Urban water use has decreased in the 1990s in many European countries as a result of measures to reduce demand and because of economic restructuring.

Urban water use is highest in western southern countries largely reflecting the warmer climate in this part of Europe.

Trends in urban water use

Notes:
AC Northern: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia
AC Southern: Turkey, Cyprus, Malta
Western (Central + Nordic): Austria, Belgium-Luxembourg, Denmark, Germany, Netherlands, United Kingdom, Finland, Sweden, Ireland, Iceland, Norway
Western Southern: France, Greece, Italy, Portugal, Spain
Data sources:
Eurostat, New Cronos Database (Eurostat-OECD JQ2000), from EEA Datawarehouse (last update available 25/07/2001)
World Bank

Policy relevance and context:
There are no policy targets, at European level, directly related to the evolution of this indicator. Nevertheless, one of the purposes of the Water Framework Directive is to promote sustainable use based on a long-term protection of available water resources. Also, one of the environmental objectives of the same directive is to ensure a balance between abstraction and recharge of groundwater, with the aim to achieve good groundwater status. In terms of the efficiency of water use, an economic analysis of water use has to be undertaken at river basin level and also Member States have to take into account the principle of cost recovery for water services, including environmental and resource cost.
One of the aims of the Sixth Environment Action Programme or the EU (2001-2010), is to provide products and services using fewer resources, such as water, encouraging resource efficiency through more sustainable consumption patterns. One of its objectives related to water is to ensure that rates of extraction from our water resources are sustainable over the long term. To achieve this objective, measures to improve the efficiency of water use in different economic sectors have to be implemented at national, regional and local level.

Maintaining the integrity of ecosystems through the efficient management of natural resources is the first objective of the OECD Environmental Strategy for the first decade of the 21st century which establishes that the freshwater resources and associated watersheds should be managed in order to maintain adequate supply of freshwater of suitable quality for human use and to support aquatic and other ecosystems.

Environmental context:

Increased urbanisation, population growth and living standards have been major drivers in the increase of urban water use in the past century. These elements have been expected to rise, and with them the water demand for urban uses. As a consequence there is a growing concern about the depletion of water resources.

The volume of urban water use per capita is defined as the relationship between the water use for urban purposes and population. It shows the trend of water use in that particular sector and its potential impact on water resources, and also gives a good comparison between countries.

The amount of urban water use depends above all on climate but also on other factors such as organisation, level and efficiency of public supply services, habit patterns of the population, technological changes (water saving technologies, alternative sources) and economic instruments.

The urban water used is not evenly distributed over time. Households and services tend to demand more water in hot and dry periods and seasonal variations of population, such as tourists, influence the amount of water used in a particular time. At the same time, population density varies across regions and countries. Yearly country figures do not reflect these seasonal and regional variations.

Terms such as water use, water demand, water need, water supply and others, are used in the literature consulted which creates confusion and can lead to misleading comparisons.

This indicator defines the term urban water use as the water abstracted for urban purposes which includes domestic uses, small industries, municipal services, and public gardening.

This concept is different from ‘Domestic water use’, which includes just household water use.

Domestic water use: usually based on estimates of average use of public water supply and usually expressed as per household or per capita (depending on the sources). The methodologies used for the estimations vary according to the sources and the information is not always available. Domestic water use is included as a sub-indicator just for selected countries only.

Assessment:

The total water use for urban purposes in Europe is 56 458 Hm³/year which amounts for 18 % of total abstraction and 44 % of its consumptive uses (total abstraction excluding water use for energy production). During the period 1993-1999 the urban use per capita has slowed down from 104 to 99 m³/inhabitant/y. Over this period, many changes have occurred which have influenced the patterns of urban water use: increasing urbanisation, changes of population habits, use of more efficient technologies and water saving devices, use of alternative sources of water (desalination, wastewater re-use), increasing metering, and the use of economic instruments (water charges and tariffs). Connection of population to water supply systems has also increased, especially in Mediterranean countries.

