inhabitant; 2020-2030]



**Source:** Spanish National Statistics Institute (INE), National University of Distance Education (UNED), AEAS-AGA

In conclusion, the national set up of infrastructure and water services, which is consistent with local population assets, contributes to the fulfillment of population resettlement and rural population recovery projections, as set out in the current demographic challenges defined by the movement known as “*La España Vacía*” (“Emptied Spain”).





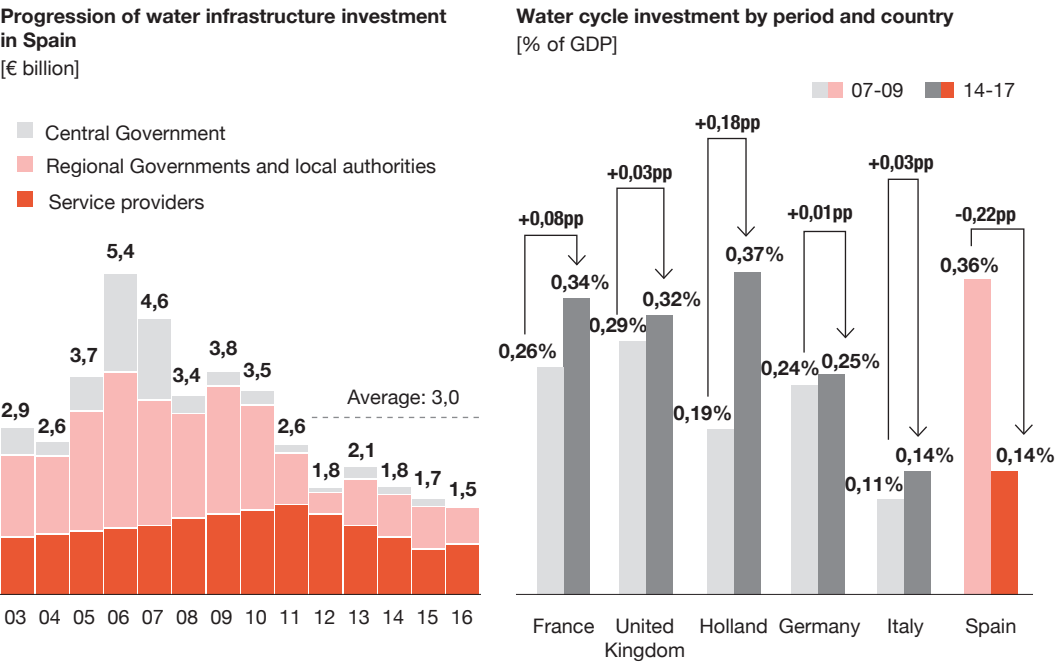


# 4

The urban water cycle can channel investments in the short term, which is necessary to ensure service sustainability

Investments in water infrastructure in Spain have fallen over recent years, mainly due to a major cutback in public funds following the 2008 economic crisis and the drawdown of European funds. Thus, total investment in this sector has nearly halved, from an average of € 3,609 M in 2003-11 to an average of € 1,782 M in 2012-16, and now the contribution of service providers accounts for over 50% of total investment (see Figure 17).

**Figure 17**  
Investment history in Spain and investment history by country



**Source:** Basin Plans, Ministry for the Ecological Transition (Miteco), Global Water Intelligence (GWI)

Thus, the contribution of water infrastructure investment to GDP has more than halved, changing from 0.36% in 2007-09 to 0.14% in 2014-17. However, this progression has not followed the same trend as the rest of European countries analysed, where investment has grown significantly and doubles the GDP share of the current average investment in Spain (see Figure 17); except in the case of Italy, where investment in 2014-17 amounted to a percentage of GDP similar to that recorded in Spain.

