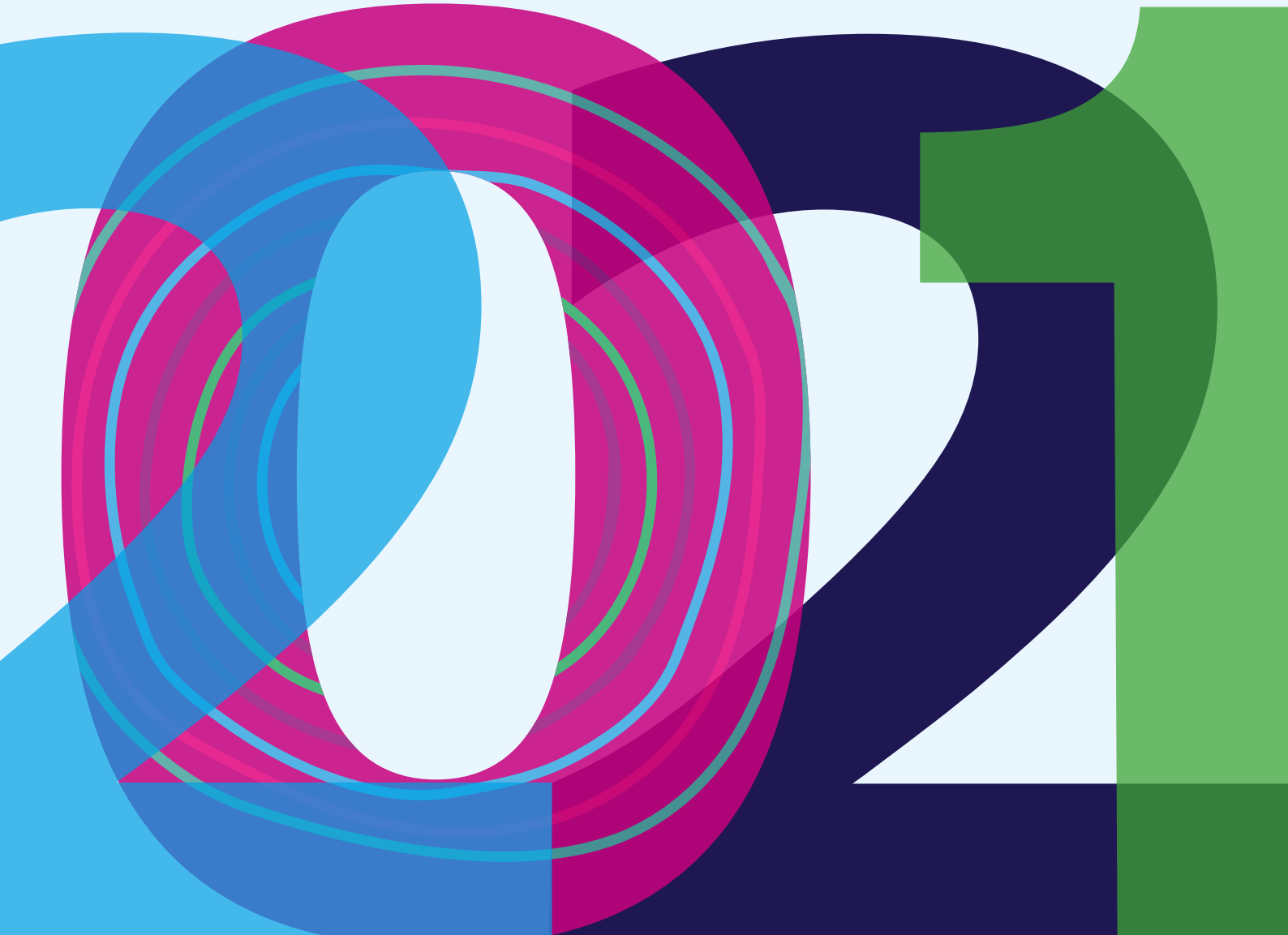
EurEau

Europe's Water in Figures

An overview of the European drinking water and waste water sectors

2021 edition



Foreword

From morning until night and even while we sleep, our water operators are working 24 hours a day, and seven days a week, to deliver sustainable services that keep each of us safe and healthy.

Most people are unaware of this clockwork process, but drinking water is continually being safely delivered to our homes and workplaces while waste water is likewise treated and returned to the environment. We are very proud of our work. Water is essential for life. Our sector is transparent in providing these essential services.

Every day, we deliver water services to over 500 million people. Behind this are 500 million stories of how these services are delivered, what happens to the residual waste and how the by-products are reused. It is with great pleasure we present Europe's Water in Figures, telling some of this story.

This edition updates the 2017 report. A lot has changed in these four years. We welcome that health and environmental standards have become more stringent, technology has improved and consumers are more knowledgeable. In a number of cases, we are able to show the change in comparative graphs.

The complex processes that we put in place to meet these changes are adapted to their specific local circumstances. They depend on factors such as population density, the type and available quantity of water resources, required treatment levels, local topography and many other elements. Additional factors influencing prices, costs and asset values include the scope of the service, salary levels, taxes and the facility running costs.

We believe that our survey is the most comprehensive currently available. It includes national technical, economic and managerial data ranging from population connection rates to drinking water production to waste water treatment levels to prices and governance. The results testify to the diversity of the sector. They also show some of the immediate challenges our sector is facing, particularly regarding investment needs.

Bearing this in mind, we would like to issue a small caveat. Each of the EurEau member organisations operates in particular national circumstances that do not allow for simple comparisons between countries.

On top of this, varying local conditions exist within countries. The national average value cannot display the range of individual results. Therefore, each graph is preceded by a short note explaining the reasons for the differences in national results.

You will quickly realise that not all countries have provided data. In many cases, we could extrapolate the results across Europe. A small number of graphs reflect the situation in less than half of the Member States. The main reason for these data gaps lies in the diversity of national figures which are sometimes not comparable. In other cases, specific data are simply not collected in certain countries.

The Green Deal adopted by the European Commission in 2019 will have, over time, a substantial impact on the water sector. Our sector is firmly committed to meeting the goals of this ambitious strategy. With this in mind, we added a section on the energy use, the energy production and CO2 emissions of our sector.

We hope you will find the information contained in this report useful.

Dr Claudia Castell-Exner
EurEau President

Acknowledgements

We would like to thank Liviu Simionov, SCADA Maintenance and Data Reporting Chief Officer from Apa Nova București S.A. for the support he provided in performing the data management for this report. It was of great value and represents a great amount of work that Liviu managed to deliver with quality and on due time. Mulțumiri, Liviu, and to Apa Nova București S.A. for seconding him to us for this project.

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Table of contents

1 Working hypothesis

As for the 2017 edition, the presented data were collected from EurEau members. Our members used their own information or that from national official statistical services. EurEau is only responsible for assembling, checking for general consistency, extrapolating and presenting those individual data. In any circumstances, EurEau cannot take responsibility for any inaccuracy of specific data.

The data were not always available in each country and in order to evaluate the statistics at European level (only EurEau members), data was extrapolated over all members according to the most relevant variable, to estimate the missing values. For each figure where an extrapolation is presented, the characteristics are described (variables and regression coefficient). More generally in the report, when we refer to 'European' data this refers to EurEau member countries.

As every country collects data with different frequencies, there is no reference year where all the data are collected. However, statistics from the water sector do not vary as quickly as other sectors and we are confident that comparing data, relating to the 2017-2019 period, gives an accurate picture of the sector.

For a number of indicators, this updated report shows the evolution since the 2017 survey, provided the definition of the indicator did not change. The evolution is limited to European average values. As the extrapolations for the EU are based on the data reported by members and some members provided more data for this report than they did in 2017, the extrapolated numbers vary according to the accuracy of the model, on top of the real evolution of national data.

For clarity in the figures, the country codes have been used in the x-axis. Table 1 regroups the country codes to help the reader to read the figures. The data used to build the figures are available in the annex on pages 34-36.

Finally, when data are not available for a country, it is referred to as N.A. on the graph.

Table 1
Country codes

AT Austria	**DE** Germany	**FR** France	**MT** Malta	**RS** Serbia
BE Belgium	**DK** Denmark	**HU** Hungary	**NL** The Netherlands	**SE** Sweden
BG Bulgaria	**EE** Estonia	**HR** Croatia	**NO** Norway	**SI** Slovenia
CH Switzerland	**EL** Greece	**IE** Ireland	**PL** Poland	**SK** Slovakia
CY Cyprus	**ES** Spain	**IT** Italy	**PT** Portugal	**UK** The United Kingdom
CZ Czech Republic	**FI** Finland	**LU** Luxembourg	**RO** Romania	**EUR*** EurEau members

2 General information

2.1 Population connected to a network

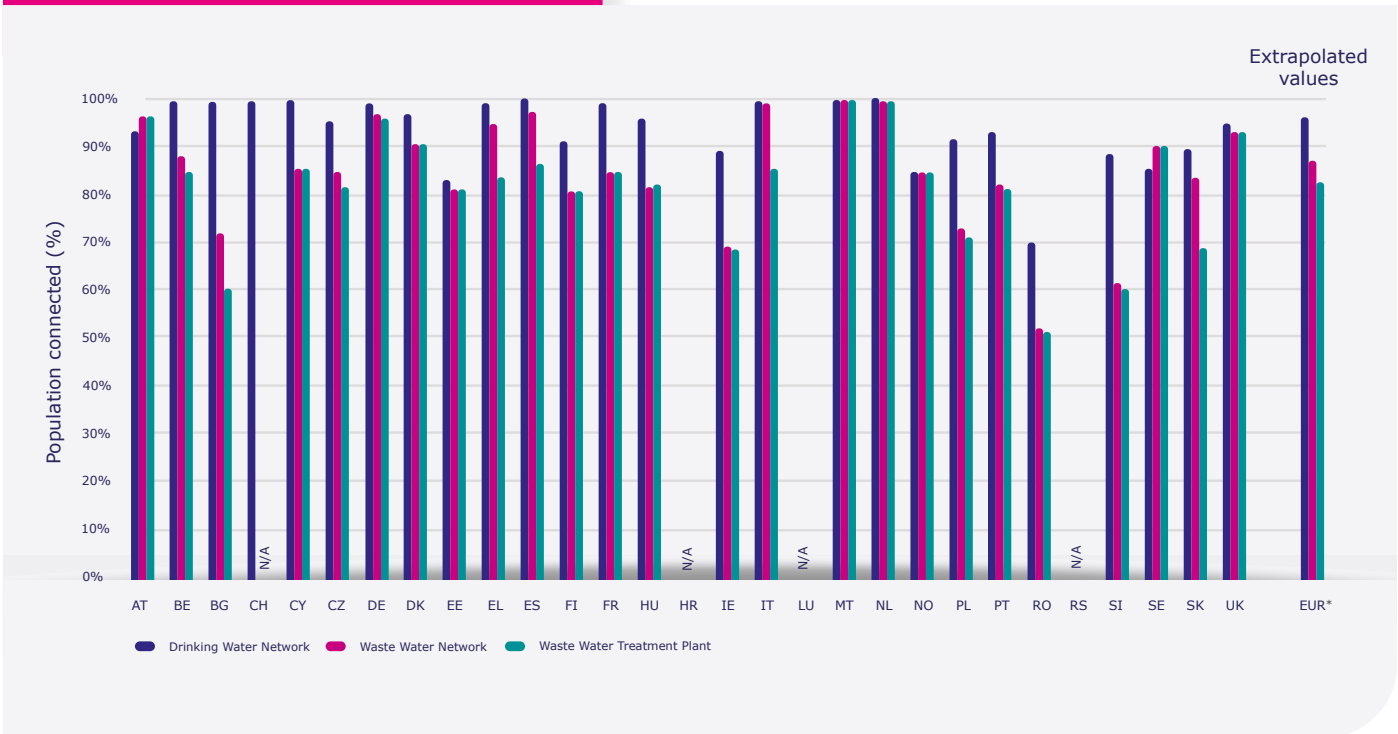
Figure 1 presents the percentage of people connected to a drinking water network, a waste water network and a waste water treatment plant per country as well as the overall percentages for Europe.

The extrapolation for the European data was done using the same values for missing data as those used in the two preceding EurEau statistical overview reports[1], with the assumption that connection rates did not increase. This is conservative, as the connection rate improved over time.

For the 29 EurEau member countries, we extrapolate that 507 million inhabitants are connected to a drinking water network, while 458 million people are connected to a waste water collection network and 436 million are connected to a waste water treatment plant. Compared to the 2017 survey it represents an increase of 1.6% for connection to the drinking water network, 1.7% for connection to a waste water collection system and 0.2% for the connection to a waste water treatment plant.

It has to be noted that the connection to a collection system and a waste water treatment plant presented in Figure 1 does not include the population connected to an individual sanitation system such as a private septic tank. In this instance, the waste water is still treated before it is returned to the environment.

Figure 1
Population connected to a water service network



[1] EurEau Statistics Overview on Water and Wastewater in Europe 2008 (Edition 2009), June 2009, Brussels and Europe's Water in Figures (2017).

2.2 Annual billing

Figure 2 presents the revenue collected through water bills, by type of service and type of customer. When this information is not available, the total by service or the total billed is displayed. Figure 3 presents the same data reported by inhabitant.

The extrapolation for Europe was based on the average annual billing rate according to the total population of each country. The extrapolation was carried out for the total amount billed and not for each service, as the coverage of each type of service by the bill is different for each country. Obviously, the overall billing largely depends on the number of inhabitants.

The overall billed amount is €108 Billion, 21% higher than in the 2017 report. It represents a large increase in revenue. However, it is worth noting that the data from Germany were not available in 2017, which improves the extrapolation model used in 2020, given Germany's size. The mean value for the billing rate is €188/inhabitant and the median value is €168/inhabitant. Figure 3 should not be compared with the annual water bill per household presented in Figure 10 as it encompasses industrial use and the entire population is taken as a basis, instead of households.

Figure 2
Annual revenue collected from the different water services (VAT excluded)

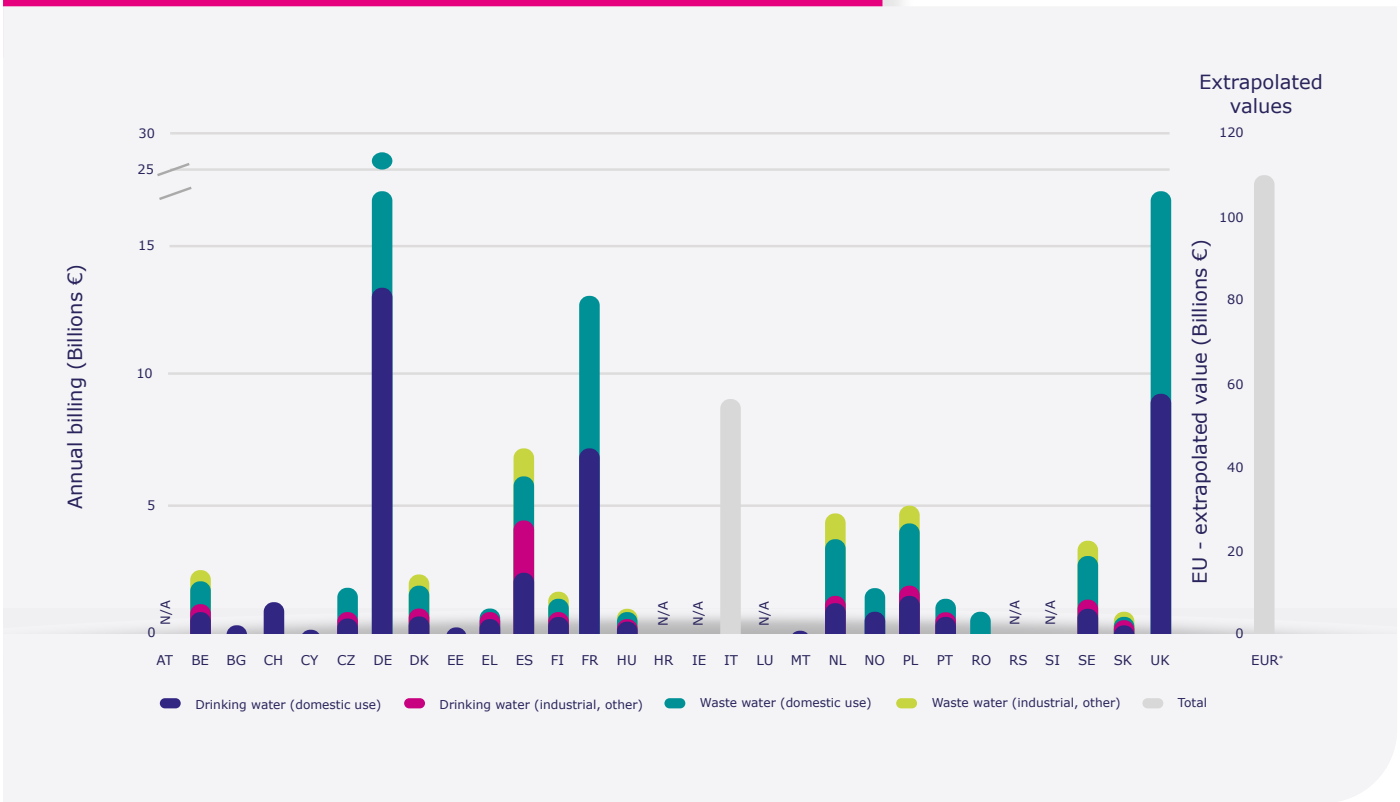
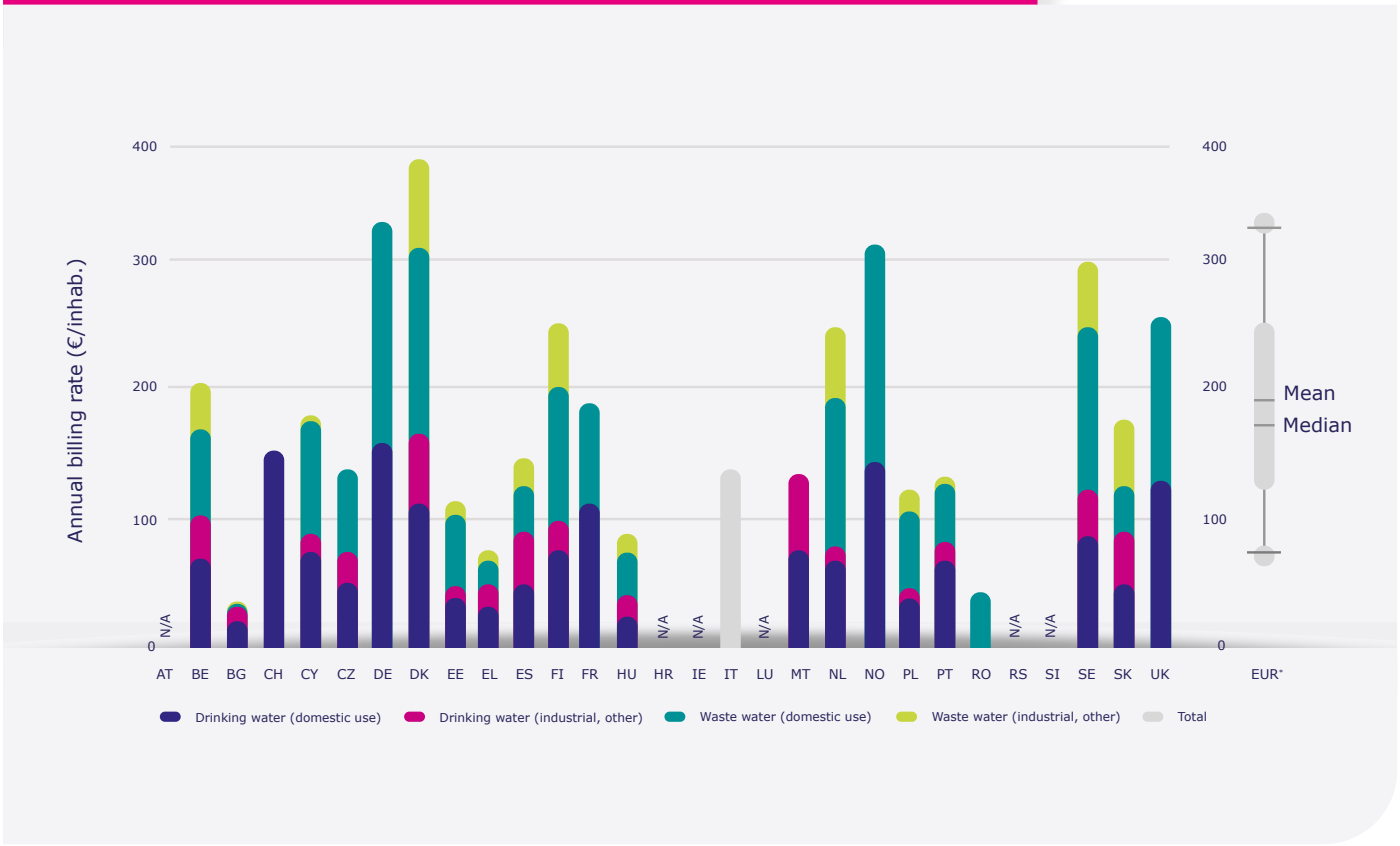


