




Wastewater treatment and access to improved sanitation

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Percentage of the population in the community or area under consideration served by a sewerage system connected to a wastewater treatment facility or a safe local wastewater disposal system

This summary is based on data on the proportion of the population connected to wastewater treatment facilities or to sanitation facilities in urban and rural areas.

KEY MESSAGE

 In the European Union (EU) countries, there were significant improvements in the proportion of the population connected to wastewater treatment facilities between 1980 and 2003. On average, two thirds of the population had been connected by 2003, although there were significant variations. Further, data for the Region show that coverage in rural areas often lags behind that in urban areas, particularly in eastern Europe and central Asia.

Diarrhoeal disease, which is estimated to have caused 13 000 deaths in children aged under 14 years in the eastern European and central Asian countries of the WHO European Region in 2001, is strongly associated with poor water quality. Improved wastewater treatment can reduce this burden, and continued efforts to implement policies with this aim are essential.

RATIONALE

This indicator assesses the potential level of pollution from domestic point sources entering the aquatic environment which may have an adverse impact on public health. It also monitors progress towards reducing this potential. In terms of population health, the indicator shows the percentage of the population at risk of infection via the faecal-oral route due to the absence of adequate sewage disposal systems.

PRESENTATION OF DATA

Figure 1 shows the percentage of the population living in agglomerations with more than 2000 inhabitants with home connections to wastewater treatment facilities in 1980, 1995 and 2003, or the most recent year between 1997 and 2003 for which data are available. The differences between western and eastern European countries are clear.

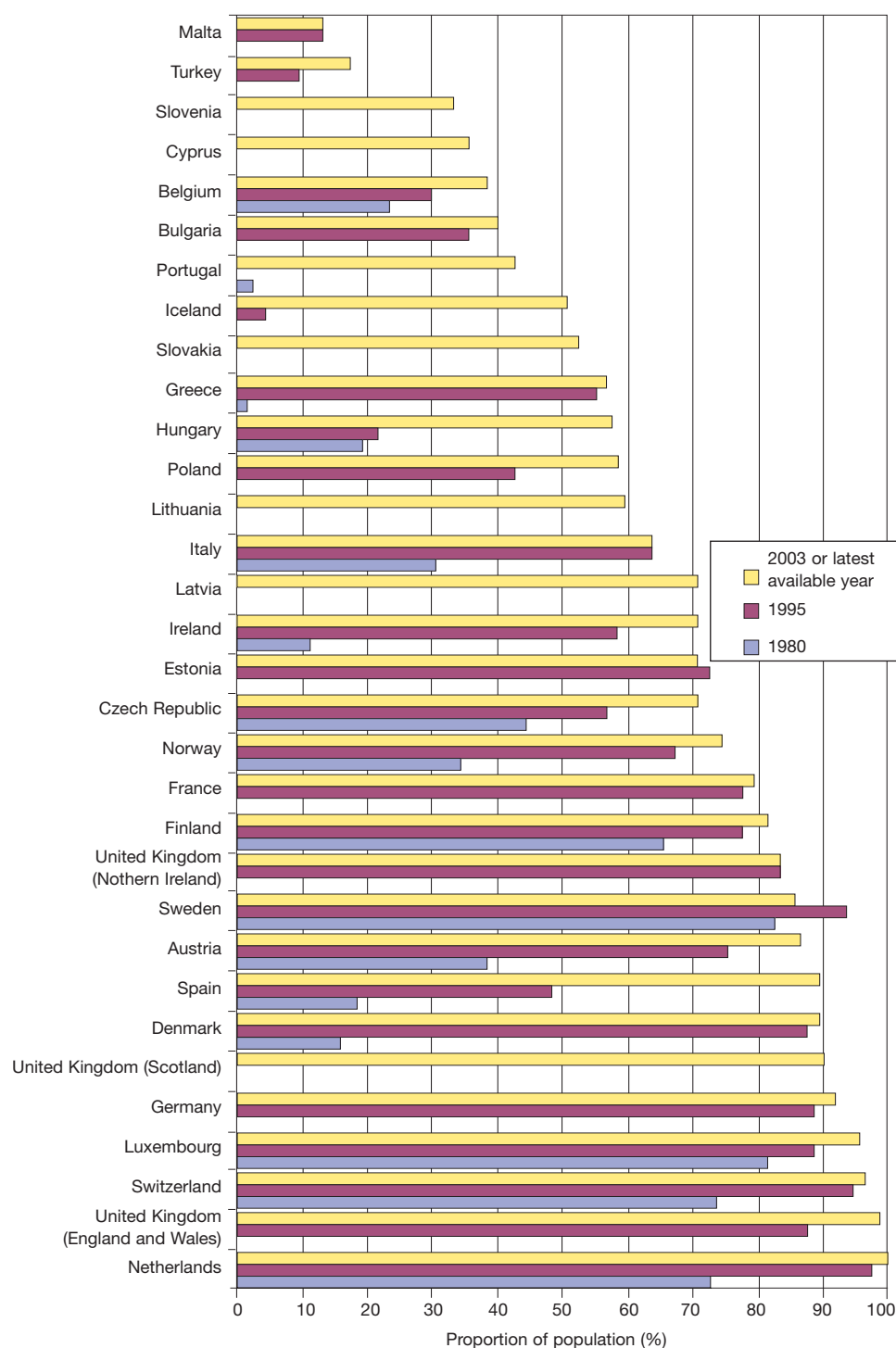
Figure 2 shows the percentage of the population with house connections to sanitation facilities in urban and rural areas for 2004 in those Member States for which data are available. Data cover domestic populations that are connected to a sewerage system, thus private septic tanks or dry sanitation are excluded.

