



## Indicator Fact Sheet

### (WQ06) Water use efficiency (in cities): leakage

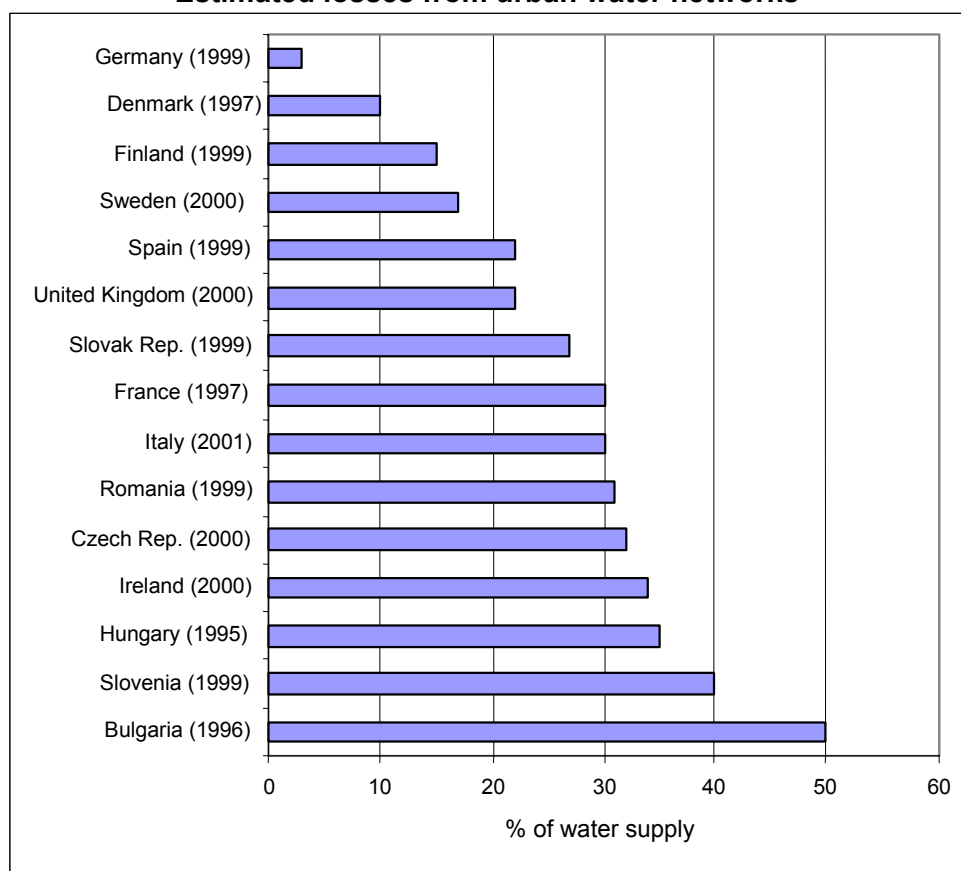
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#### Key message

- Leakage losses are significant in many cities

#### Estimated losses from urban water networks



Source: EEA, from different sources

#### Results and assessment

##### Policy relevance and context:

Under Article 9 of the Water Framework Directive the control and management of water quantity in all water sectors is a legal requirement in order to promote the sustainable use of water resources and to enhance the aquatic environment. Improved water use efficiency is viewed as an essential pre-requisite to achieving these aims.

##### Environmental context:



Water is a major concern for environmental policies. Water losses during transport have a negative impact on the water environment. Water infrastructure, especially in cities, can be outdated or reached the end of their service life causing leakage problems and therefore contributing to increase the level of water abstraction in order to keep water supply levels.

#### Assessment

Losses of water in the distribution network can reach high percentages of the volume introduced. The problems with leakage are not only related to the efficiency of the network but also to water quality.

Leakage reduction applies to both leakage from companies distribution systems and supply pipe leakage (from customers underground supply pipes). An effective reduction in leakage rates to an acceptable level depends on a range of factors. These include mains pressure, local climate and topography, local value of water, age of the system, type of mains and soil types. Privatised water companies do not necessarily benefit financially by reducing leakage: in England and Wales for example leakage targets are set by the water regulator. Germany and Netherlands have low leakage levels due to a combination of favourable soil conditions, treatment to reduce the aggressiveness of the water supplied, easy access to repair mains and a high level of mains replacement.

Leakage losses are still significant in many cities. Commonly, this is due to the poor condition of water mains. Nonetheless, progress is being made to reduce leakage losses, although this is uneven within different countries. For instance In Malta, leakage control policies have been introduced to reduce leakage rates from 67 200 m<sup>3</sup>/d in 1995 to 29 400 m<sup>3</sup>/d by 2001 (see also subindicator: Trends in urban leakage).

In UK, the Environment Agency estimates that demand management and leakage reduction measures together could reduce losses by 1.3 Ml/day during summer and autumn peak periods. This means potential average savings of 15 % (DEFRA, 2002)

Issues of water use efficiency are given less emphasis in some of those countries or regions where water supplies are abundant, where there is limited competition for water supplies or in order to promote socio-economic development, nevertheless, countries like Denmark, Finland, Germany and Sweden have low levels of leakage.

See fact-sheets: Sectoral water use, Water use in urban areas.