Figure 3
Annual revenue collected from the different water services per inhabitant (VAT excluded)

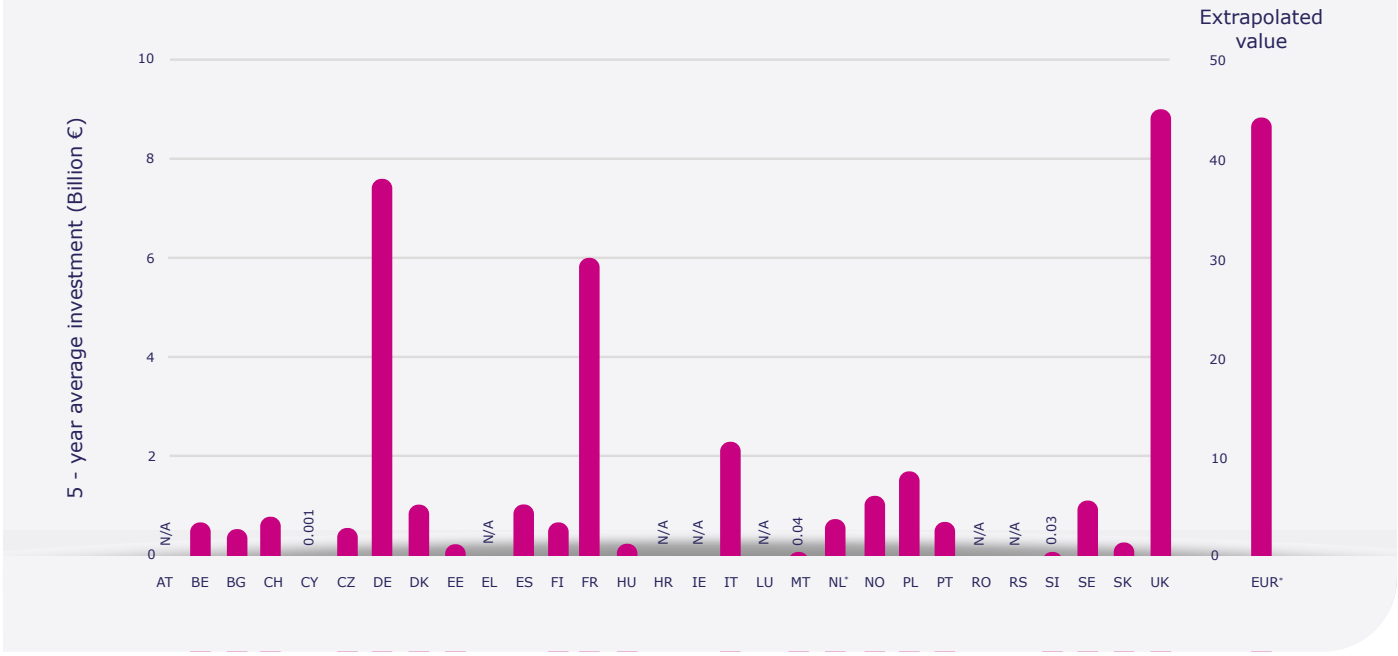


2.3 Investment

Figure 4 presents the total amount of money invested in drinking and waste water infrastructure annually. The extrapolation is derived from the average investment rate according to the total country population. Investment and investment rates can change significantly from one year to the next. The data in Figures 4 and 5 are therefore based on a five-year average, whereas the 2017 report represented a one-year snap shot.

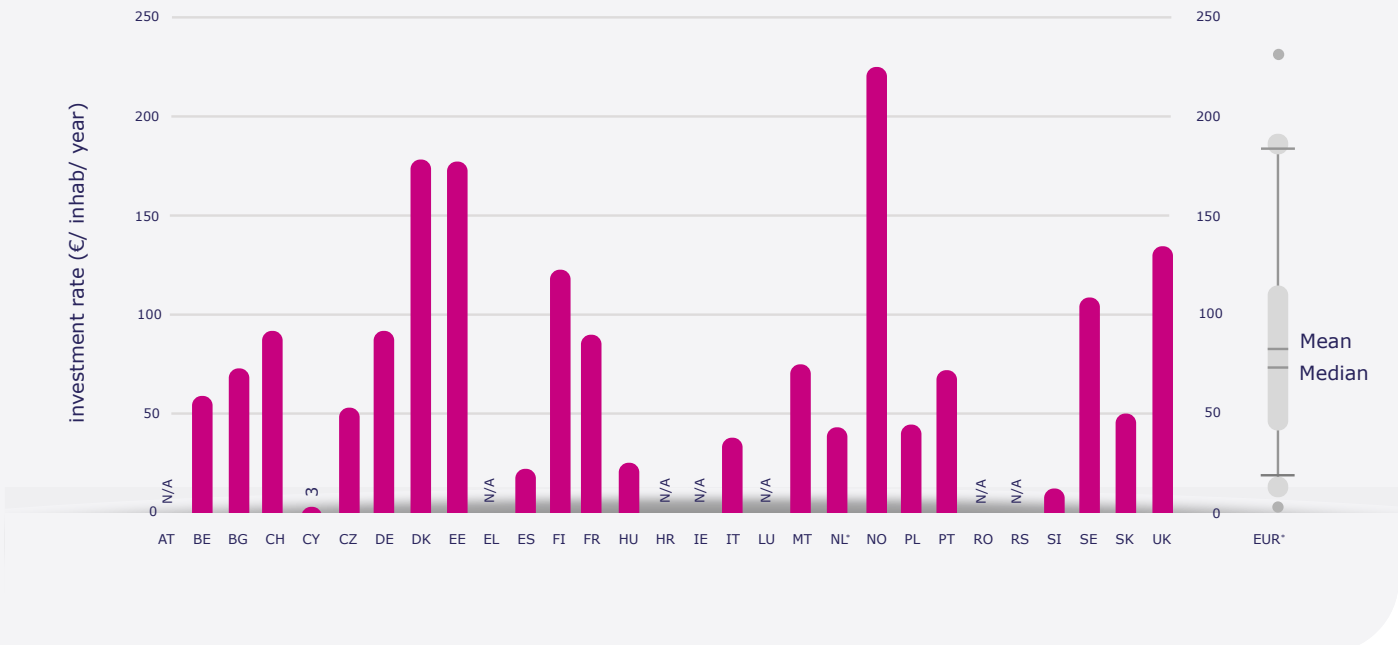
Annually, the water services providers invest approximately €45 billion in infrastructure. This means that, on average, water services providers invest €82 per inhabitant per year (median value is €73 per inhabitant per year) (Figure 5) in water infrastructure. These investments are financed mainly through tariffs (water bill), taxes and transfers (from European Union financing schemes or loans from other countries/organisations). The investment rate depends on many factors including investments to comply with EU legislation, national upgrading requirements, the cost of manpower etc.

Figure 4
Total annual investment in drinking and waste water infrastructure (5-year average)



*NL does not include all investments in sewerage infrastructure.

Figure 5
Annual investment rate in both drinking and waste water infrastructure (5-year average)



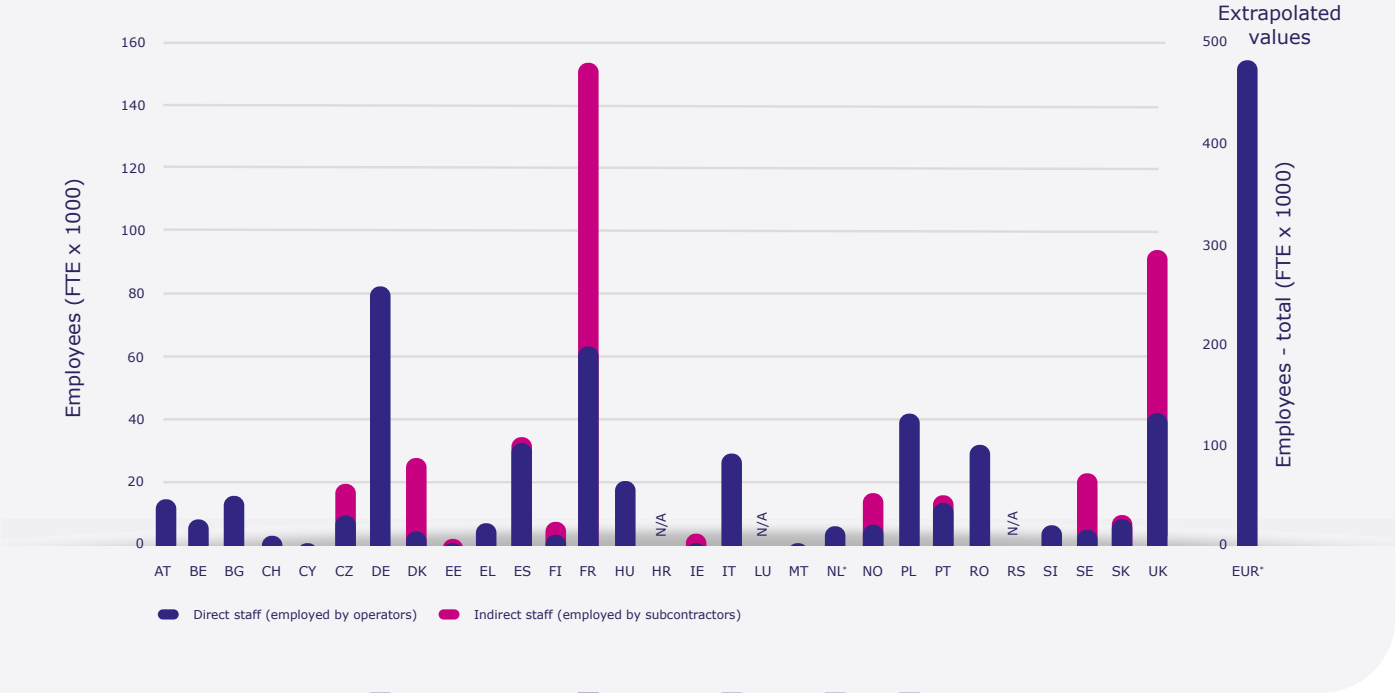
*NL does not include all investments in sewerage infrastructure.

2.4 Employment

In this section, we wanted to quantify the workforce that water services represent. Figure 6 shows the direct and indirect employment provided by water services in Europe, covering both drinking and waste water services. Direct employment comprises the people employed by water operators for the design, construction, maintenance, control and management of water services. The indirect employment is a rough estimation of jobs generated by water services. It can cover employment in subcontracted companies as well as the share of the employment related to the production and distribution of equipment and chemical products used in the water services. This figure is difficult to measure and can vary a lot but it is presented as it is important to include it when talking about the impact of water services on employment in Europe.

As the numbers regarding indirect employment are not reliable, the extrapolation has only been made for direct employment and based on the average share of the total country population. Water services in Europe employ 475,000 full time equivalent (FTE) people, which represents 0.1% of the EurEau member countries' population.

Figure 6
Direct and indirect employment generated by water services in EurEau member countries



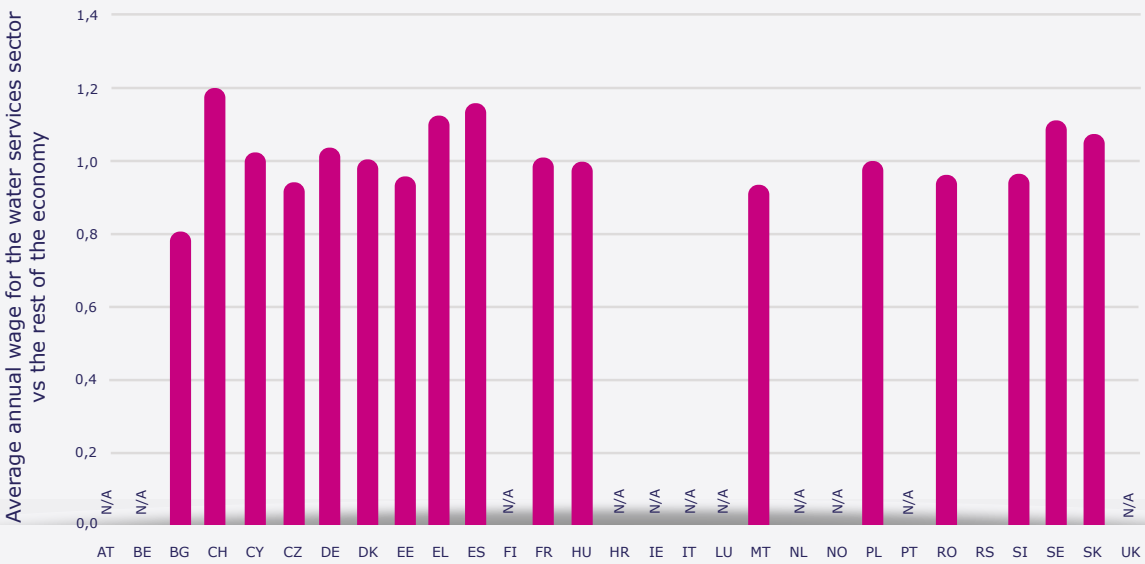
*NL does not include all FTE in sewerage infrastructure

The number of direct jobs has remained largely stable over the past years.

The water sector is facing an employment crisis, however. It needs highly-qualified professionals to deal with the increase in the complexity of drinking water and waste water treatment processes (digitalisation, new pollutants, circular economy) and to replace an ageing workforce. One way to measure the attractiveness of the sector is a comparison of its wage/salary levels compared with the overall economy.

As Figure 7 shows, pay levels in many countries are in line with or above the national average. However, in 8 out of 17 countries, water sector employees receive lower wages/salaries than national average levels.

Figure 7
Average wages for the water sector compared to the average wages for the rest of the economy in EurEau member countries



2.5 Management

Figure 8 and Figure 9 respectively present the percentage of the population covered by the different types of drinking water and waste water management models in European countries. The type of management is a competence of the individual country which gives a lot of variation.

For clarification, the definition of the management types are as follows:

- **Local government department:** the infrastructure and the service are owned and managed entirely by a public authority being a municipality or a group of municipalities.
- **Publicly owned company:** the infrastructure is publicly owned by the local authority and the service is delegated to a publicly owned company.
- **Private operator:** the infrastructure is publicly owned by the local authority but the service is delegated to private company.
- **Privatisation:** the infrastructure and the service are owned and managed entirely by a private company, generally supervised by a public regulator.
- **Public-Private joint venture:** the infrastructure and the service are owned and managed entirely by a consortium made up of public and private companies.