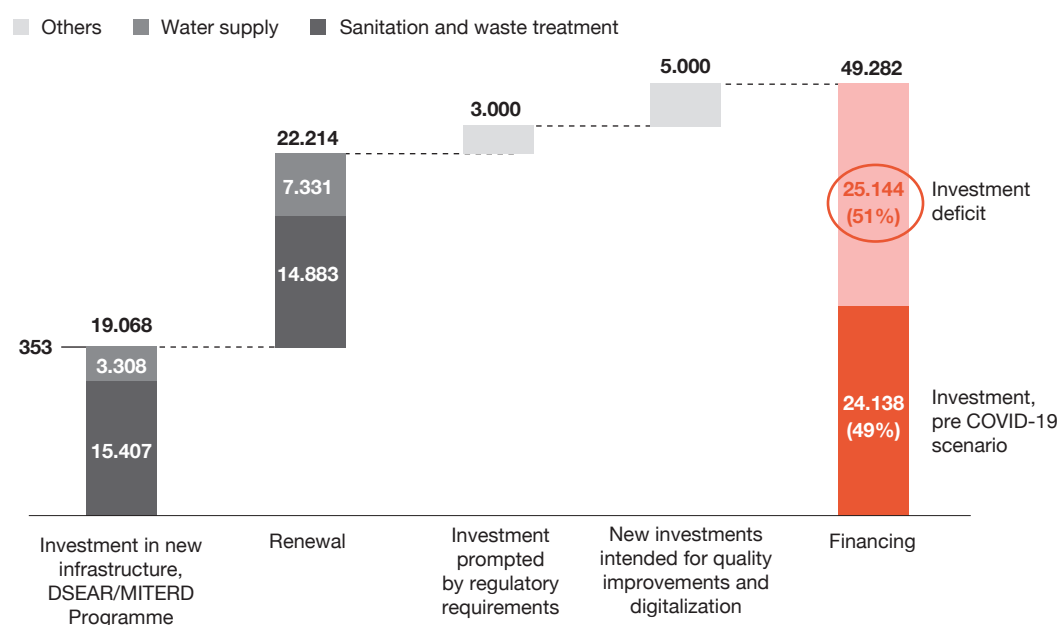
Additionally, in the present context, this sector is in clear need of digitalisation, in terms of both relations with users (which has been proven by lockdown measures during the state of alarm) and that relating to investment planning and infrastructure management (e.g. leak alerts, digital monitoring, teleworking, etc.), to promote the efficiency of operations.



This downward trend in investment, along with new legal and digitalisation requirements, has resulted in a significant investment deficit concerning urban water cycle infrastructures (see Figure 18).

Investment needs of this sector have been estimated at € 49,282 M over the next 10 years; however, should investments over the past years be maintained<sup>27</sup> (by all concerned national, regional and local public governments, as well as other actors involved), only 49% of the above investment needs would be covered. This would produce an investment gap of € 25,144 M.

**Figure 18**  
**Required investments and investment deficit concerning water infrastructure in Spain over the next 10 years<sup>28</sup>**



**Source:** AEAS-AGA, Basin Plans, Ministry for the Ecological Transition (MITECO) DSEAR/MITERD Programme

This investment deficit means the urban water cycle can quickly mobilise investments: (i) investment needs concerning new infrastructures are already detailed and identified in the Basin Plans and the National Waste Water Treatment, Sanitation, Efficiency, Saving and Reuse Programme by the Ministry for the Ecological Transition and Demographic Challenge, DSEAR/MITERD Programme (*Plan DSEAR/MITERD, by its Spanish acronym*) (see Figure 18); (ii) renewal investments are not subject to high bureaucratic pressure (compulsory purchases/expropriation, environmental impact) because these are intended for existing infrastructure; and (iii) investments to improve operation quality and digitalisation are fast-tracked (new technological tools, data analysis, digital tools, etc.).

<sup>27</sup> Investments made in 2009-2016 were applied for calculating the estimated investments that would be made under a hypothetical ongoing pre-COVID-19 scenario

<sup>28</sup> The National Waste Water Treatment, Sanitation, Efficiency, Saving and Reuse Programme by the Ministry for the Ecological Transition and Demographic Challenge, DSEAR/MITERD Programme (*Plan DSEAR/MITERD, by its Spanish acronym*) has been established for a seven-year period. However, for the purposes of calculating the financing needs for ten years, it has been assumed that the programme would be renewed with the same amount awarded.