HEALTH – ENVIRONMENT CONTEXT

Wastewater from households and industry places a significant pressure on the water environment through the release of loads of organic matter, nutrients, hazardous substances and pathogenic microorganisms. The majority of the European population lives in urban agglomerations (three quarters in 1999) and a significant proportion of wastewater is collected in sewers connected to public wastewater treatment plants. Low water quality reduces the availability of water resources for specific uses, in particular domestic needs and irrigated agriculture, and has adverse implications for public health.

The principal effect on health of poor water quality is diarrhoeal disease. A recent estimate of mortality from diarrhoeal disease attributable to poor water, sanitation and hygiene suggested that over 13 000 children aged under 14 years die annually in Europe and central Asia due to poor water conditions (3–5). In the European Region, the burden of diarrhoeal disease is estimated to be 5.3% of all deaths and 3.5% of all disability-adjusted life-years (DALYs) in children aged 0–14 years in 2001. The largest contribution to the burden of disease comes from those countries with low adult and low child mortality (countries in the WHO Eur-B sub-region),¹ with over 11 000 deaths and almost 500 000 DALYs. This suggests that high potential reductions in deaths and DALYs could be made by the development of infrastructures and better personal hygiene. For instance, giving the entire child population in the Eur-B countries access to a regulated water supply and full sanitation coverage, with partial treatment for sewage, would save about 3700 lives and 140 000 DALYs (6). For additional information, see ENHIS-2 fact sheet 1.1 of May 2007 on outbreaks of waterborne diseases (7).

Fig. 1. Changes over time in the population connected to wastewater treatment facilities, selected European countries, 1980–2003



Source: EUROSTAT (1).

POLICY RELEVANCE AND CONTEXT

Pan-European and global context

The WHO-United Economic Commission for Europe (UNECE) Protocol for Water and Health, adopted in 1999, requires all countries to provide sanitation to a standard which sufficiently protects human health and the environment through the establishment, improve-

ment and maintenance of collective systems and wastewater treatment installations, and to establish a programme for monitoring situations likely to result in outbreaks or incidents of water-related disease (8). Progress made is to be assessed in terms of suitable indicators, of which this indicator is one.

¹ Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Serbia and Montenegro, Slovakia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan.

The size of the burden of disease attributable to poor sanitation and hygiene, and the availability of means to reduce it, led to the inclusion of “access to improved sanitation”² in the United Nations Millennium Development Goals indicators (9).

In 2004, the Fourth Ministerial Conference on Environment and Health adopted the Children’s Health and Environment Action Plan for Europe (CEHAPE), which includes four regional priority goals to reduce the burden of environment-related diseases in children (10). One of the goals (RPG I) aims at preventing and significantly reducing morbidity and mortality arising from gastrointestinal disorders and other health effects, by ensuring that adequate measures are taken to improve access to safe and affordable water and adequate sanitation for all children.