Figure 8
Percentage of the population served by drinking water services for different management types

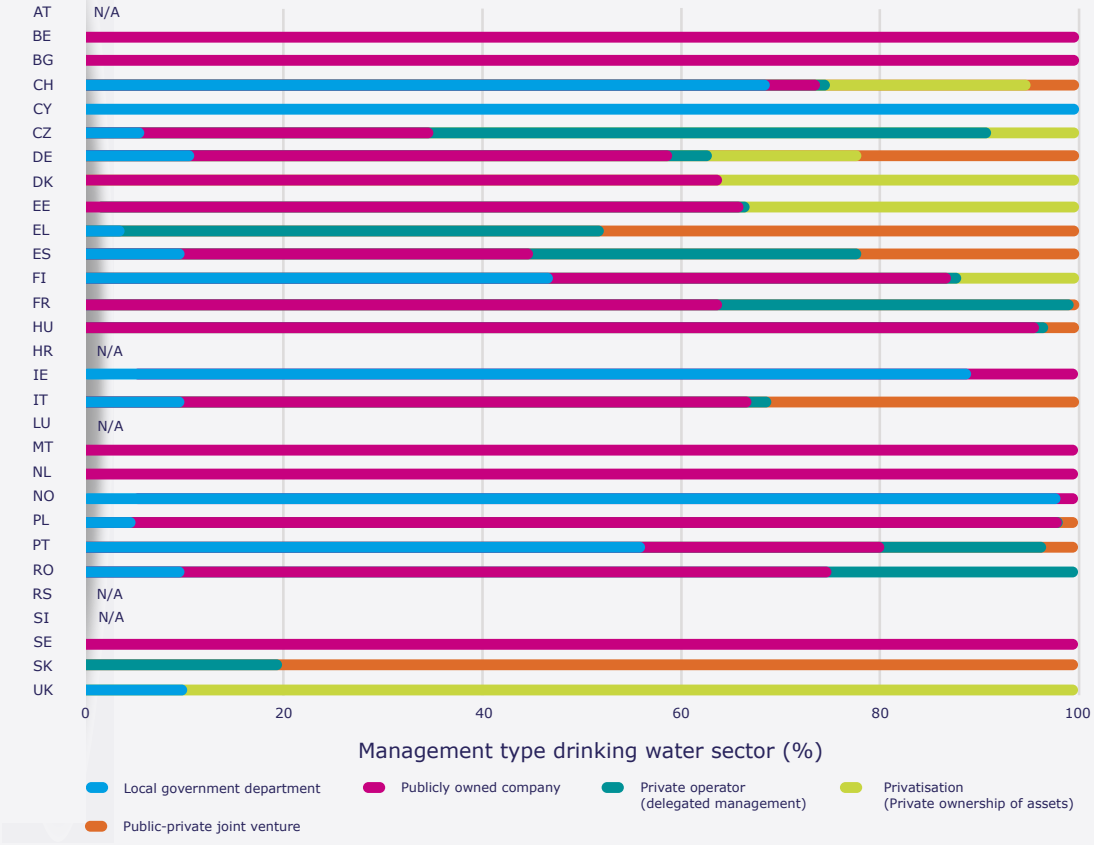
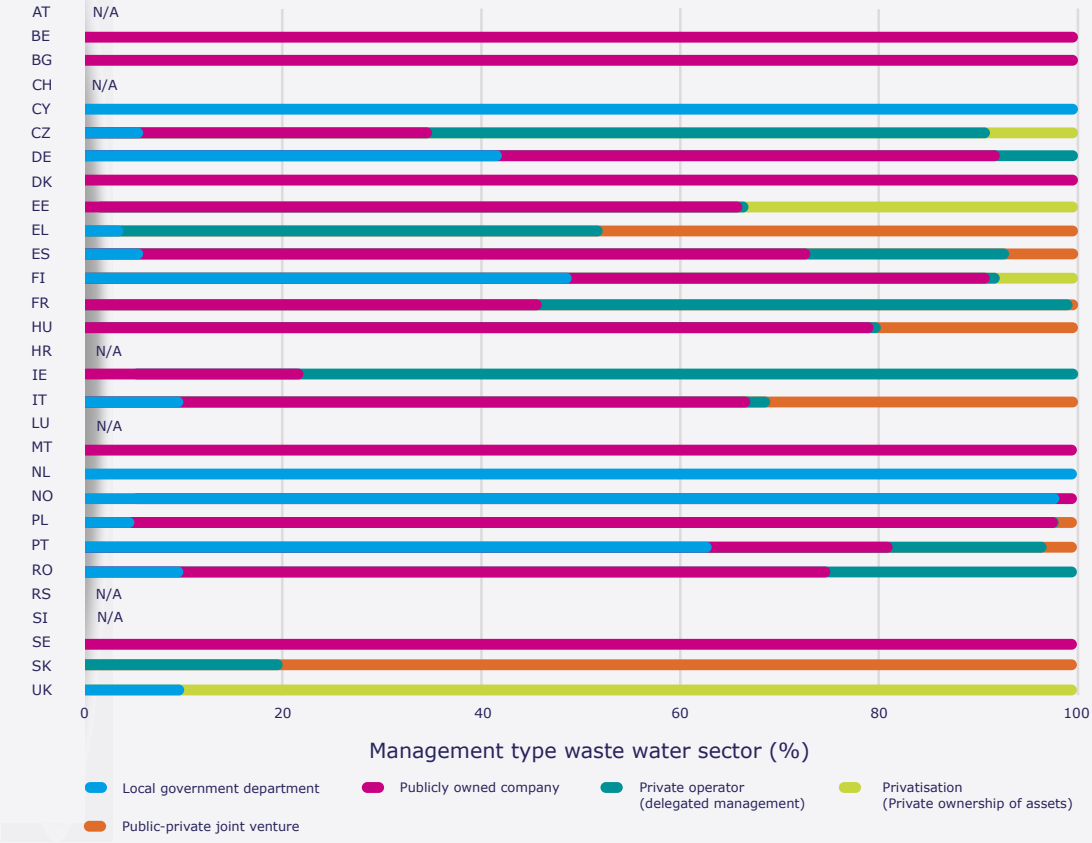


Figure 9
Percentage of the population served by waste water services for different management types



2.6 Water tariffs

Water tariffing is a complex topic as tariffs depend on multiple local parameters like tax level, water sources (groundwater usually requires less treatment than surface water or desalination), the length of network per inhabitant, receiving water (sensitive areas require a higher level of treatment for waste water), etc.

It is generally regulated through a public body; either an official regulator or the local government. Figure 10 and Figure 11 also present averages at country level which might be composed of very different local prices. They are useful in evaluating the global diversity of prices across Europe but a direct comparison of water bills or the price per cubic metre between countries, or even regions is not possible.

Figure 10
Average annual water bill per household (depending on the country, the figures provided are from between 2017 and 2019)[2]

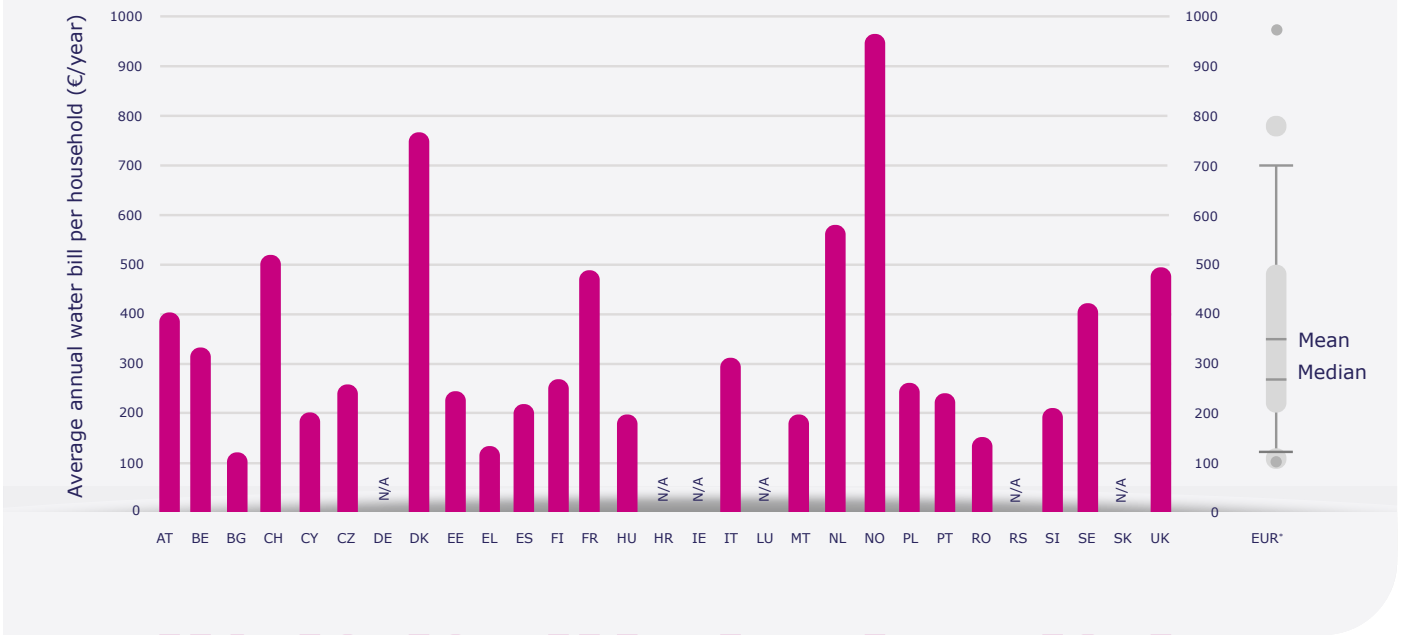
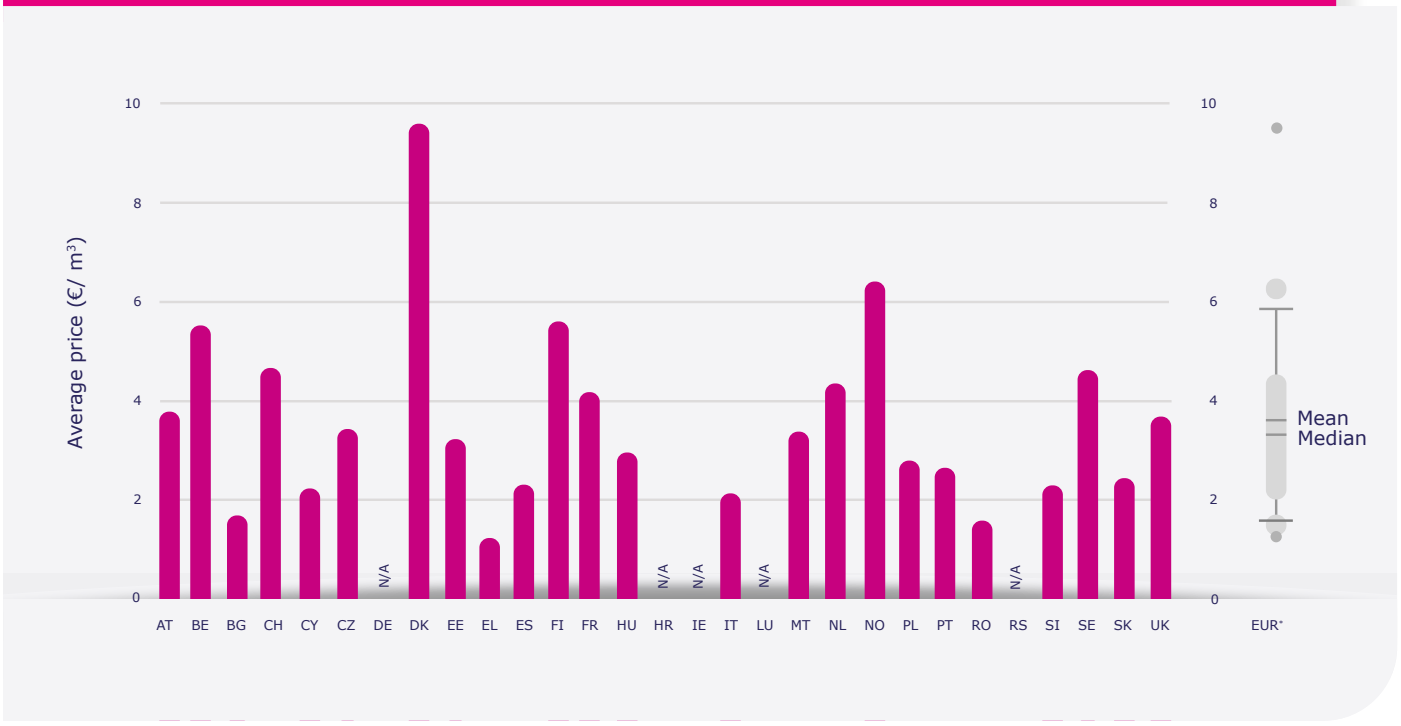


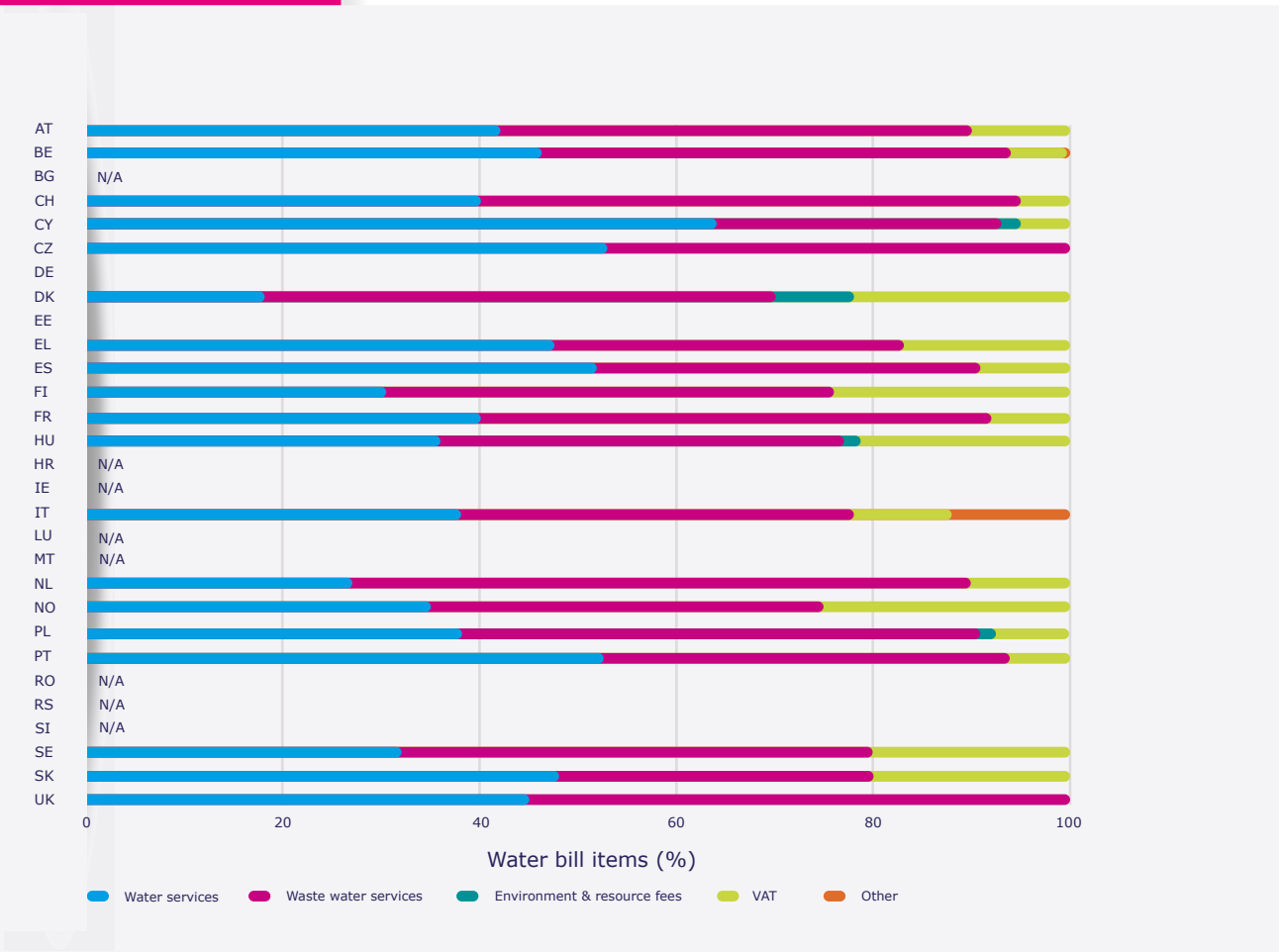
Figure 11
Average price per cubic metre of water considering both drinking and waste water (depending on the country, the figures provided are from between 2017 and 2019)[2]



[2] For Germany, see the VEWA–study: comparisons of water and waste water, 3rd edition, BDEW. The methodology used in this study is different and the numbers should not be compared to those presented here.

The main elements of the water tariff (price per cubic meter) are the costs to provide drinking water and waste water services. Depending on the country, it may comprise additional elements such as taxes, fees or rain water charges. Figure 12 provides examples of the average composition of national water tariffs.

Figure 12
Composition of the water tariff



3 Drinking Water Services

3.1 Length of network

Figure 13 presents the total length of the drinking water pipe network per country. The data was extrapolated according to the population connected to a drinking water network with a coefficient of determination R2 of 0.836. The countries that did not supply data for this calculation each tend to have a shorter network, so the total length of the drinking water pipe network in Europe is not very sensitive to this extrapolation.

The total length of the drinking water network in Europe is 4.3 million km of pipes, which represents 11 times the distance from the Earth to the Moon. This infrastructure requires maintenance and investments to continue guaranteeing service and provide clean and safe water for all and to the highest standards as is our duty.

Figure 14 presents the length of the drinking water network per connected inhabitant. It ranges from 4.35 m/inhabitant for Romania to 19.57 m/inhabitant for Finland. Such differences in infrastructure are mainly due to population density and the number of small local water works.

Given very high connection rates, these values have only marginally changed since our 2017 report.

Figure 13
Length of the drinking water pipe network in Europe

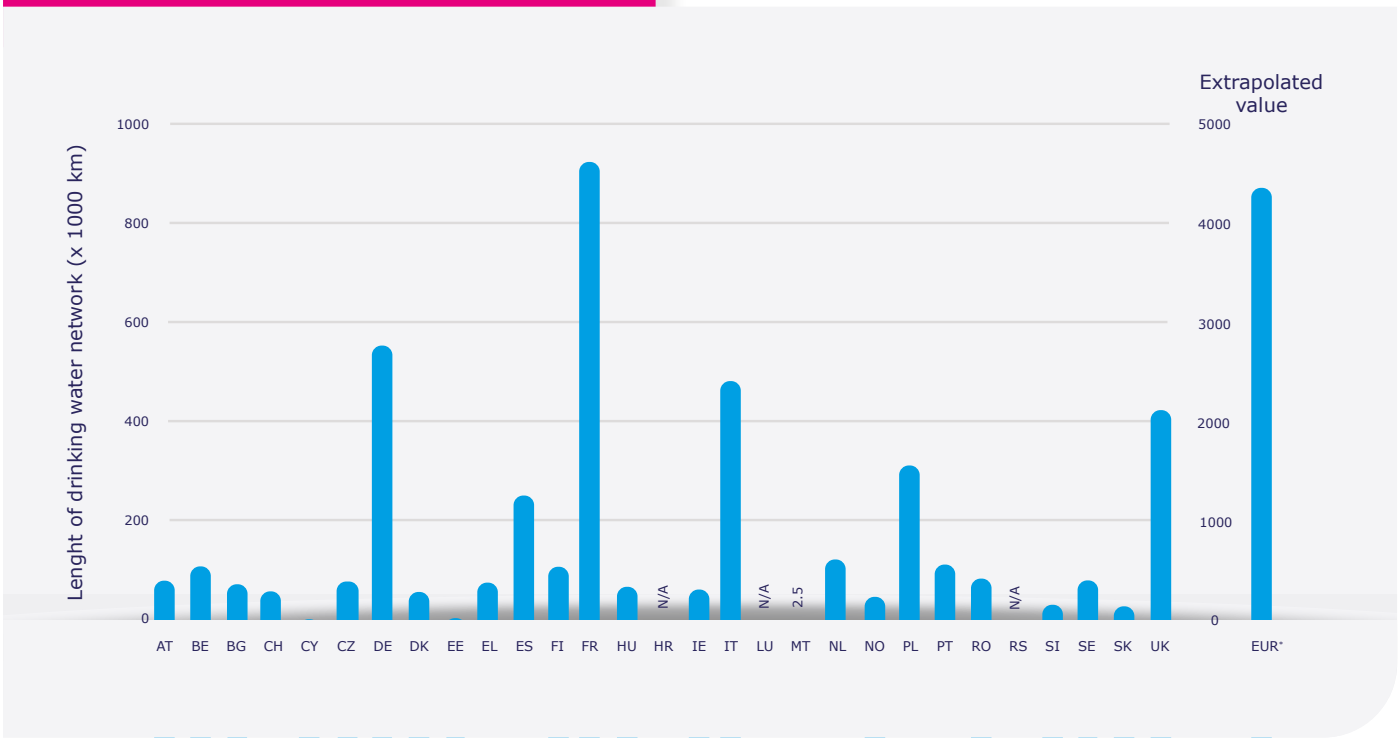
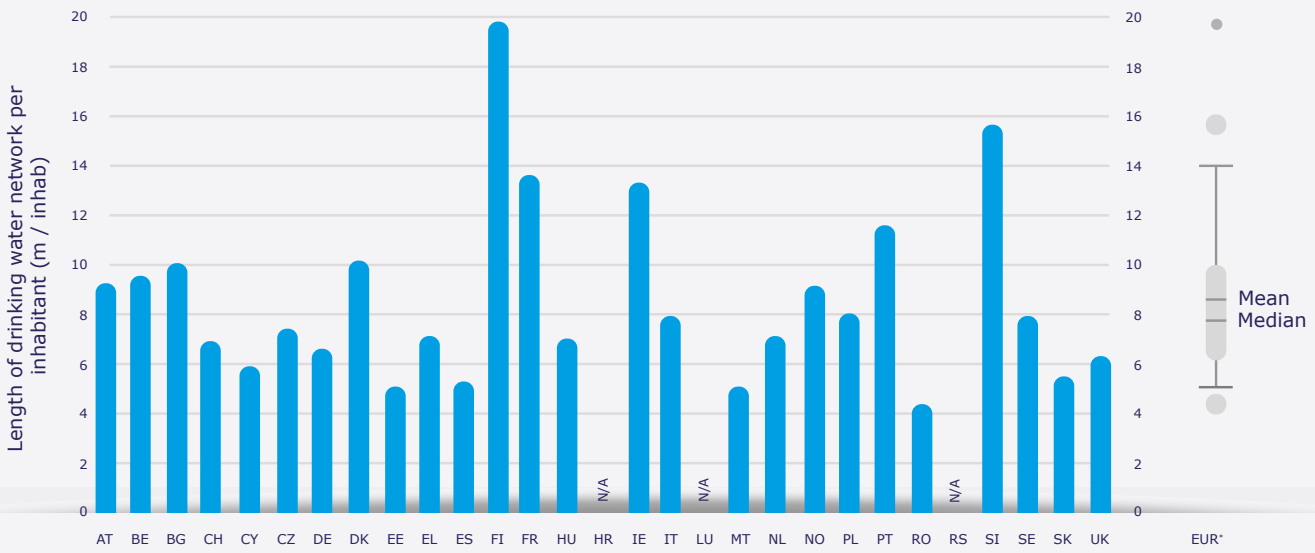