This fact makes this sector appealing to promote rapid recovery from the crisis, because its investment deficit can be quickly channelled since its needs are identified and detailed, and there is advanced planning in place and available feasible projects.

**Figure 19**  
**Detailed information on required investments in urban water in Spain over the next 10 years<sup>29</sup>**

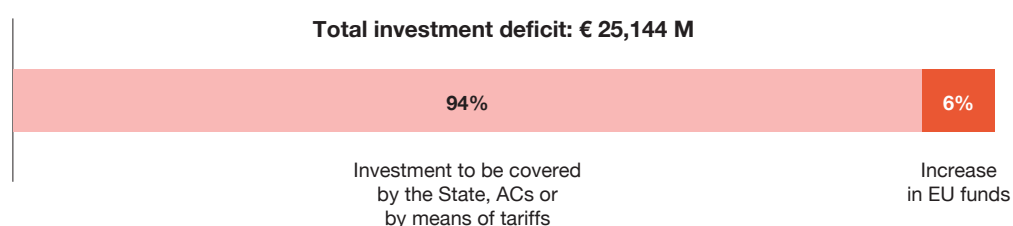
Programme	Code or detailed information	Item	Total invest. H 2030	Total annual
DSEAR/MITERD Programme	Cd: 1	Reduction in point-source pollution	15.407	1.540,7
DSEAR/MITERD Programme	Cd: 3-9-12	Drinking water	3.308	330,8
DSEAR/MITERD Programme	Cd: 10-11	Other UWC governance measures	353	35,3
UWC Renewal	Demographic challenge - Municipalities with <20.000 inh.	Sanitation and waste water treatment	4.820	482
UWC Renewal	Demographic challenge - Municipalities with <20.000 inh.	Water supply	3.491	349,1
UWC Renewal	Municipalities with >20.000 inh.	Sanitation and waste water treatment	10.063	1.006,3
UWC Renewal	Municipalities with >20.000 inh.	Water supply	3.841	384,1
UWC New Requirements	Legal Requirements	Adapting Drinking Water System (Quality, Safety)	3.000	300
UWC New Requirements	Operational modernisation	Equipment, systems, digitalization, technology	5.000	500
<b>Total projected needs</b>			<b>49.283</b>	<b>4.928,3</b>
<b>Investments maintained from the pre COVID-19 scenario</b>			<b>24.138</b>	<b>2.413,8</b>
<b>Deficit to be covered</b>			<b>25.145</b>	<b>2.514,5</b>

**Source:** AEAS-AGA, Basin Plans, MITECO, DSEAR, MITERD Programme

<sup>29</sup> The National Waste Water Treatment, Sanitation, Efficiency, Saving and Reuse Programme by the Ministry for the Ecological Transition and Demographic Challenge, DSEAR/MITERD Programme (Plan DSEAR/MITERD, by its Spanish acronym) has been established for a seven-year period. However, for the purposes of calculating the financing needs for ten years, it has been assumed that the programme would be renewed with the same amount awarded.

Finally, while European funds contained in the European Green Deal and the recovery and reconstruction package Next Generation EU may be partly targeted at covering investments in the urban water cycle, thus increasing investment from the EU, estimates put this increase at approximately € 1,2 billion during the period, which is far from sufficient to address the investment deficit of the sector.

**Figure 20**  
**Financing sources of the deficit regarding water infrastructure**



**Source:** AEAS, Basin Plans, MITECO, AEAS

Therefore, for a long-term solution, reviewing the structure of sectoral tariff models is necessary, as an essential complement of attracting funds to cover the investment efforts required, in accordance with the principle of “adequate user contribution” set out under the WFD and with the “polluter pays” principle, by providing credit guarantees to manage borrowing needs and shift the economic burden from users, within a reasonable timespan.