Nevertheless there are important variations between regions and countries. The share of urban water use in total abstractions in Western Central Europe is 27 % and accounts for 60 % of its consumptive uses, this share is 31 % and 39 %, respectively, in Nordic countries.
The water use per capita in the Nordic countries is higher than in Central Europe and varies between 106 m$^3$/inhabitant/y in Sweden to 267 m$^3$/inhabitant/y in Iceland. Some studies suggest that this high use is related to personal washing and dishwasher use. In Central Europe the variations are between 68 m$^3$/inhabitant/y in Germany to 125 m$^3$/inhabitant/y in Ireland. These variations reflect differences between the structure of water supply systems and water saving measures applied. Ireland for instance does not use water pricing for public water supply, domestic rates were abolished in 1978 and with them the contribution made by household to the cost of water services in urban areas. In Belgium (Region Vallonne), water distribution is a public monopoly managed by the local authority, which fixes prices and services. In UK the water public services are privatised and work under the umbrella of a Regulator (OFWAT).

The northern Accession Countries use 26 % of their abstraction for urban purposes and this accounts for 62 % of their consumptive uses. This group of countries follows the general pattern described above a decreasing trend mainly due to the general increase of water prices and technological changes. In many urban areas, water use has reduced by around 40 %. In some rural areas, there may be a future increase because the actual water service level is very low. For instance in Romania only 55 % of population (90 % of the population living in villages) are connected to centralised water supply systems.

Baltic countries have the lowest water use per capita, together with Czech Republic, Poland and Hungary. The restructuring of the economy and the institutional framework in these three countries accounts for the decline. For instance in Hungary some of the water supply companies are privatised, the water service tariff is high and has had an important effect in urban water use. The Czech Republic water industry has been transferred from the state to municipalities and different forms of ownership have been established, and water charges applied. In Baltic countries meters in private houses were installed, higher water tariffs applied and renovation of old pipe systems carried out, and all these measures have influenced the urban water use. Bulgaria, Romania and Slovenia with 294, 123 and 124 m$^3$/inhabitant/y respectively, have the highest urban water use per capita. The high levels of use in Romania and Bulgaria can be explained by the number of breakdowns in water-supply networks, lack of water metering, water losses and water wastage.

The southern Accession Countries use 13 % of their abstraction for urban purposes and the same percentage of their consumptive uses. The reason for these equal percentages is that the use of water for energy purposes in these countries is negligible. There is a consistent decrease in the late 1990s (from 82 m$^3$/inhabitant/y in 1995 to 67 m$^3$/inhabitant/y in 1999) with the exception of Cyprus, where the urban water use increased steadily throughout the whole period considered. Desalination plants provide water to main cities and the coastal tourist areas to avoid water shortages and rationing water to population. Increasing tourism and migration from rural population to urban settlements are influencing the urban water use.

The share of urban water in southern Europe is 16 % of its total abstraction and 20 % of its consumptive uses, the lowest in Europe with the southern Accession Countries. The relative high use per capita in Mediterranean countries, around 128 m$^3$/inhabitant/y in 1999, reflects their hot climate (increase in water for showering, garden use, public services), and the trend reflects mainly changes in lifestyle derived from increasing urbanisation.

In some areas where the seasonal population increases and water use demand rises (especially demand generated from tourism and recreational activities), alternative sources of water such as desalination are increasing to confront water shortages for the population. During 2000, 15 % of Italian families suffer irregularities in the water supply for domestic use but this figure is higher in some regions (47.9 % in Calabria, 47.3 % in Sardinia).

In the Greek islands drinking water is obtained from spring water, rainwater reservoirs and small dams but in some cases water is transported by tanker ships or produced by desalination. In Spain there is an increasing use of desalination plants in the islands and Mediterranean tourist destinations.