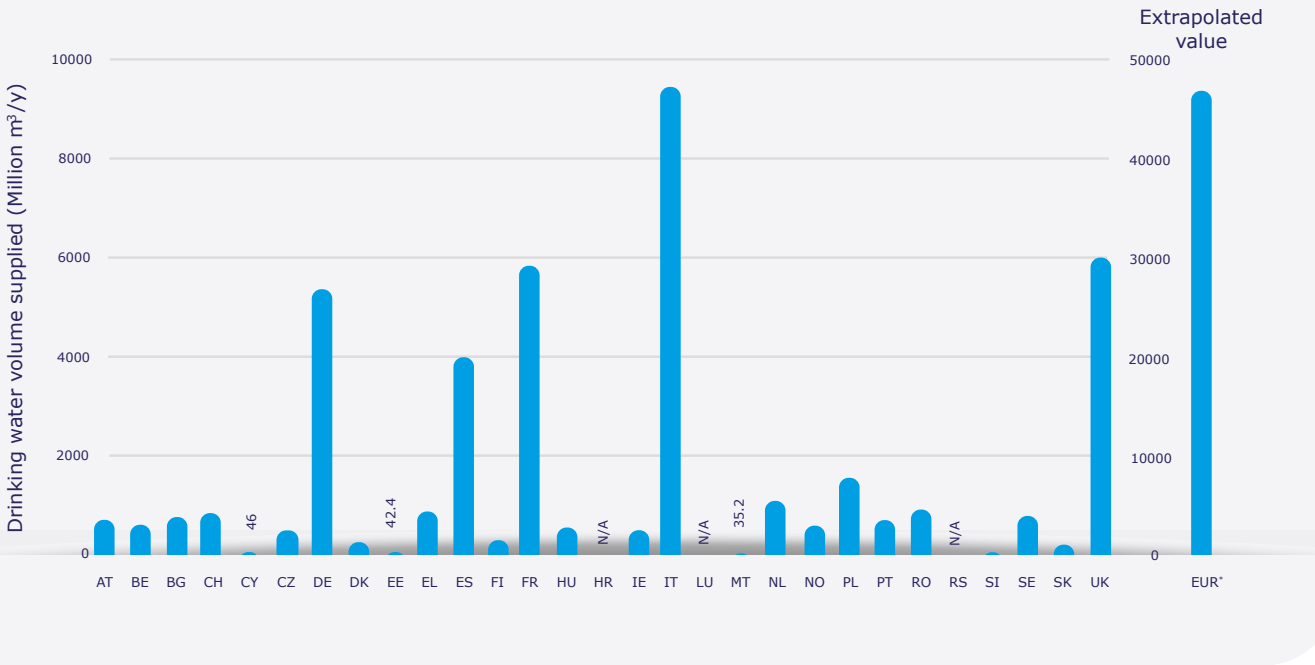
Figure 14
Length of drinking water network per inhabitant connected



3.2 Drinking water supply

Figure 15 presents the amount of water delivered by drinking water suppliers. It covers both billed consumption and non-revenue water. Extrapolation at European level was made through the average water consumption/water produced ratio, taking into account the average water consumption for countries that did not provide data. The total volume of water supplied is about 45.9 billion m^3/year, an increase of 2.7% compared to the 2017 report.

Figure 15
Drinking water supply

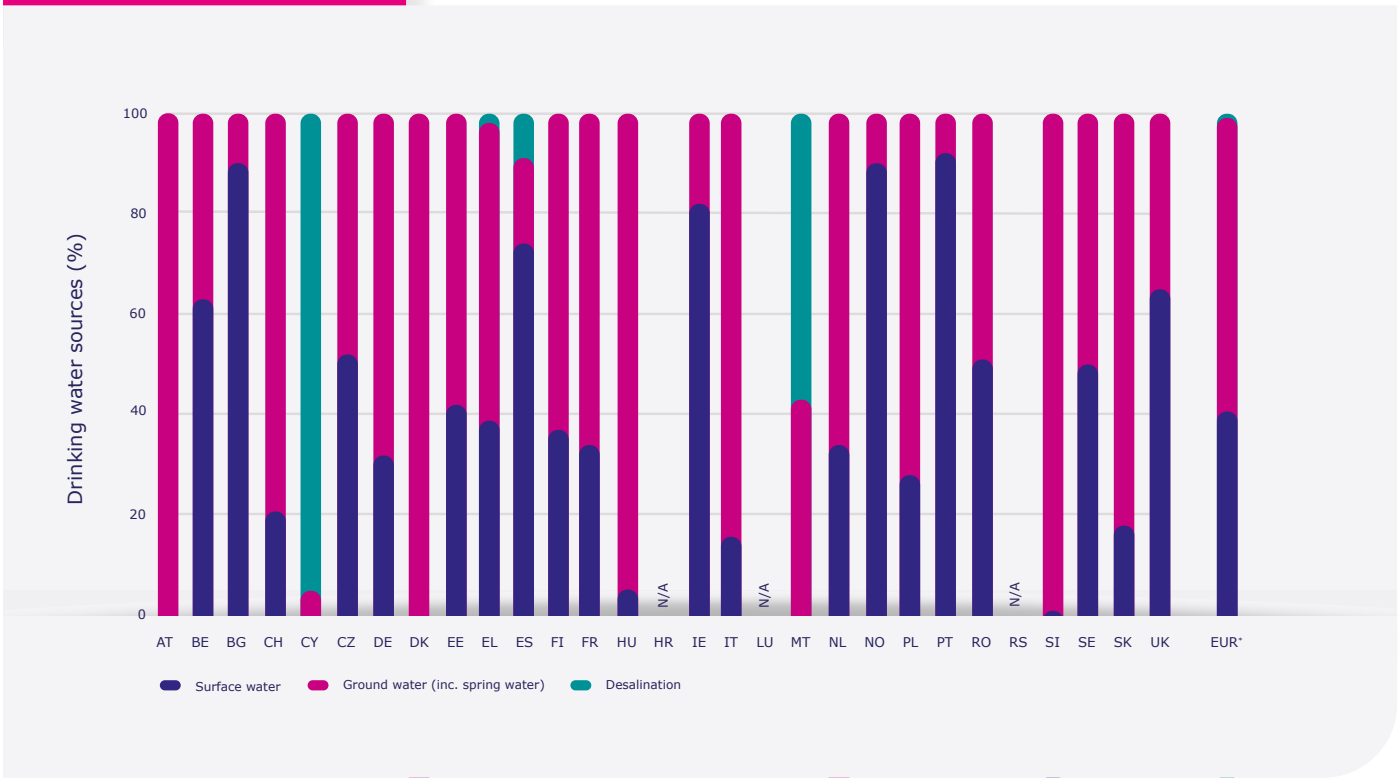


3.3 Drinking water sources

Figure 16 shows the disparate sources of our drinking water. We can see significant variation between countries. Groundwater is the most important drinking water resource for EurEau members, followed by surface water. The European percentages are based only on the countries that provided data as it is not possible to extrapolate this information.

Although there are only small changes compared to the 2017 edition, we note that some Mediterranean countries are increasing the use of desalination.

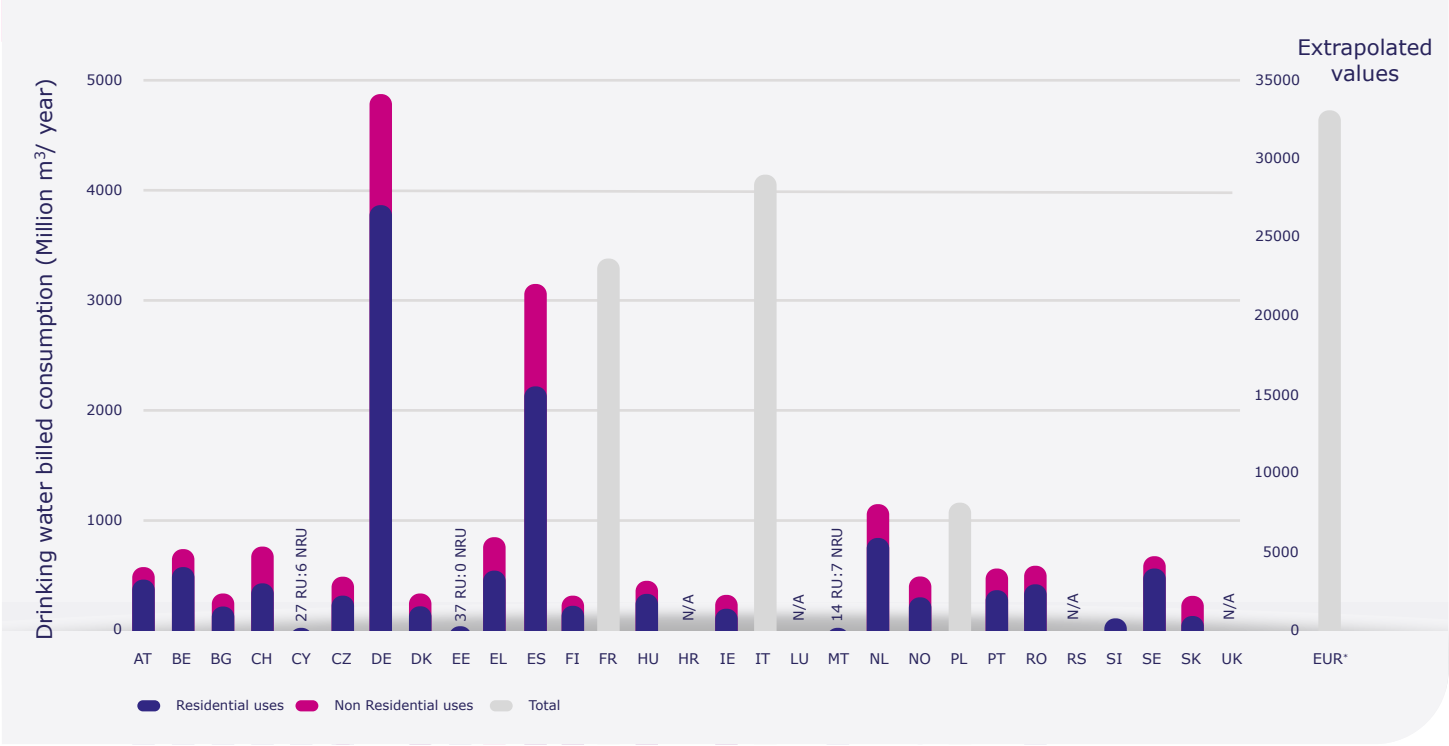
Figure 16
Sources of drinking water



3.4 Drinking water consumption

Figure 17 presents the drinking water consumption that is billed to consumers. It covers residential and sometimes non-residential consumption; the separation for each use is not always available in every country. The extrapolation of the total consumption was made according to the population connected to a drinking water network with a coefficient of determination R2 of 0.953. The European value was not segregated by the different uses as the data was not available for all countries. Overall, the total billed consumption is 33.2 billion m^3/year. This is a 4.3% increase for total consumption compared to the 2017 data.

Figure 17
Annual billed drinking water consumption



3.5 Residential drinking water consumption

The residential drinking water consumption is a statistical evaluation provided by EurEau members, often available at national level. It might be different from the consumption presented in the previous section because of statistical definitions and treatment at national level. For these reasons, the values at European level are computed based on averages of the data available and no extrapolation was done. The average consumption is 124 litres per inhabitant per day. The average household composition is 2.3 inhabitants and the average consumption per household is 105 m^3/household/year.

Compared to our 2017 survey, the average consumption per inhabitant per day has decreased by 3%, whereas the average annual consumption per household decreased by 6%.