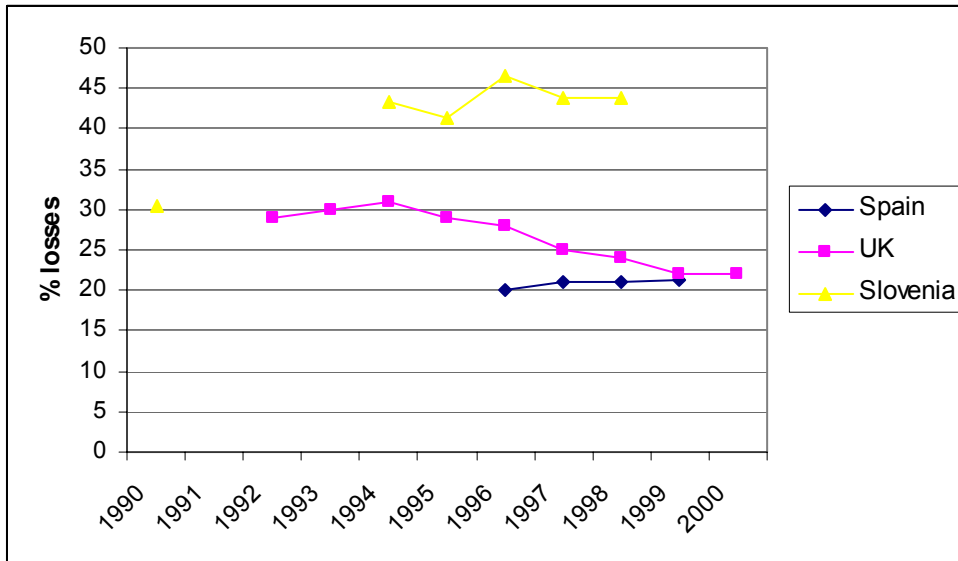
### **Sub-indicators**

#### **Some trends in urban leakage: Spain, UK and Slovenia**

☺ Progress is being made in some countries to reduce water leakage from urban distribution systems.



### Trends in urban leakage in Spain, UK and Slovenia



Sources:

Spain, INE 1999; UK, OFWAT; Slovenia, Statistical Yearbook of Rep. of Slovenia, 2000

#### Assessment of the sub-indicator

In England and Wales, an active programme of leakage reduction reduced network losses from 29 to 22% of the total distribution input between 1992/3 and 2000/1. Average losses (including unaccounted for water) for the largest municipalities in Sweden in 1997 were 18%, but vary from 10.7 to 35.1%. In Spain average water losses in the distribution network increased from 20.0 to 21.4% between 1996 and 1999, with only 4 regions recording a reduction in water losses over this period. Network losses in Slovenia in 1985 and 1990 were 31.7 and 30.4% of total water urban supply, respectively, but increased to an average of 43.8% during the period 1994-1998.

#### References

Baltic State of the Environment Report, 2000.

DEFRA, 2002. Economic Instruments in Relation to Water Abstraction. [www.defra.gov.uk](http://www.defra.gov.uk)

EEA, 1999. Sustainable water use in Europe. Part 1. Sectoral use of water. Environmental Assessment Report No 1.

INE, 1999. Estadísticas del Agua, Spain, 1999

Federal Statistical Office of Germany, 1998.

OECD, 1999. Environmental Data Compendium.

OECD, 2001. Environmental Indicators: towards sustainable development.

Statistics Sweden, 2000.

Water Efficiency in Cities, 1999. 'Ahorro de agua en la industria' Paper. International Conference. Zaragoza, Spain, 1999



## Data

Spreadsheet:

WatUseEfficiency\_RevJune03.xls

## Meta data

### Technical information

1. Data source: National sources\*
2. Description of data: leakage as a % of water supply (average)
3. Geographical coverage: EEA countries
4. Methodology and frequency of data collection: Data are taken for published literature. Methods and frequency vary.
5. Methodology of data manipulation, including making 'early estimates':
6. Quality information
7. Strength and weakness (at data level): Data are insufficient to make an accurate assessment.
8. Reliability, accuracy, robustness, uncertainty (at data level): The concept of leakage covers different aspects (losses in the network, losses in users installations before the water is metered, undermeasurement by meters when water flow is low, water for public uses not metered ...), comparison between the figures found in different countries has to be taken with caution because of these differences.
9. Overall scoring: (give 1 to 3 points: 1=no major problems, 3=major reservations.

Relevancy: 2

Accuracy: 3

Comparability over time: 3

Comparability over space: 3

\*

Bulgaria (1996)	OECD, Environmental Performance Review
Slovenia (1999)	Vision to Action, Central and Eastern Europe, 1999
Hungary (1995)	Mountain Unlimited, 1995
Ireland (2000)	OECD, Environmental Performance Review, 2000
Czech Rep. (2000)	SoE Report
Romania (1999)	EEA/WHO, 1999
Italy (2001)	OECD, Environmental Performance Review, 2001 (draft)
France (1997)	OFWAT, 1997
Slovak Rep. (1999)	EEA, 1999
United Kingdom (2000)	OFWAT, 2000
Spain (1999)	Water Statistics, INE, 1999
Sweden (2000)	Statistics Sweden, 2000
Finland (1999)	FEI, 1999
Denmark 1997)	Vangsgaard, 1997
Germany (1999)	Pricing Water Economics, Environment, Sintra, 1999

## Further work required

Common indicators of water use efficiency, such as percentage urban leakage, are of limited value. Consistent measures and concepts of water efficiency need to be defined within each major water sector to provide reliable and comparable data. Other indicators could include expenditure on environmental protection or water use per unit of production. Investment in water conservation measures, including water taxes, can provide a response indicator of efforts to improve water use.