Similarly, in order to increase public funding by means of private capital contributions, promoting public-private partnership models (with an extensive and positive tradition in Spain, especially in the municipal sphere) is also necessary. Promoting contributions by private stakeholders entails reviewing and adapting legislation, ensuring regulations are consistent with the specific features of this sector<sup>30</sup>.

In short, the need for investment in water cycle infrastructures was prevalent in Spain prior to the onset of the COVID-19 crisis. Ensuring these investments is crucial to promote sustainability and a more efficient water cycle. Besides, these investments will contribute to job creation and economic recovery in the country and can be mobilised immediately, in the short term, and be sustainably maintained in the medium and long term. Reviewing the tariff model, guaranteeing it is consistent with the investment efforts required, and encouraging public-public coordination and public-private partnerships is imperative.

<sup>30</sup> Detail of specific tariff and legislative proposals within the AEAS-AGA study “Moving towards a more efficient financing of urban water cycle infrastructures in Spain”








“To deal with investments is necessary review the rate model, ensuring it is consistent with investment efforts raised, and promote public-public coordination and public-private collaboration.”

# 5

Main socio economic  
and environmental  
benefits derived from  
the stimulation of the  
urban water cycle



As discussed in Sections 5 and 6 herein, the urban water cycle has several specific features that make it an ideal vehicle for recovery and driver of the European Green Deal (as summarised in Figure 21), by generating social, economic and environmental benefits for the whole of Spain.

Figure 21 Main socio economic characteristics of the urban water cycle	
	<b>Employment</b> <ul style="list-style-type: none"><li>• It promotes <b>stable employment</b>, since at 86%, its proportion of permanent employment is significantly higher than the Spanish average of 74%</li><li>• It promotes <b>quality employment</b> with a higher rate of employees who have completed higher education</li><li>• It promotes <b>equal employment</b> since the gender pay gap in the sector is 38% lower than the Spanish average (13% vs. 21%)</li></ul>
	<b>Environmental sustainability</b> <ul style="list-style-type: none"><li>• Water plays a key role in the circular economy and Spain is the country with the second <b>highest rate of water reuse</b> worldwide</li><li>• In terms of emissions, it is a <b>more sustainable sector</b> than the industrial average; since its <b>carbon footprint is lower</b>, while <b>its renewable energy generation and use rate is higher</b></li><li>• Its tariff schemes are graduated, thus <b>fostering sustainable consumption</b></li></ul>
	<b>Protection of vulnerable groups</b> <ul style="list-style-type: none"><li>• Its provides for several <b>social action mechanisms aimed at vulnerable groups</b>. Support is targeted at low-income people, the unemployed, pensioners or large families, and benefits 4.7% of customers</li><li>• Additionally, the percentage of income spent in water consumption by Spanish consumers is among the lowest in Europe, thus guaranteeing <b>tariffs are affordable</b> for the entire population</li></ul>
	<b>Demographic challenge</b> <ul style="list-style-type: none"><li>• The urban water cycle <b>invests in less populated municipalities</b>, thus helping develop their helping develop their economies and slowing down depopulation</li><li>• In fact, the ideal identified investment per capita is 36% higher in municipalities with fewer than 20,000 inhabitants, compared to those with large populations</li></ul>
	<b>Investment capacity</b> <ul style="list-style-type: none"><li>• <b>Investment needs in this sector have to be significant</b> in order to provide a <b>more sustainable, better quality service and reduce pollutione</b></li><li>• This sector is burdened with deficit from past years. Identified <b>needs amount to € 2,5 M annually</b> over the next 10 years</li></ul>

Source: PwC

### 5.1. Socio-economic benefits

From a socio-economic perspective, investing in water infrastructure generates a positive impact on the economy and has great potential for fostering recovery.

Thus, the urban water cycle stands out as a key element for the promotion of economic recovery and can generate quality and permanent employment, while supporting vulnerable groups.