Figure 18
Average household size

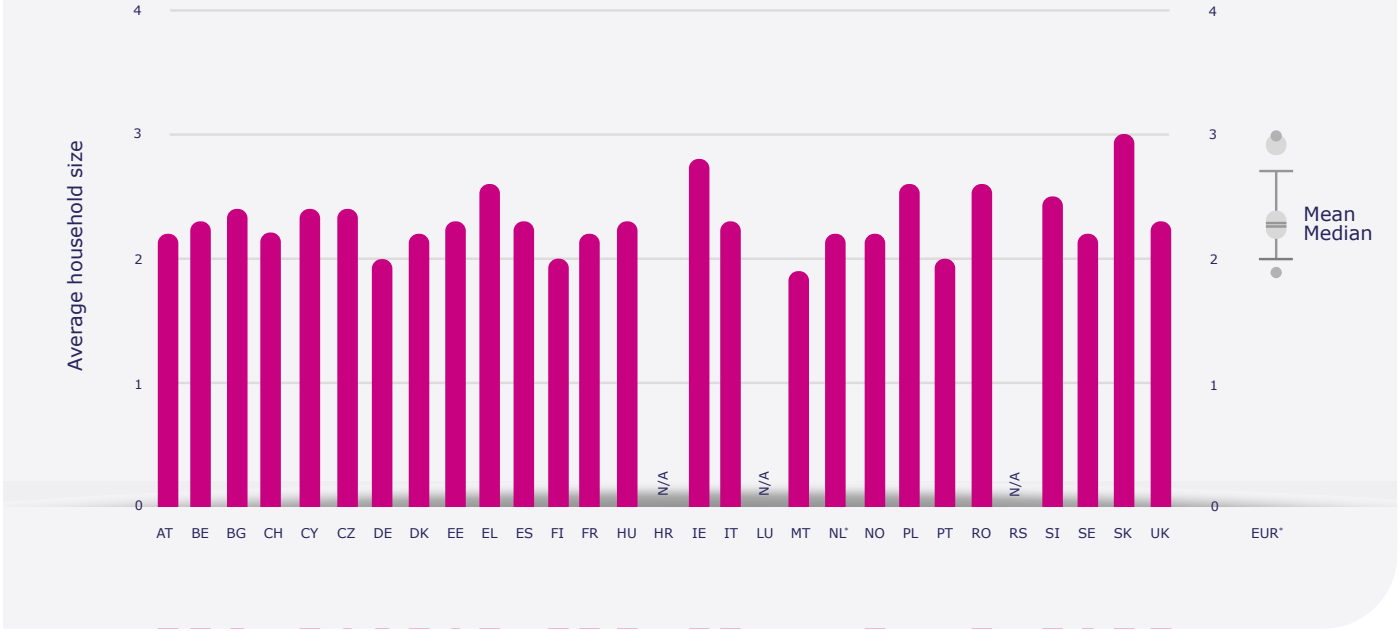


Figure 19
Average residential drinking water consumption per capita per day

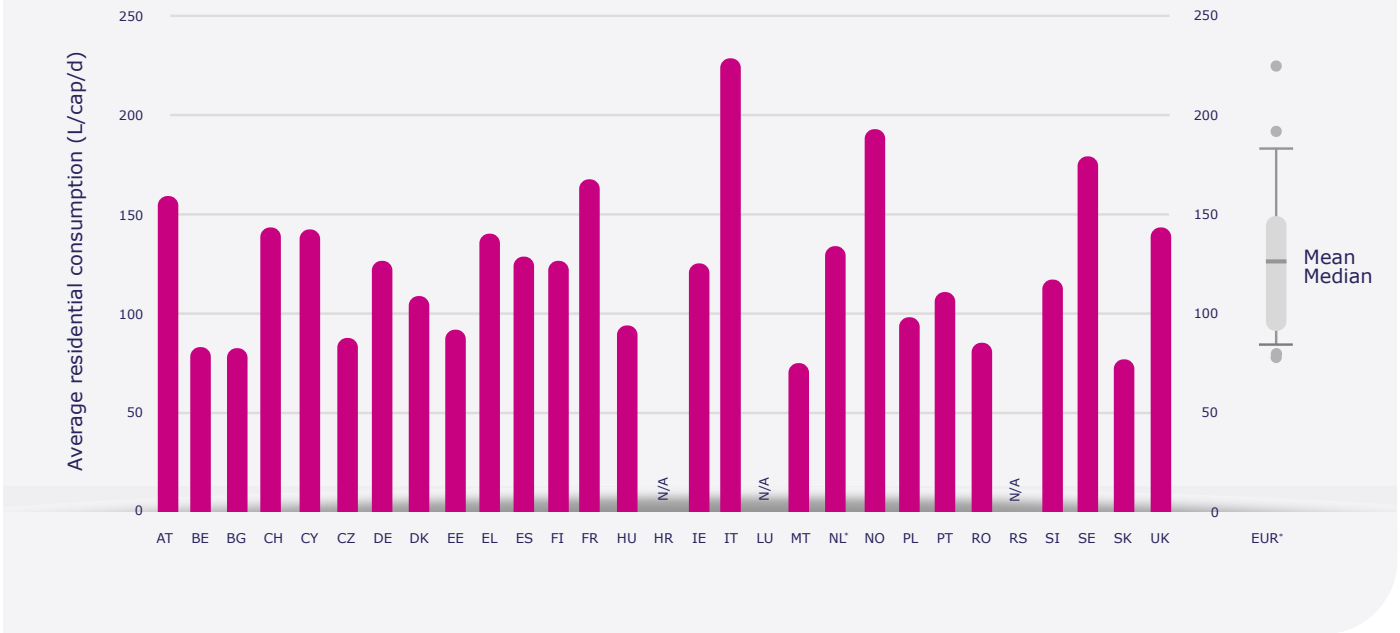
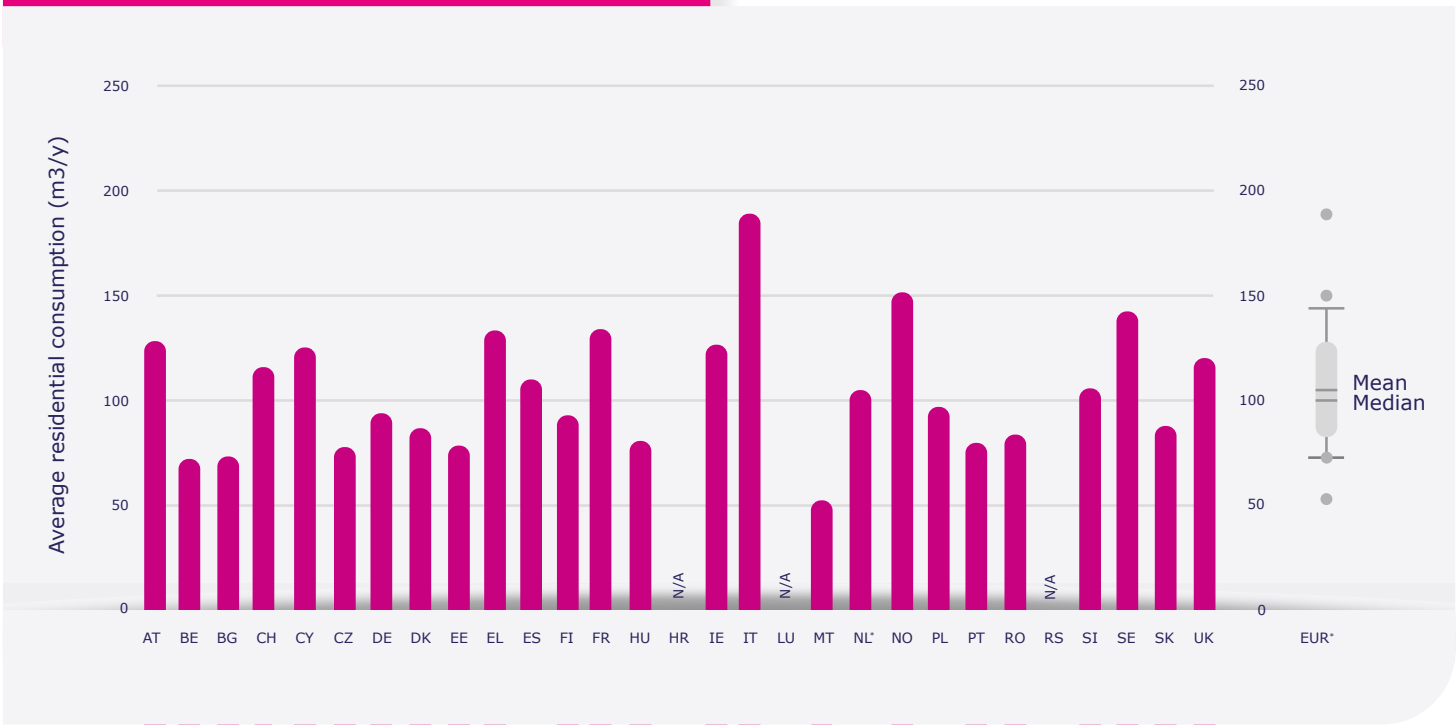


Figure 20
Average drinking water consumption per household per year



3.6 Distribution losses

Figure 21 and Figure 22 present the non-revenue water for drinking water networks in Europe with the two units commonly used by professionals: percentage and volume per km of pipe. There is currently no feasible/agreed European methodology for leakage computation. EurEau is working with the European Commission on how to practically implement the new DWD provisions on leakage reporting. In a recent survey, both volume and percentage (unreliable but commonly quoted) are widely used. The losses cover all non-revenue water which may include leakage, water used for maintenance, street-cleaning, public buildings, fire-fighting, etc.

The losses have a meaning in the local context when the management of the network, the origin of the losses and age of the network are known. Mean values at national level are already extrapolated out of local level data. Because of these discrepancies, it is not reliable to make comparisons between countries in this context. The mean values for non-revenue water are 26% and 2801m^3/km/y in EurEau member countries. The 2017 report presented the same percentage of losses but a lower average loss in volume, mainly because fewer countries responded to this indicator.

Figure 21
Average non-revenue water in percentages

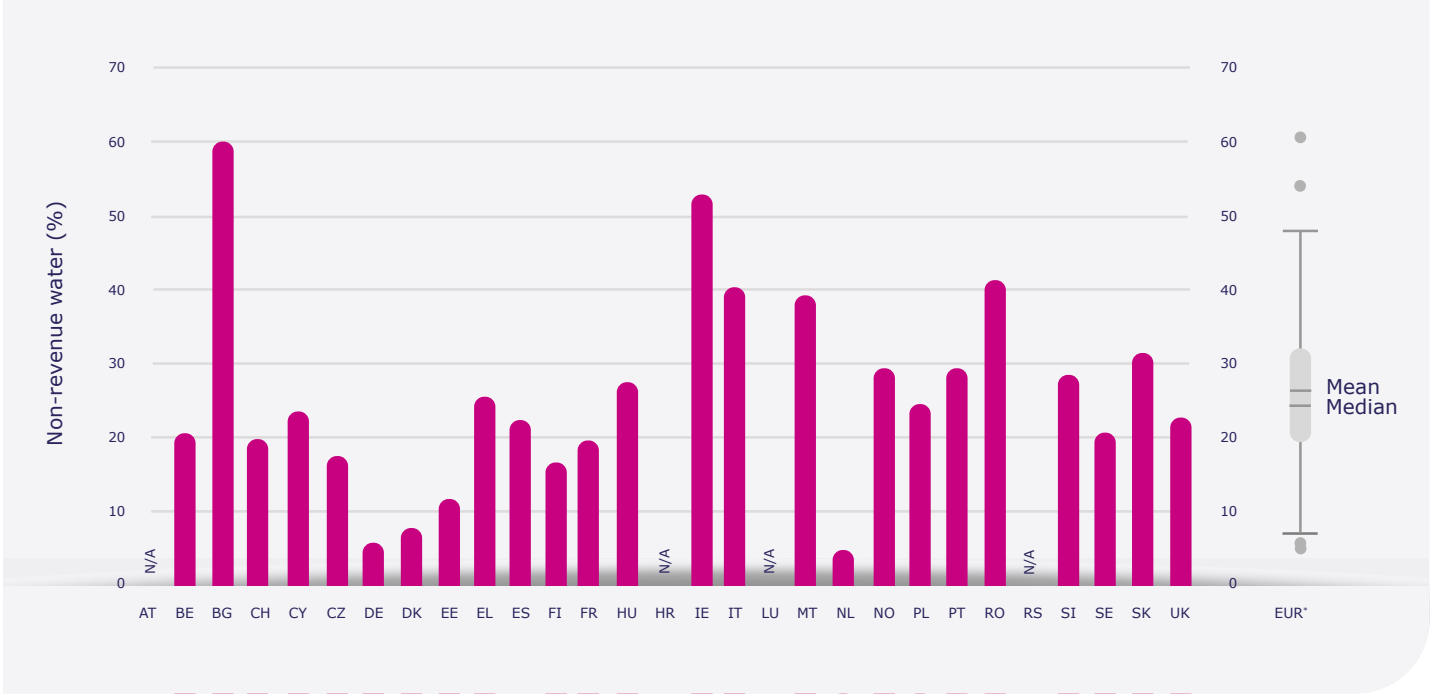
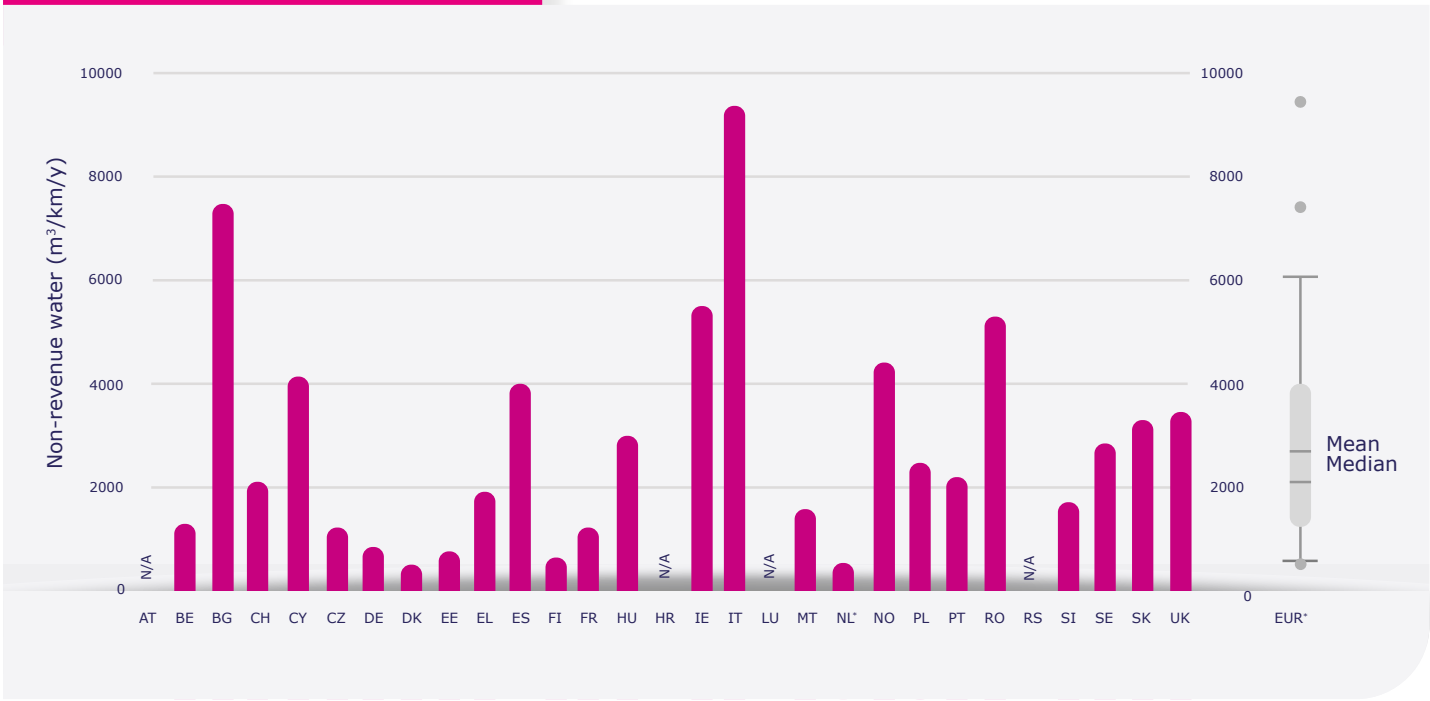


Figure 22
Average non-revenue water in m^3/km/y

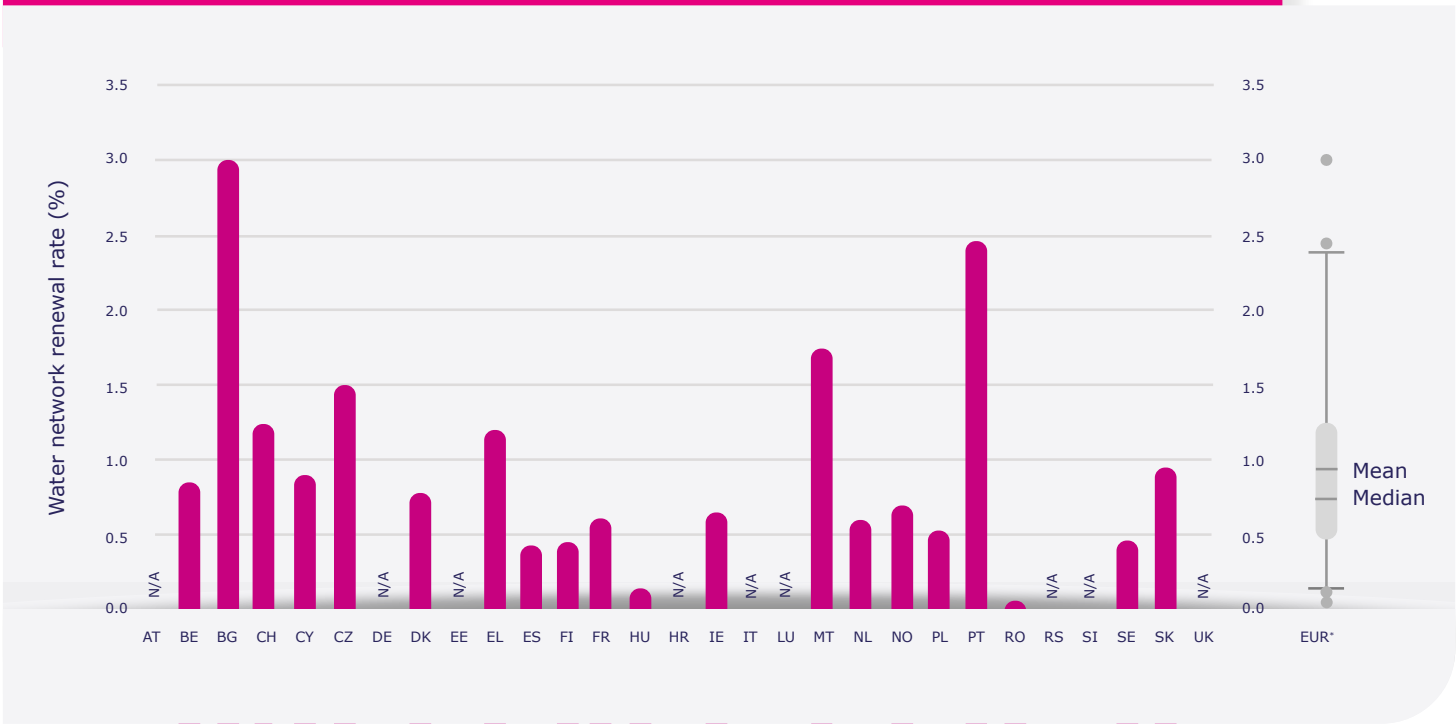


3.7 Asset renewal rate

This section presents the asset renewal rates for the different countries. The numbers vary a lot from one country to another according to the local water management system, the age of the infrastructure, the impact of depreciation or the origin of drinking water. It was also not possible to have reports for the same year and the results vary from 2017 to 2019.

Compared to the 2017 report which used data from 2012-2015, the asset renewal rate increased in seven countries and decreased in five. We did not receive information for the remaining countries. However, as the rate depends on the available funds, numbers can change from one year to another and general trends cannot be determined.

Figure 23
Average asset renewal rate for drinking water infrastructure (data from 2017 to 2019 depending on the country)



4 Waste Water Services

This section covers statistics related to waste water services including sludge management.

4.1 Sewer network

Figure 24 is new compared to the 2017 report, presenting the length of the different types of sewers. In combined sewers, rain water and waste water are collected in the same pipe, while for separate sewers, each type of water is conveyed by independent pipes.

For countries where no separate information is available, the total sewer length is presented. The extrapolation was based on the total length only and according to the population connected to a sewer network (R2=0.88). It amounts to 3.2 million km, which represents almost eight times the distance between the Earth and the Moon.

Figure 25 presents the length of the sewer network per connected inhabitant. The mean value is 6.7m of sewers per connected inhabitant.

When compared to the 2017 report, the total length increased by 10%.

Figure 24
Length of the sewer network per type of sewer

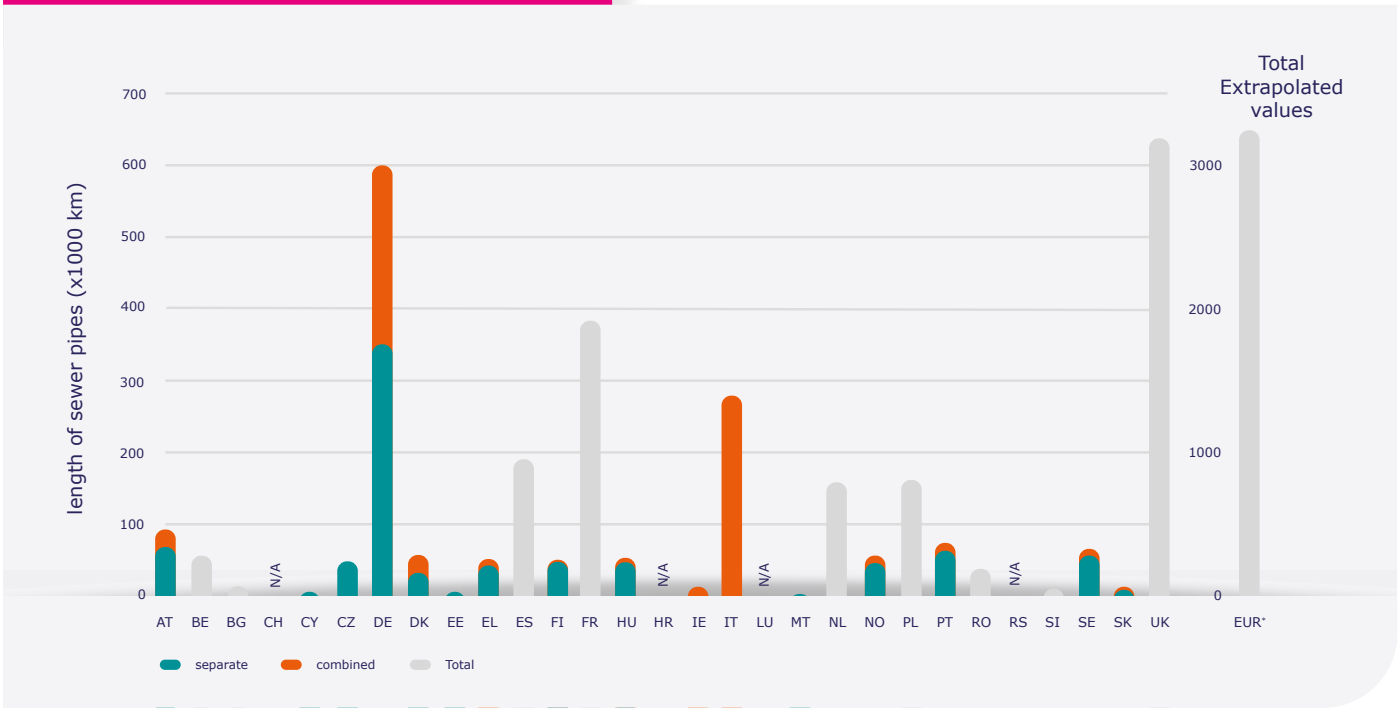
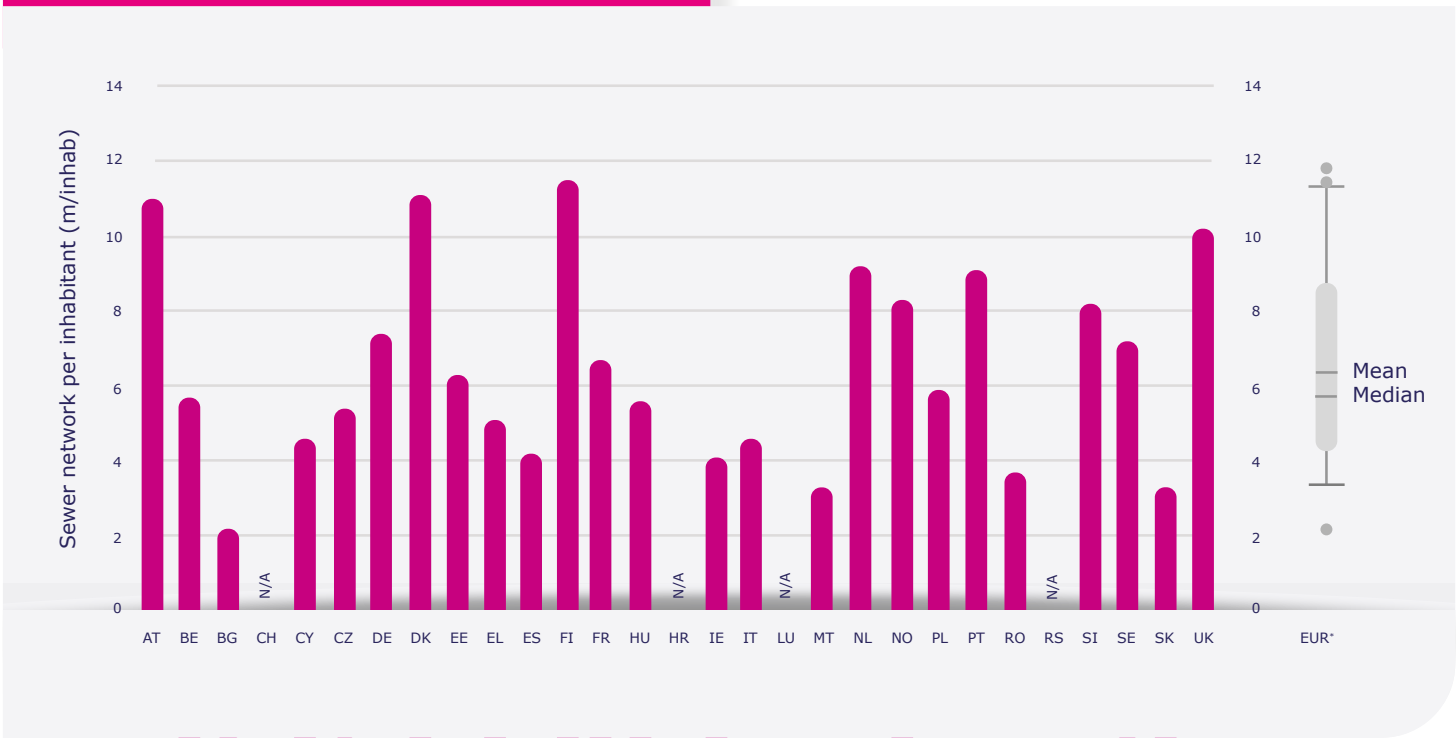