See also fact-sheets: Population growth and density, Tourism, Exploitation and Consumption indexes, Sectoral water uses and Water use efficiencies.
Sub-indicator
Household water use

Key message
● The highest amount of water used per household is found in Spain followed by Norway, Netherlands and France.
Baltic countries and Belgium have the lowest household water use between the European countries considered.

Household water use in selected countries (l/capita/day)

Source: EWA, 2002

Assessment of the sub-indicator
Household water use is usually based on estimates of average use of public water supply and usually expressed on per household or per capita (depending on the sources). The methodologies used for the estimations vary according to the sources and the information is not always available. Data to elaborate this indicator are taken from the European Water Association; data for other countries can be found in different national reports but have not been used to avoid misleading comparisons.

In general, Western European countries have a higher household use per capita than the AC countries. Institutional and economic changes are behind this fact.

The highest amount of water use per household is found in Spain with 265 l/person/day, followed by Norway (224 l/capita/day), Netherlands (218 l/capita/day and France (164 l/capita/day).

Baltic countries (Lithuania and Estonia) with 85 and 100 l/capita/day respectively and Belgium (115 l/capita/day) have the lowest household water use among the European countries considered.

(See more complete assessment in the main indicator)

References


ISTAT. Giornata mondiale dell’acqua: le statistiche dell’Istat. Instituto Nazionale di statistica. Italy

OECD Environmental Performance Reviews (Czech Republic, 1999, Germany, 2001; Greece, 2000; Ireland, 2000; Portugal, 2001; Slovak Rep., 2002; Turkey, 1999)


SoE country reports

UN, Environmental Performance Reviews (Romania, Bulgaria, Estonia)

Data

Spreadsheet:
WaterUrban_RevOct03.xls

Meta data

Technical information
1. Data source:
Water use for households: European Water Association (EWA), Yearbook 2002
Population: World Bank
2. Description of data:
Water abstractions for urban use (Hm$^3$/year) data are compiled every two years. It includes water for domestic, small business and public services uses.
Water use for households (l/person/day) data are based on estimations compiled from country sources, it covers different years.

3. Geographical coverage: Eurostat data covers most of Europe, EWA covers selected European countries.

4. Temporal coverage: Water abstractions, available data from 1993 for most of the countries but available data series are scarce (see tables included).

5. Methodology and frequency of data collection: Updates every two years for water abstractions.

6. Methodology of data manipulation, including making 'early estimates': Estimations used for water uses by country when not available. General criteria:
   - Years of data: 1. As only guesswork can be made, the (arbitrary) action is to copy the only available figure to every year of the series.
   - Years of data: 2. 'Step to step' method. It is a refinement of the former one. Every new figure is used to fill the gaps ahead until a new figure appears.
   - Years of data 3. As before
   - Years of data 4, 5 and 6. Interpolation and extrapolation, assuming linearity.

Strength and weakness (at data level):
Urban water use covers not only domestic uses but also, small business and public services, they are data series at European level and regular updates, even with some gaps.
Domestic water use is based on estimates of average use of public water supply made by countries. It does not cover all the countries and the methodologies may differ. They are not data series available at European level and time for updates varies between countries.
The scarcity of data means that estimations have been made to fill the data series by country and make the regional assessment, this is particularly serious when just data for one or two years exist, so the assessment has to be seen with this consideration.
Some of the existing data about water use are quite unreliable, for example, some countries repeat the same figure over the years.

9. Overall scoring (give 1 to 3 points: 1=no major problems, 3=major reservations):
   Relevancy: 1
   Accuracy: 2
   Comparability over time: 2
   Comparability over space: 2

Further work required
Related to water uses it is necessary to improve the data flows between countries and international organisations in order to have reliable and accurate data series to produce the information needed. Further work is necessary to improve definitions, and methodologies for estimations at country level in order to make reliable comparisons.
The main limitations to produce accurate assessments on water uses for different economic sectors are derived from the limitations on quality, quantity and regional resolution of data.