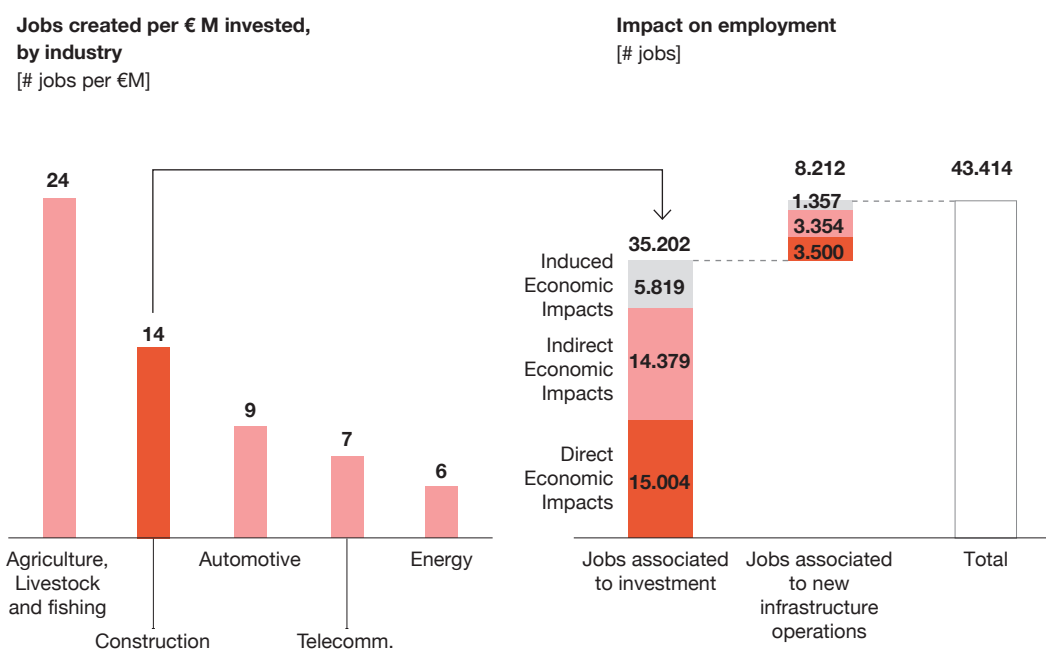
### a) Employment generation

Firstly, investing in urban water cycle infrastructures creates direct, indirect and induced jobs; this fact will be especially relevant during the recovery period facing the Spanish economy over the coming years.

Investing in urban water cycle infrastructures has considerable potential for job creation, with the construction industry being one of the most important sectors (at 14 jobs created per € M invested) (see Figure 22).

In this regard, it is estimated that under a scenario in which investment will be increased to cover the existing deficit (€ 25 M over the next 10 years), the equivalent of 43,414 full-time jobs would be created. This figure takes account of both jobs associated with investment implementation and permanent and stable jobs related to the operation and maintenance of new assets<sup>31</sup>.

**Figure 22**  
**Impact on annual employment**  
**figures resulted from investment**  
**in the urban water cycle**



**Source:** Association of Infrastructure Contractor and Concessionaires (SEOPAN), AEAS, PwC

<sup>31</sup> The number of direct employees associated with the operation and maintenance of assets have been provided by AEAS- AGA

b) Economic recovery:

Beyond job creation, these investments would have a positive effect on GDP. In fact, it is estimated that attracting €2,514 M annually to cover the aforementioned investment deficit would result in an additional annual contribution to GDP of €1,819 M, the equivalent to 0.15% of GDP.

**Figure 23**  
**Impact on GDP of covering the investment deficit [M€]**

Direct economic impact	Indirect economic impact	Included economic impact	
675	797	348	1.819
This impact corresponds to the increase in GDP, employment and tax collection brought about in those sectors that have directly benefited from the increased volume of investments made in the water sector	This impact refers to the carryover effect caused by said rise in the economic activity on the remaining companies in the supply chain serving the companies belonging to the “Direct impact category”	Economic activity generated additionally as a result of the increase in household consumption prompted by the created jobs	

Source: SEOPAN, PwC

c) Demographic challenge

The national set up of infrastructures and water services, which is consistent with local population assets, contributes to the fulfilment of population resettlement and rural population recovery projections, as set out in the current demographic challenges defined by the movement known as “La España Vacía” (“Emptied Spain”). Specifically, investments intended for infrastructure renewal are 36% higher in municipalities with less than 20,000 inhabitants, compared to those with larger populations.