Figure 25
Length of the sewer network per inhabitant connected



4.2 Waste water treatment

The waste water treatment capacity is the total load that a waste water treatment plant is able to treat according to the definition of population equivalent described in the Urban Waste Water Treatment Directive (91/271/EEC (UWWTD)). The total treatment capacity in the EU in population equivalents has to be bigger than the actual population in order to anticipate the changes occurring over the life time of the waste water treatment plants and to take into account the industrial pollution load if they are authorised by local authorities. The extrapolation of the waste water treatment capacity for the missing values was done according to the population connected to a waste water treatment plant with a coefficient of determination R2 of 0.937.

Figure 26
Waste water treatment capacity in population equivalents

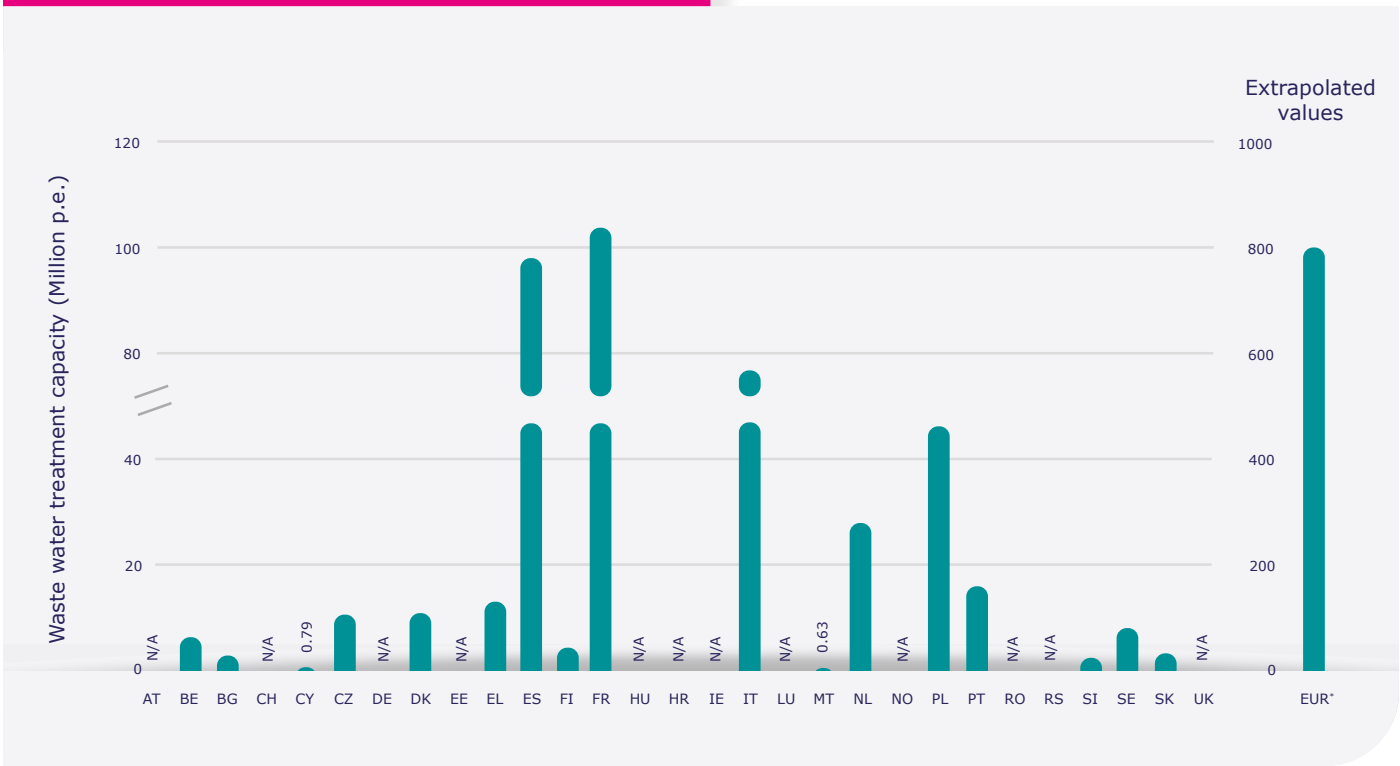
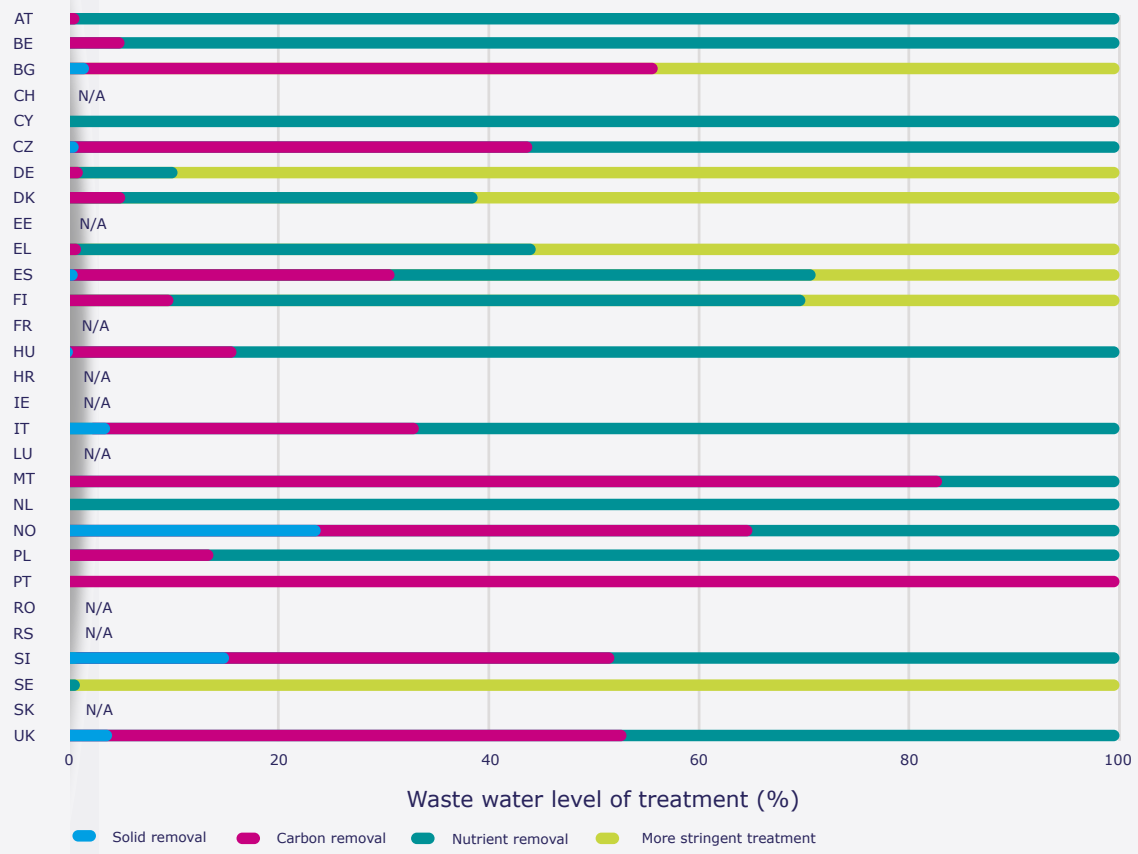


Figure 27 presents the percentage of the pollution load treated by waste water treatment plants depending on their level of treatment as defined in the UWWTD. "More stringent treatment" refers to treatment going beyond the requirements of the UWWTD. It is often referred to as tertiary treatment and may cover nutrient removal or disinfection.

The data presented for Europe only considers the countries that submitted data. No extrapolation was possible as the level of treatment depends on the sensitivity of the receiving waters according to the UWWTD. In Europe, 1.5% of the load is treated for solids removal (2017: 3.1%), 23.6% is treated for organics removal (2017: 28.5%), 63.7% for nutrient removal and 11.3% of the load is treated for more stringent requirements than those set in the UWWTD (2017: 68.4% for nutrient removal and more stringent treatment together).

Figure 27
Level of treatment in percentage of the load entering waste water treatment plants



4.3 Circular economy

Waste water operators are involved in the circular economy and we recover a lot of valuable material such as sludge, nutrients and water, from waste water treatment plants. This material can be treated and reused, especially in agriculture. Recovering phosphorus and energy (see section 5.2) from sludge treatment is vital for the circular economy.

Sewage sludge management

Figure 28 presents the destination of the treated sewage sludge produced per country and the overall total for Europe. We were not able to extrapolate these data as the destination of sludge are very country specific. The overall total reflects the sum of available data.

Since the 2017 report, total sludge production has decreased by 4.2%.

Figure 29 presents the results for Europe only (last column of Figure 28) and was obtained by adding the total weight of sewage sludge of all the responding countries according to the final destination. The total amount of sludge produced in 2018 is 8.67 million tonnes.

As more countries contributed data for this report compared to the 2017 edition, comparisons should be made with caution. Still, the data show a slight trend towards reducing landfill, land reclamation and agricultural uses, while incineration and, in particular, other uses of sewage sludge like phosphorus recovery increased.

Figure 28
Destination of the sewage sludge production

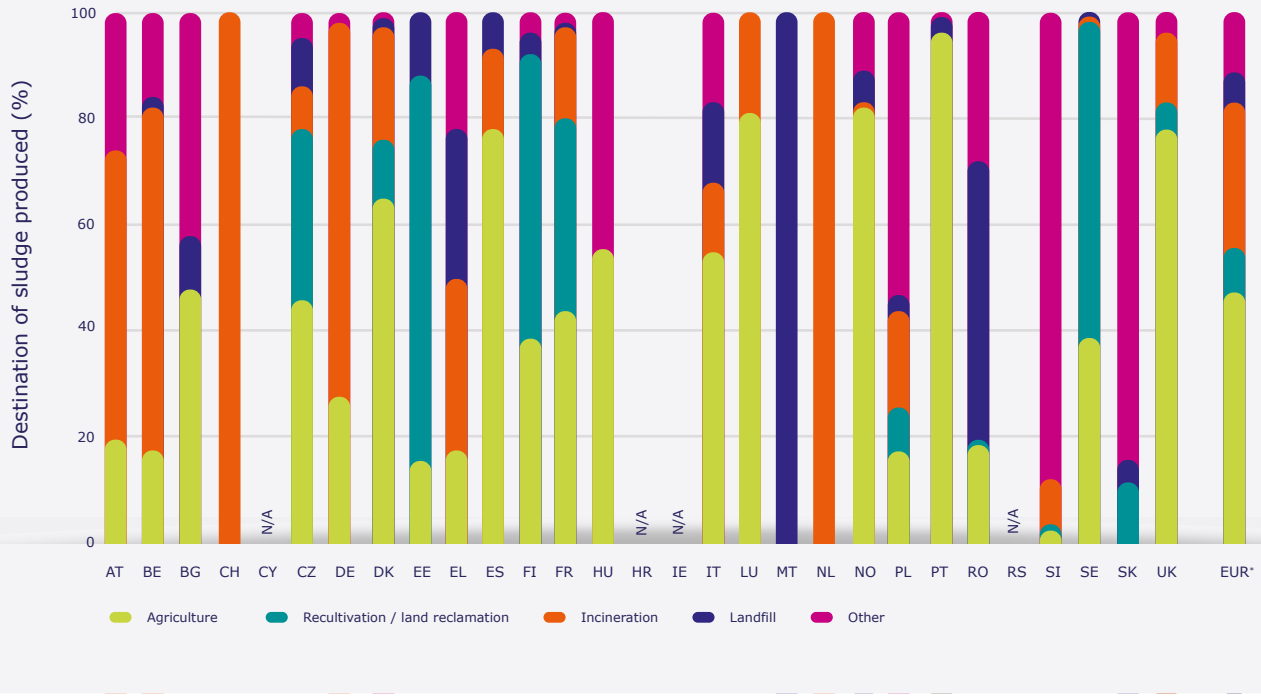
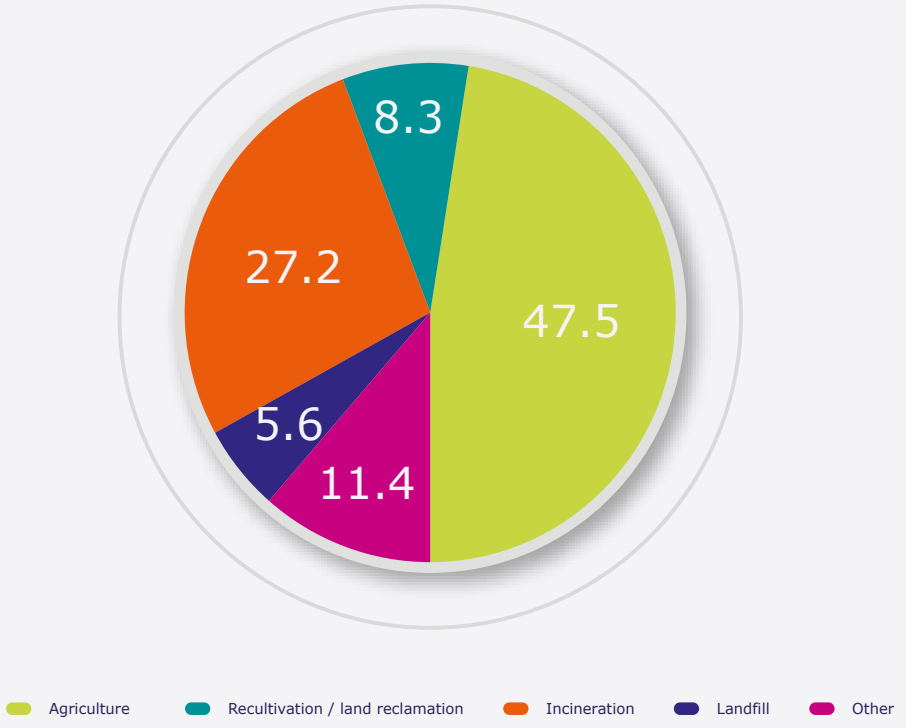


Figure 29
Destination of the sewage sludge production in EurEau member countries (based on responses, no extrapolation)



Reclaimed water

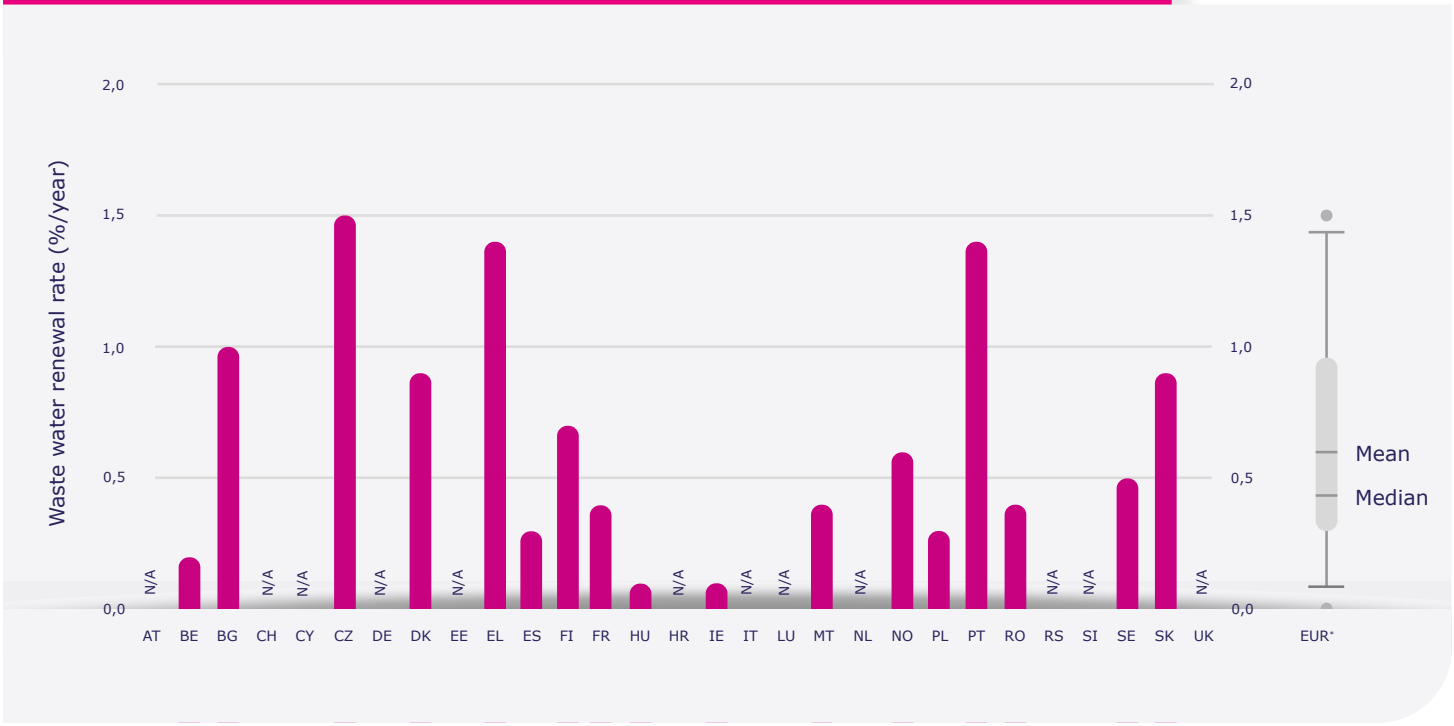
Because they face droughts or a lack of water in general or to avoid abstraction of natural water resources in general (surface water, groundwater…), some EurEau members are reusing the treated waste water from WWTP. They generally treat this water further to reach the quality needed for the planned reuse, for example in agriculture or as cooling water in energy production. The total volume of reclaimed water produced by our members reached 11 518 million m^3/y.