## 5.2. Environmental Benefits

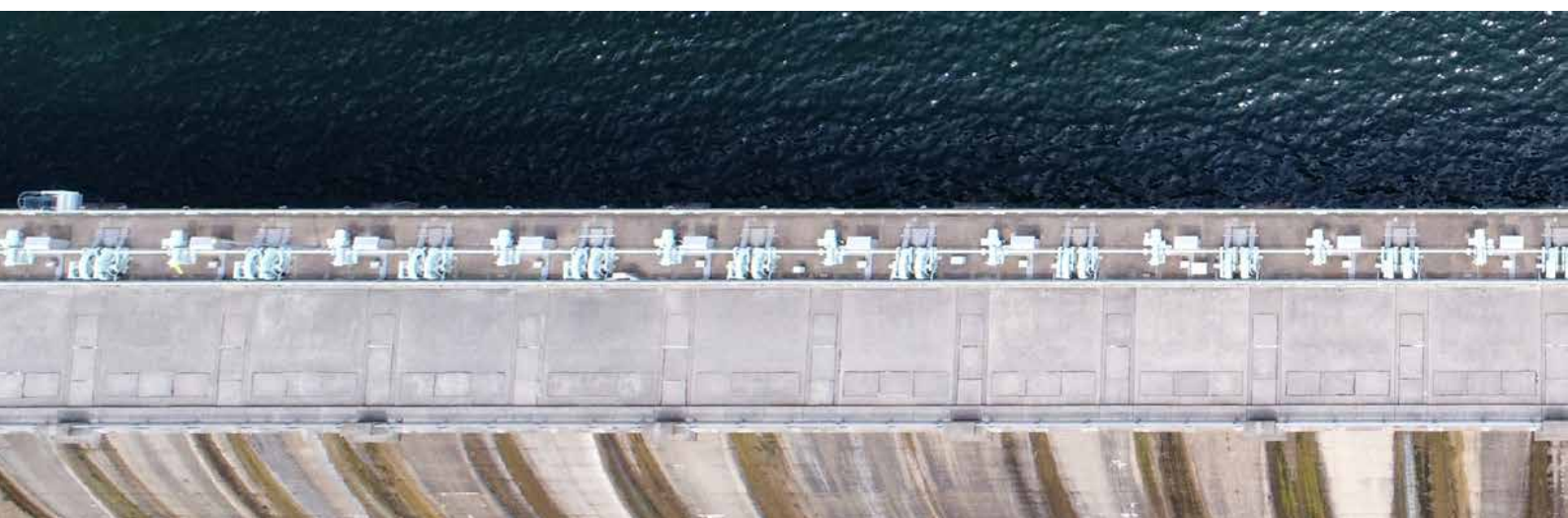
From an environmental perspective, investments in urban water cycle infrastructure are particularly important given how scarce this resource is, especially in a country like Spain, which already presents a high water stress index<sup>32</sup>; this fact makes it all the more necessary to have infrastructure in good condition that ensures environmental sustainability and protection from extreme weather events, whose prognosis is already well-known on the grounds of scientific studies conducted on climate change.

Covering the current investment deficit concerning urban water cycle infrastructure would help Spain align with other European countries in terms of environmental indicators. Besides, investing in the urban water cycle would allow Spain to be consistent and advance towards the attainment of the 4 objectives set out in the European Green Deal. Specifically, this investment would provide the following benefits:

- Increasing the rate of tertiary-treated waste water, currently at 38%, to over 95%, which would approach the Netherlands (100%) and Germany's level (98%). This measure would increase the waste water treatment rate before its discharge into natural waterways, thus reducing pollution and complying with Directive 91/271/EEC concerning urban waste water treatment.