4.4 Asset renewal rate

This section presents the renewal rates for the participating countries. The numbers vary a lot from one country to another according to the local water management system, the age of the infrastructure, the impact of depreciation and/or the level of requirements. For the countries that submitted data, it was not possible to have numbers for the same year so we have a range of information from between 2017 to 2019.

Compared to the 2017 report which used data from 2012-2015, the asset renewal rate increased in four countries and decreased in seven and there is not enough data to make a reliable conclusion for other countries. However, as the annual investment rate depends on the available investment capacity of the utility, numbers can vary from one year to another and general trends cannot be determined.

Figure 30
Asset renewal rate for waste water infrastructure (data from 2017 to 2019 depending on the country)



5 The water sector and the European Green Deal

The water sector is committed to reducing its environmental footprint in line with the European Green Deal. Some of our members are pledging more ambitious targets.

Increasing the energy efficiency of operations, producing renewable energy, exploiting the sector's circular economy potential, and minimising process-related greenhouse gas emissions are four key avenues to achieving these goals. Much will depend on the level of treatment required to supply consumers with safe and clean drinking water and return treated waste water safely to the environment. The better protected our drinking water resources and the fewer unwanted substances are released to the waste water, the faster water operators can increase their sustainability.

5.1 Energy consumption

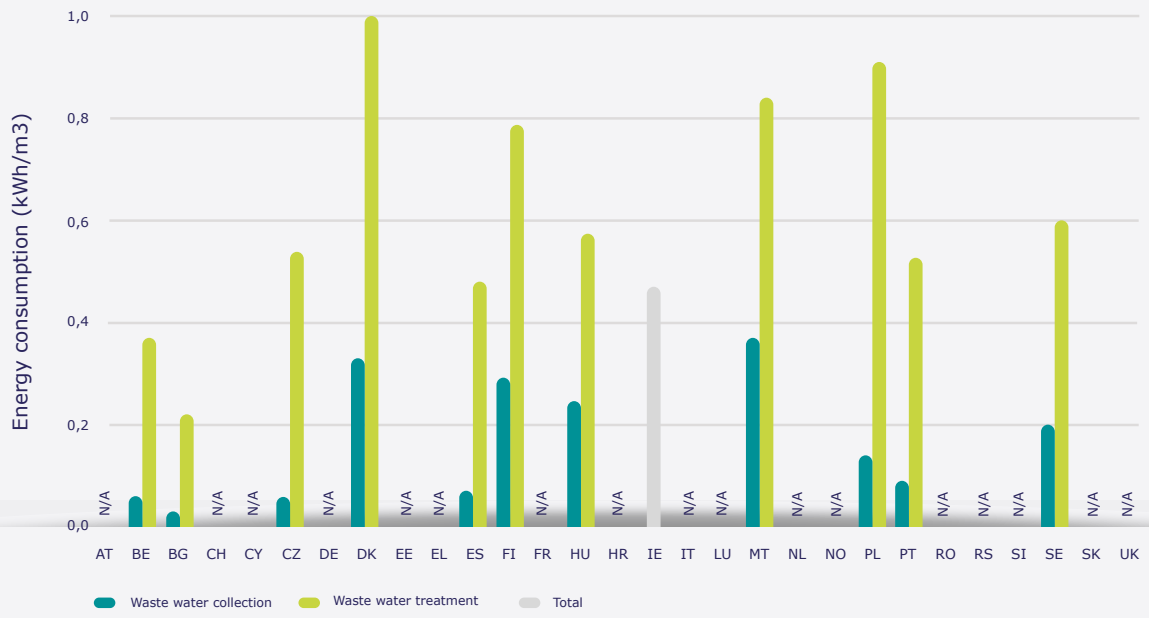
Water operators are continuously increasing the efficiency of their processes. However, their energy consumption depends on multiple factors, many of which are beyond their control. On the drinking water side, this includes the sources used (groundwater, surface water, sea water), the topography (number of pumps), population density (length of the network per capita), and the required treatment (micropollutants, pesticides, nitrate etc.).

The energy consumption of waste water collection and treatment depends on the level of pollution of the untreated waste water, the flow rate, the weather conditions the topography, population density and the requirements of the receiving water (sensitive area).

Direct comparisons between individual operators or countries are therefore impossible.

Figure 31
Energy consumption for the extraction, treatment and distribution of drinking water

Figure 32
Energy consumption for the collection and treatment of waste water



5.2 Renewable energy generation

One way for waste water operators to generate renewable energy is the production of biogas through the anaerobic digestion of sewage sludge. The process is currently not economically viable in smaller treatment plants.

The gas can be used to cover the operator's energy demand or refined for injection in the urban gas network or for use as vehicle fuel.

Figure 34 shows the energy produced by water operators. It is a broad indicator, regrouping all forms of production. In the graph, the heat energy part can include the incineration of sludge (Combined Heat and Power or only power generation) and/or heat recovery from sewers, the second being much lower due to the lower temperature of operation. Electricity can be generated via hydropower produced from drinking water networks and reservoirs or waste water networks, wind turbines and solar panels installed in water works.

Figure 33
Biogas production on waste water treatment plants

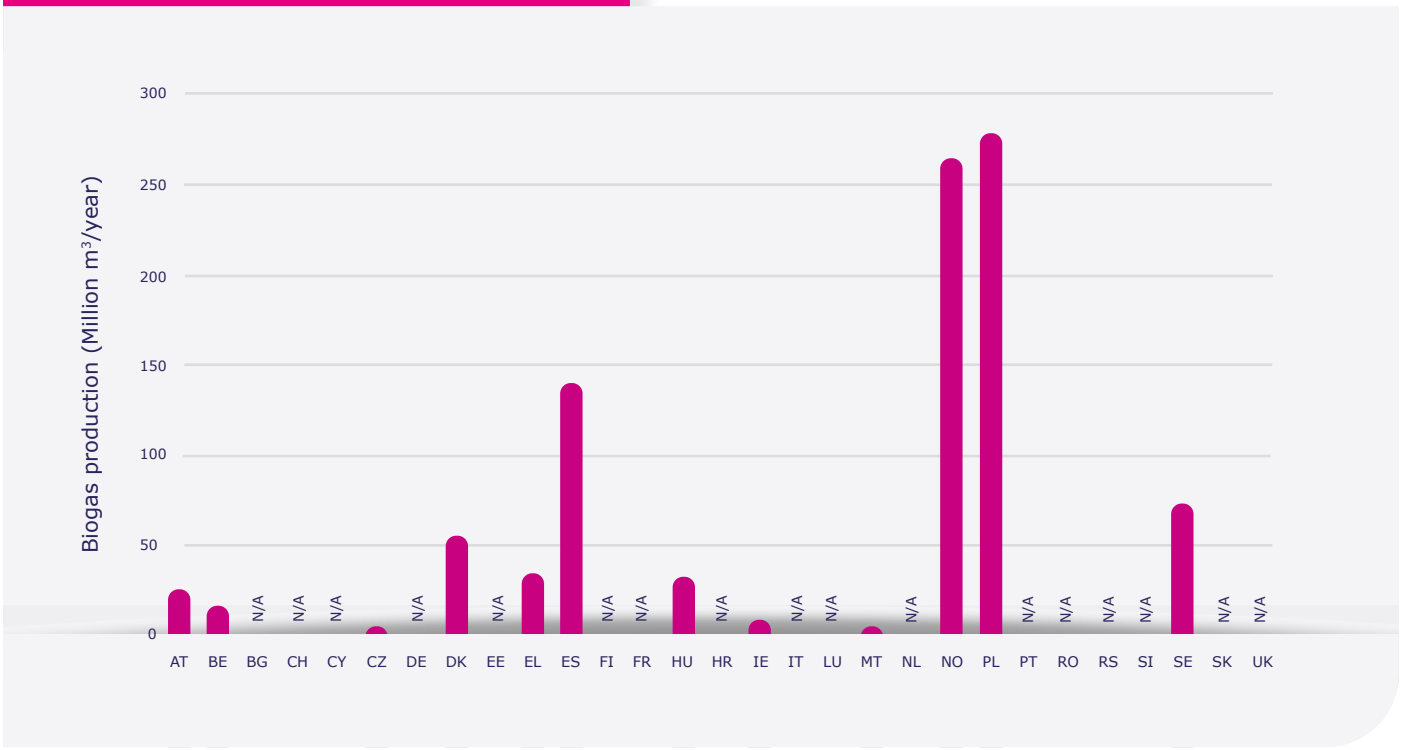
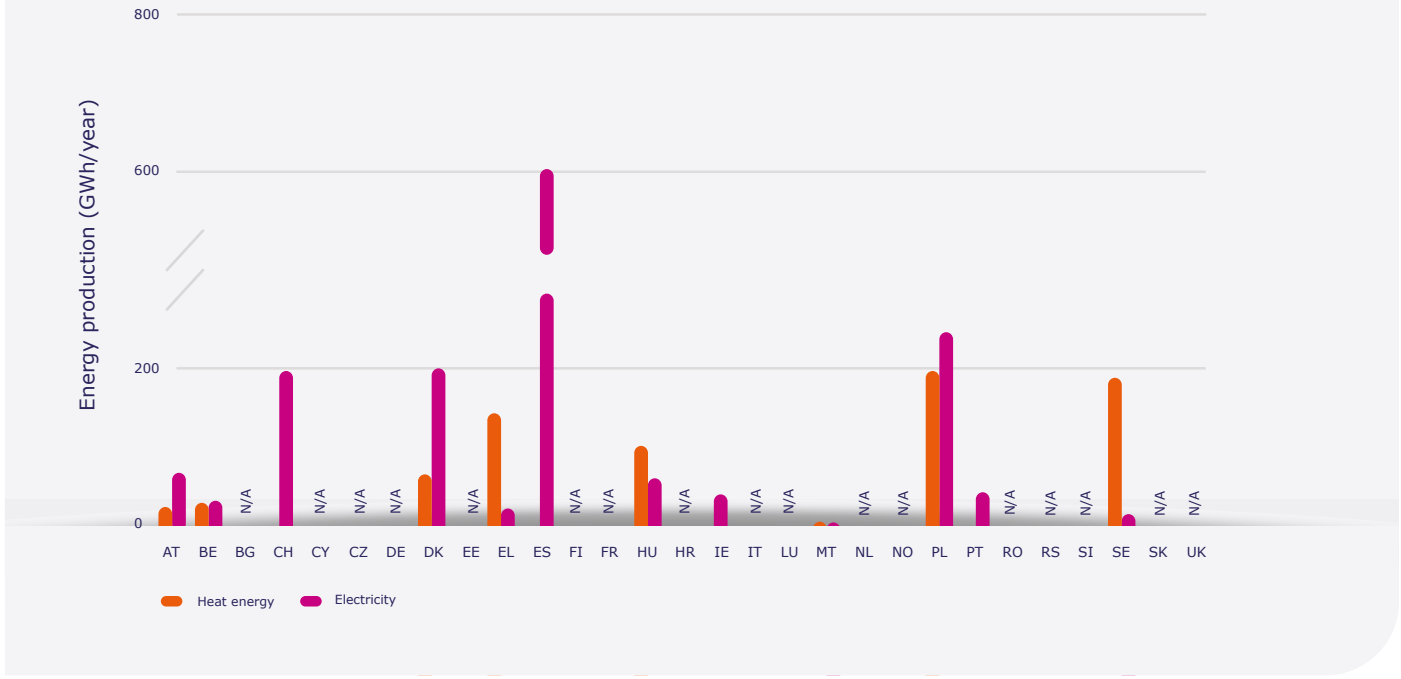


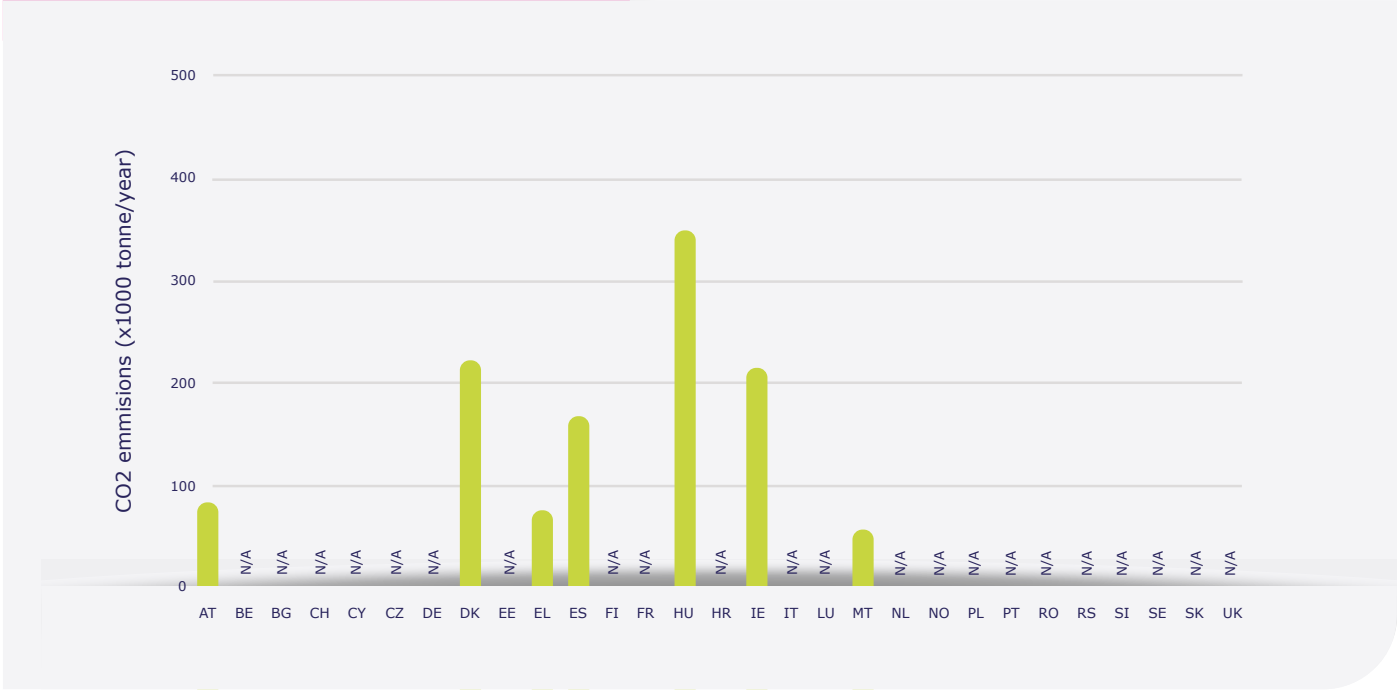
Figure 34
Energy production by water operators



5.3 Greenhouse gas emissions

The reduction of greenhouse gas (GHG) emissions is an ongoing process and we need to reinforce our efforts over the coming years or even decades. Again, the level of treatment required to protect public health and the environment will have an impact on how quickly reduction targets can be met. We also have to make the distinction between direct emissions (nitrous oxide, methane and eventually biogenic carbon dioxide from the degradation or incineration of sewage sludge) and the indirect emissions coming from the energy and chemical use and from the infrastructure that we put in place. The water sector does not have the capacity to influence all of them as, for example, the GHG produced by the electricity generated at state level. The first step is to quantify the GHG emission footprint of the sector but the monitoring is not completely reliable for all GHG yet. Figure 35 shows the current level of knowledge we have for the GHG emissions of the water sector. We expect this particular data collection will progress in the future.

Figure 35
Greenhouse gas emissions by water operators



Annex

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
1	Pop. connected to a DW network	%	92.2	99.5	99.2	99.4	100	94.7	99.4	97	83	99.3	100	91.1	99	95.55	N/A
	Pop. connected to a WW network	%	95.2	87.2	72.6	N/A	86	85.5	97.1	90	81	93.4	97	80.7	85	82.2	N/A
	Pop. connected to a WWTP	%	95.2	84.4	60	N/A	86	82.4	96.5	90	81	83.7	85.8	80.7	85	82.43	N/A
2	Annual bil. DWDU	Billion €	N/A	0.797	0.16	1.309	0.039	0.49	13	0.623	0.056	0.376	2.27	0.373	7.075	0.261	N/A
	Annual bil. DWIU	Billion €	N/A	0.381	0.084		0.008	0.244		0.321	0.007	0.173	1.903	0.171		0.115	N/A
	Annual bil. WWDU	Billion €	N/A	0.759	0.017	N/A	0.045	0.693	13.7	0.859	0.073	0.12	1.713	0.545	5.346	0.263	N/A
	Annual bil. WWIU	Billion €	N/A	0.408	0.014	N/A	0.001	N/A		0.442	0.01	0.061	1.167	0.28		0.157	N/A
3	Annual bil. DWDU	€/inhab	N/A	69.7	21.7	151.7	72.9	46.1	156,6	107.7	42.5	34.8	48.4	67.6	105.6	26.7	N/A
	Annual bil. DWIU	€/inhab	N/A	33.3	11.4		15.0	23.0		55.5	5.3	16.0	40.5	31.0		11.8	N/A
	Annual bil. WWDU	€/inhab	N/A	66.4	2.3	N/A	84.1	65.2	165	148.5	55.3	11.1	36.5	98.8	79.8	26.9	N/A
	Annual bil. WWIU	€/inhab	N/A	35.7	1.9	N/A	1.9	N/A		76.4	7.6	5.6	24.9	50.7		16.1	N/A
4	5-y average inv.	Billion €/y	N/A	0.675	0.54	0.806	0.0014	0.562	7.6	1.036	0.235	N/A	1.034	0.68	6	0.248	N/A
5	Investment rate	€/inhab /y	N/A	59	73	92	3	53	92	179	178	N/A	22	123	90	25	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
1	Pop. connected to a DW network	%	88.5	99.8	N/A	100	100	85	92.1	93.5	69.4	N/A	88.6	86	89	95	95.7
	Pop. connected to a WW network	%	69	99.4	N/A	100	99.5	85	74	83.3	52.9	N/A	62.4	90	84	93	86.5
	Pop. connected to a WWTP	%	68	85	N/A	100	99.5	85	70.8	82.4	51.5	N/A	60.4	90	68.4	93	82.4
2	Annual bil. DWDU	Billion €	N/A	8.57	N/A	0.033	1.079	0.782	1.399	0.608	N/A	N/A	N/A	0.857	0.263	8.6	108.5
	Annual bil. DWIU	Billion €	N/A		N/A	0.036	0.265		0.356	0.169	N/A	N/A	N/A	0.367	0.225		
	Annual bil. WWDU	Billion €	N/A		N/A	N/A	1.913	0.872	2.259	0.464	0.85	N/A	N/A	1.286	0.18	8.33	
	Annual bil. WWIU	Billion €	N/A		N/A	N/A	0.985		0.623	0.049		N/A	N/A	0.551	0.215		
3	Annual bil. DWDU	€/inhab	N/A	142.0	N/A	66.8	62.4	146.0	36.4	62.2	N/A	N/A	N/A	83.8	48.5	129	Mean: 188.4 Median: 168.3
	Annual bil. DWIU	€/inhab	N/A		N/A	72.9	15.3		9.3	17.3	N/A	N/A	N/A	35.9	41.5		
	Annual bil. WWDU	€/inhab	N/A		N/A	N/A	110.7	162.8	58.8	47.4	43.8	N/A	N/A	125.7	33.2	125.0	
	Annual bil. WWIU	€/inhab	N/A		N/A	N/A	57.0		16.2	5.0		N/A	N/A	53.9	39.6		
4	5-y average inv.	Billion €/y	N/A	2.3	N/A	0.037	0.743	1.21	1.706	0.7	N/A	N/A	0.026	1.114	0.27	9	44.707
5	Investment rate	€/inhab /y	N/A	38	N/A	75	43	226	44.44	72	N/A	N/A	12	109	50	135	Mean: 81.5 Median: 72.5

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
6	Direct staff	1000x FTE	14.7	8.4	15.8	3.2	0.5	10	81.8	5	1.3	7.6	32.7	4	63	20.8	N/A
	Indirect staff	1000x FTE	N/A	N/A	N/A	N/A	N/A	10	N/A	23	1	N/A	1.9	4	89	N/A	N/A
7	Wage Water Sector / National Wage	%	N/A	N/A	0.804	1.194	1.019	0.938	1.032	1	0.954	1.119	1.153	N/A	1.005	0.994	N/A
8	DW local gov. dpt.	%	N/A	0	0	69	100	6	11	0	0	4	10	47	0	0	N/A
	DW public company	%	N/A	100	100	5	0	29	48	64	66.17	0	35	40	64	95.8	N/A
	DW private op.	%	N/A	0	0	1	0	56	4	0	0.61	48.1	33	1	35.3	0.9	N/A
	DW private owner.	%	N/A	0	0	20	0	9	15	36	33.22	0	0	12	0	0	N/A
	DW P-P joint vent.	%	N/A	0	0	5	0	0	22	0	0	47.9	22	0	0.7	3.3	N/A
9	WW local gov. dpt.	%	N/A	0	0	N/A	100	6	42	0	0	4	6	49	0	0	N/A
	WW public comp.	%	N/A	100	100	N/A	0	29	50	100	66.2	0	67	42	46	79.4	N/A
	WW private op.	%	N/A	0	0	N/A	0	56	8	0	0.6	48.1	20	1	53	0.8	N/A
	WW private owner.	%	N/A	0	0	N/A	0	9	0	0	33.2	0	0	8	0	0	N/A
	WW P-P joint vent.	%	N/A	0	0	N/A	0	0	0	0	0	47.9	7	0	1	19.8	N/A
10	Av. an. water bill per household	€/y	404	334	120	521	201	258	N/A	770	244	132	218	267	490	202	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
6	Direct staff	1000x FTE	0.7	29.4	N/A	1.14	6.6	7	41.9	13.9	32.1	N/A	6.9	5.6	8.9	42.3	475
	Indirect staff	1000x FTE	3.5	N/A	N/A	N/A	N/A	10	N/A	2.4	N/A	N/A	N/A	17.7	0.9	51	N/A
7	Wage Water Sector / National Wage	%	N/A	N/A	N/A	0.931	N/A	N/A	0.996	N/A	0.958	N/A	0.961	1.106	1.069	N/A	N/A
8	DW local gov. dpt.	%	89	10	N/A	0	0	98	5	56.3	10	N/A	N/A	0	0	10.5	N/A
	DW public company	%	11	57	N/A	100	100	2	93.11	24	65	N/A	N/A	100	0	0	N/A
	DW private op.	%	0	2	N/A	0	0	0	0.04	16.2	25	N/A	N/A	0	20	0	N/A
	DW private owner.	%	0	0	N/A	0	0	0	0.05	0	0	N/A	N/A	0	0	89.5	N/A
	DW P-P joint vent.	%	0	31	N/A	0	0	0	1.8	3.5	0	N/A	N/A	0	80	0	N/A
9	WW local gov. dpt.	%	0	10	N/A	0	100	98	5	63.1	10	N/A	N/A	0	0	10.1	N/A
	WW public comp.	%	22	57	N/A	100	0	2	92.91	18.2	65	N/A	N/A	100	0	0	N/A
	WW private op.	%	78	2	N/A	0	0	0	0.04	15.5	25	N/A	N/A	0	20	0	N/A
	WW private owner.	%	0	0	N/A	0	0	0	0.05	0	0	N/A	N/A	0	0	89.9	N/A
	WW P-P joint vent.	%	0	31	N/A	0	0	0	2	3.2	0	N/A	N/A	0	80	0	N/A
10	Av. an. water bill per household	€/y	N/A	312	N/A	197	582	970	263	240	151	N/A	211	423	N/A	496	Mean: 348 Median: 263

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
11	Price per m^3	€/m^3	3.7	5.38	1.67	4.55	2.2	3.36	N/A	9.32	3.16	1.23	2.27	5.46	4.08	2.9	N/A
12	DW service	%	42	46.2	N/A	40	64	52.9	N/A	18	N/A	47.5	51.8	30.4	40	35.9	N/A
	WW service	%	48	47.8	N/A	55	29	47.1	N/A	52	N/A	35.5	39.1	45.6	52	41.1	N/A
	Env. & resource fee	%	0	0	N/A	0	2	0	N/A	8	N/A	0.1	0	0	0	1.7	N/A
	VAT	%	10	5.7	N/A	5	5	0	N/A	22	N/A	16.9	9.1	24	8	21.3	N/A
	Other	%	0	0.3	N/A	0	0	0	N/A	0	N/A	0	0	0	0	0	N/A
13	DW network length	X1000 km	81.2	108.7	73.4	59.4	3.17	78.8	544	58.4	6.7	76.5	248.2	108	906	68.4	N/A
14	DW network length/ inabitant	m/ inhab	9.2	9.5	10	6.9	5.9	7.4	6.6	10.1	5.1	7.1	5.3	19.6	13.5	7	N/A
15	Volume DW supplied	Million m^3/y	829	720.6	873.2	953	46	609	5437	370	42.4	987	4078	411.5	5909	653.9	N/A
16	Surface water	%	0	63	90	20.8	0	52	32	0	42	39	74	37	34	5	N/A
	Ground water	%	100	37	10	79.2	5	48	68	100	58	59	17	63	66	95	N/A
	Desalination	%	0	0	0	0	95	0	0	0	0	2	9	0	0	0	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
11	Price per m^3	€/m^3	N/A	2.1	N/A	3.31	4.25	6.24	2.75	2.6	1.57	N/A	2.26	4.51	2.4	3.6	Mean: 3.54 Median: 3.24
12	DW service	%	N/A	38	N/A	N/A	27	35	38.2	52.6	N/A	N/A	N/A	32	48	45	N/A
	WW service	%	N/A	40	N/A	N/A	63	40	52.8	41.3	N/A	N/A	N/A	48	32	55	N/A
	Env. & resource fee	%	N/A	0	N/A	N/A	0	0	1.6	0.1	N/A	N/A	N/A	0	0	0	N/A
	VAT	%	N/A	10	N/A	N/A	10	25	7.4	6	N/A	N/A	N/A	20	20	0	N/A
	Other	%	N/A	12	N/A	N/A	0	0	0	0.1	N/A	N/A	N/A	0	0	0	N/A
13	DW network length	X1000 km	63	474	N/A	2.5	122.1	48.8	307.7	112.4	84.5	N/A	32.4	81	29.9	416.9	4,300
14	DW network length/ inabitant	m/ inhab	13.2	7.9	N/A	5.1	7.1	9.1	8	11.5	4.4	N/A	15.5	7.9	5.5	6.3	Mean: 8.6 Median: 7.7
15	Volume DW supplied	Million m^3/y	610.5	9488	N/A	35.2	1199	703	1665.8	813.4	1024	N/A	170.7	900	320	6050	45,938.3
16	Surface water	%	82	16	N/A	0	34	90	28	92	51	N/A	1	50	18	65	40.8
	Ground water	%	18	84	N/A	43	66	10	72	8	49	N/A	99	50	82	35	58.2
	Desalination	%	0	0	N/A	58	0	0	0	0	0	N/A	0	0	0	0	1

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
17	DW billed consumption – Residential uses	Million m^3/y	466	582	224	445	27	328	3,810	224	37	545	2,188	232	4,000	338	N/A
	DW billed consumption – Non-resident. uses	Million m^3/y	111	156	118	316	6	163	991	116	0	299	919	90		116	N/A
18	Av. household size	pers	2.2	2.3	2.4	2.21	2.4	2.4	2	2.2	2.3	2.6	2.3	2	2.2	2.3	N/A
19	Av. residential consumption	L/cap/d	157	85	84	142	141	89	126	109	93	139	128	126	165	95	N/A
20	Av. annual residential consumption / hh	m^3/y	127	71	73	115	124	77	93	86	78	132	109	92	133	80	N/A
21	Non-revenue water	%	N/A	21	61	20	24	18	6	8	12	26	23	17	20	28	N/A
22	Non-revenue water	$m^3/km/y$	N/A	1,276	7,243	2,088	4,022	1,206	845	514	762	1,871	3,911	647	1,214	2,919	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
17	DW billed consumption – Residential uses	Million m^3/y	206	4,900	N/A	14	837	314	1,386	372	427	N/A	79	565	140	N/A	32,515
	DW billed consumption – Non-resident. uses	Million m^3/y	123		N/A	7	303	180		200	163	N/A	37	110	180	N/A	
18	Av. household size	pers	2.8	2.3	N/A	1.9	2.2	2.2	2.6	2	2.6	N/A	2.5	2.2	3	2.3	Mean: 2.3 Median: 2.3
19	Av. residential consumption	L/cap/d	125	223	N/A	77	133	189	99	111	87	N/A	117	176	79	142	Mean: 124.5 Median: 125.5
20	Av. annual residential consumption / hh	m^3/y	125	187	N/A	52	104	150	96	79	83	N/A	105	141	87	119	Mean: 104.6 Median: 100.0
21	Non-revenue water	%	54	41	N/A	40	5	30	25	30	42	N/A	29	21	32	23	Mean: 26.3 Median: 24
22	Non-revenue water	$m^3/km/y$	5,340	9,072	N/A	1,551	548	4,283	2,413	2,147	5,142	N/A	1,679	2,778	3,210	3,361	Mean: 2,802 Median: 2,147

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
23	DW - Av. renewal rate	%	N/A	0.85	3	1.24	0.9	1.5	N/A	0.78	N/A	1.2	0.43	0.45	0.61	0.145	N/A
24	Length of sewer - separate	X1000 km	68.4	56.5	11.8	N/A	2.1	48.8	347.6	32.9	6.8	43	189.2	48.5	380	48	N/A
	Length of sewer - combined	X1000 km	24.1			N/A	0	N/A	246.7	24.7	0	9		2.6		3.4	N/A
25	Sewer network /inahbitant	km/ inhab	11	5,7	2,2	N/A	4,6	5,4	7,4	11,1	6,3	5,1	4,2	11,5	6,7	5,6	N/A
26	WW treatment cap.	Million p.e.	N/A	6.8	3.1	N/A	0.8	11.4	N/A	11.7	N/A	14.0	97.9	4.7	104	N/A	N/A
27	WW – Solid removal	%	0	0	2	N/A	0	1	0	0.3	N/A	0	1	0	N/A	0.5	N/A
	WW – C removal	%	1	5.3	54	N/A	0	43.1	1.4	5.2	N/A	1.2	30	10	N/A	15.6	N/A
	WW – Nutrient removal	%	99	94.7	0	N/A	100	55.9	9	33.5	N/A	43.2	40	60	N/A	83.9	N/A
	WW – more stringent	%	0	0	44	N/A	0	0	89.6	61	N/A	55.6	29	30	N/A	0	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
23	DW - Av. renewal rate	%	0.65	N/A	N/A	1.74	0.6	0.7	0.53	2.46	0.063	N/A	N/A	0.46	0.95	N/A	Mean: 0.96 Median: 0.74
24	Length of sewer - separate	X1000 km	0	0	N/A	1.6	157.6	49.8	160.7	63.2	38.5	N/A	10.7	57.5	9.5	631	3,223.2
	Length of sewer - combined	X1000 km	13.4	277	N/A	0		6,9		11		N/A		8.5	2.7		
25	Sewer network /inahbitant	km/ inhab	4,1	4,6	N/A	3,3	9,2	8,3	5,9	9,1	3,7	N/A	8,2	7,2	3,3	10,2	Mean: 6.6 Median: 5.9
26	WW treatment cap.	Million p.e.	N/A	75.2	N/A	0.6	29.9	N/A	49.4	17.1	N/A	N/A	2.7	9	3.6	10,2	784.7
27	WW – Solid removal	%	N/A	4	N/A	0	0	24	0	0	N/A	N/A	15.2	0	N/A	4	N/A
	WW – C removal	%	N/A	29.3	N/A	83	0	41	13.8	100	N/A	N/A	36.6	0	N/A	49	N/A
	WW – Nutrient removal	%	N/A	66.7	N/A	17	100	35	86.2	0	N/A	N/A	48.2	1	N/A	47	N/A
	WW – more stringent	%	N/A	0	N/A	0	0	0	0	0	N/A	N/A	0	99	N/A	0	N/A

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
28	Sludge - agriculture	%	20	18	48	0	N/A	46	28	65	16	18	78	39	44	55	N/A
	Sludge – recultivation/ land reclamation	%	0	0	0	0	N/A	32	0	11	72	0	0	53	36	0	N/A
	Sludge - incineration	%	54	64	0	100	N/A	8	70	21	0	32	15	0	17	0	N/A
	Sludge - landfill	%	0	2	10	0	N/A	9	0	2	12	28	7	4	1	0	N/A
	Sludge - other	%	26	16	42	0	N/A	5	2	2	0	22	0	4	2	45	N/A
30	WW - Av. renewal rate	%	N/A	0.2	1	N/A	N/A	1.5	N/A	0.9	N/A	1.4	0.3	0.7	0.4	0.1	N/A
31	DW – energy cons. - Treatment	kWh/m³	0.03	0.22	0.54	0.46	0.63	0.38	N/A	0.35	N/A	N/A	0.39	0.56	N/A	0.409	N/A
	DW – energy cons. - Distribution	kWh/m³	0.3	0.67	0.54		0.1	0.2	N/A	0.05	N/A	N/A		0.237	N/A	0.154	N/A
32	WW – energy cons. - Collection	kWh/m³	N/A	0.06	0.032	N/A	N/A	0.06	N/A	0.33	N/A	N/A	0.07	0.292	N/A	0.246	N/A
	WW – energy cons. - Treatment	kWh/m³	N/A	0.37	0.22	N/A	N/A	0.54	N/A	1.11	N/A	N/A	0.48	0.787	N/A	0.574	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
28 & 29	Sludge - agriculture	%	N/A	55	81	0	0	82	18	96	19	N/A	3	39	0	78	47.5
	Sludge – recultivation/ land reclamation	%	N/A	0	0	0	0	0	8	0	1	N/A	1.2	59	12	5	8.3
	Sludge - incineration	%	N/A	13	19	0	100	1	18	0	0	N/A	8.4	1	0	13	27.2
	Sludge - landfill	%	N/A	15	0	100	0	6	3	3	52	N/A	0	1	4.2	0	5.6
	Sludge - other	%	N/A	17	0	0	0	11	53	1	28	N/A	87.4	0	83.8	4	11.4
30	WW - Av. renewal rate	%	0.1	N/A	N/A	0.4	N/A	0.6	0.3	1.4	0.4	N/A	N/A	0.5	0.9	N/A	Mean: 0.62 Median: 0.45
31	DW – energy cons. - Treatment	kWh/m³	0.54	N/A	N/A	0.298	0.32	N/A	0.46	0.245	N/A	N/A	N/A	0.6	N/A	N/A	N/A
	DW – energy cons. - Distribution	kWh/m³		N/A	N/A	0.13	0.18	N/A	0.19	0.685	N/A	N/A	N/A	0.1	N/A	N/A	N/A
32	WW – energy cons. - Collection	kWh/m³	0.47	N/A	N/A	0.37	N/A	N/A	0.14	0.09	N/A	N/A	N/A	0.2	N/A	N/A	N/A
	WW – energy cons. - Treatment	kWh/m³		N/A	N/A	0.84	N/A	N/A	0.91	0.527	N/A	N/A	N/A	0.6	N/A	N/A	N/A

Fig.	Field	Unit	AT	BE	BG	CH	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HU	HR
33	Biogas produciton	Million m³/y	25	16	N/A	N/A	N/A	5	N/A	55	N/A	34	141	N/A	N/A	32	N/A
34	Energy production - Heat energy	GWh/y	24	30	N/A	N/A	N/A	N/A	N/A	66	N/A	145	N/A	N/A	N/A	103	N/A
	Energy production - Electricity	GWh/y	68	32	N/A	200	N/A	N/A	N/A	203	N/A	22	611	N/A	N/A	61	N/A
35	CO2 emissions	X1000 t/y	79	N/A	N/A	N/A	N/A	N/A	N/A	218	N/A	71	163	N/A	N/A	345	N/A

Fig.	Field	Unit	IE	IT	LU	MT	NL	NO	PL	PT	RO	RS	SI	SE	SK	UK	**EUR***
33	Biogas production	Million m³/y	8	N/A	N/A	3	N/A	266	280	N/A	N/A	N/A	N/A	73	N/A	N/A	N/A
34	Energy production - Heat energy	GWh/y	N/A	N/A	N/A	5	N/A	N/A	200	N/A	N/A	N/A	N/A	191	N/A	N/A	N/A
	Energy production - Electricity	GWh/y	40	N/A	N/A	4	N/A	N/A	250	43	N/A	N/A	N/A	14	N/A	N/A	N/A
35	CO2 emissions	X1000 t/y	N/A	211	N/A	N/A	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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