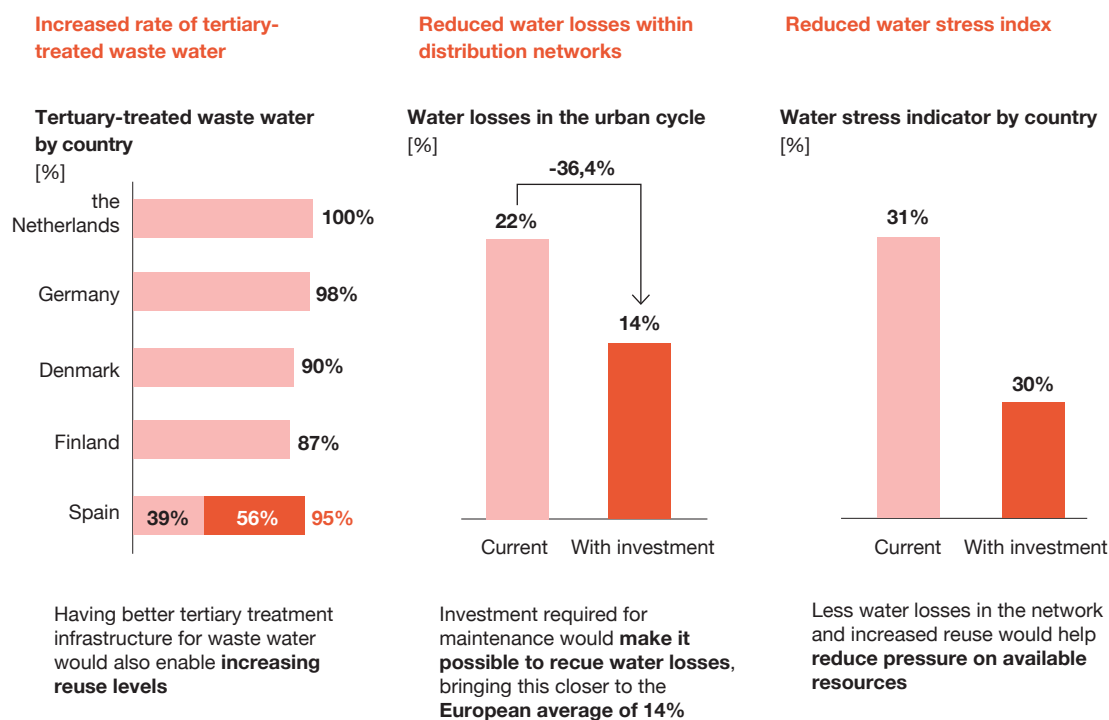
Furthermore, it would also increase the rate of water reuse, even though Spain is the second country worldwide in this respect (at 11%), though it is still nowhere near Israel (which reuses 87% of its treated water).

- Decreasing the rate of water leaks or losses, currently at 22%, to the average in the European countries analysed, at 14%. This measure would reduce water abstraction for urban purposes and the water stress index, thus increasing the sustainability of this resource.
- Optimising the water stress index, from the current 31% to 30%, shifting the upward trend recorded over the last decades. While urban water consumption accounts for only 10% of total water consumption, reducing water leaks and increasing reuse would have a positive impact on the water stress index.
- Achieving carbon neutrality by promoting biogas and/or biomethane, generating energy through mini-hydro power plants, reusing renewable fuels, seizing the opportunities offered by other renewable sources (wind, solar, etc.) and cogeneration and implementing self-consumption, ensuring all energy used in the urban water cycle is green energy.
- Minimising the risk of floods and other extreme weather events, thus mitigating their impacts and making cities more resilient.



<sup>32</sup> Aquastat, AEAS

**Figure 24**  
**Environmental benefits**



**Source:** EurEau, OCDE, Eurostat, PwC





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