EU context

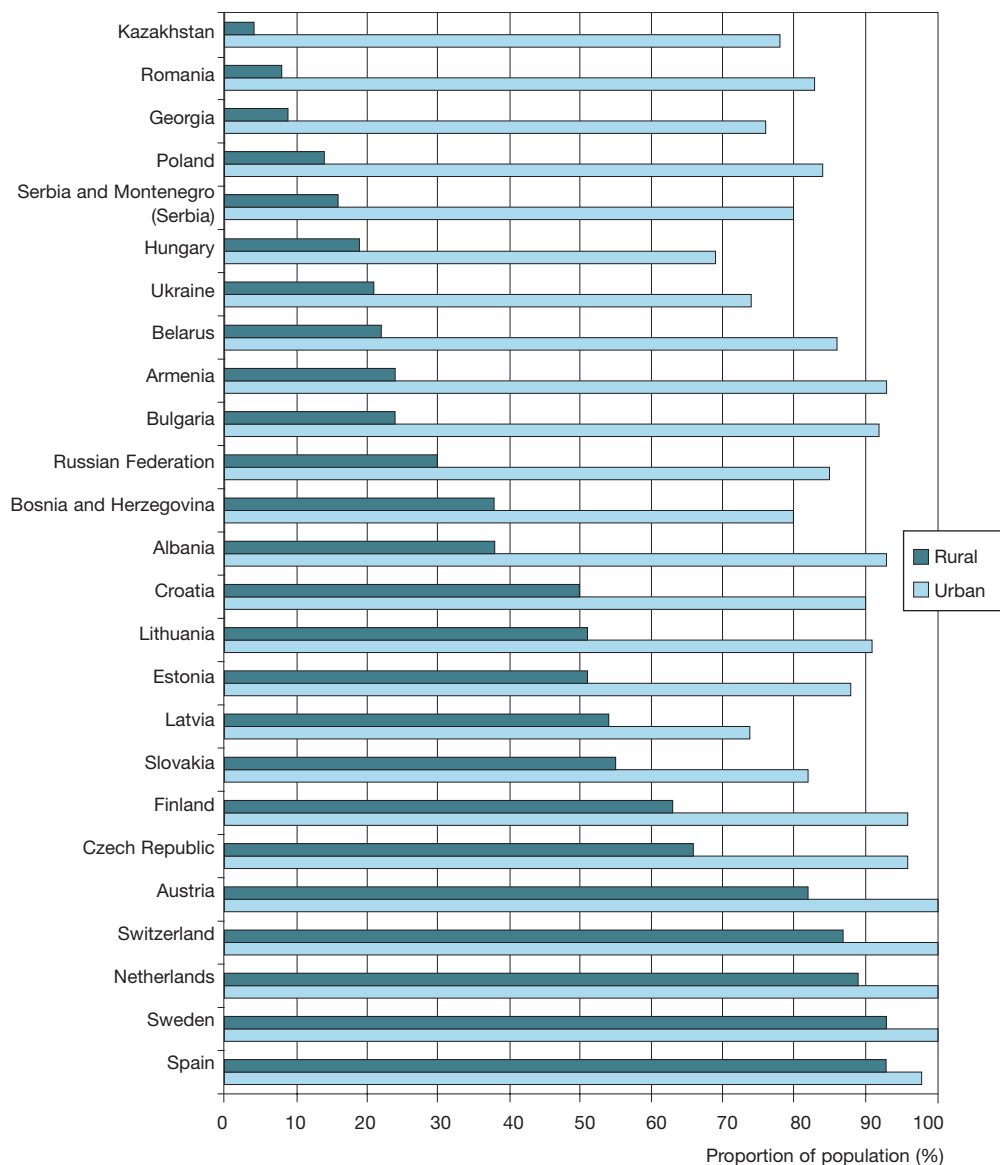
Council Directive of 21 May 1991 (91/271/EEC) concerning urban wastewater treatment prescribes the level of treatment required before discharge (11). It requires member states to provide all agglomerations of more than 2000 population equivalents (p.e.) with collecting systems. Secondary (biological) treatment must be provided for all agglomerations of more than 2000 p.e. discharging into fresh waters and estuaries and for all agglomerations of more than 10 000 p.e. discharging into coastal waters. EU member states must identify water bodies as sensitive areas (vulnerable to eutrophication) in accordance with the criteria of the Directive. In sensitive areas, they must provide more advanced treatment of wastewater with nutrient removal, placing more stringent criteria with specific monitoring requirements. The Directive is designed to protect the ecological status of receiving waters and does not require microbiological analysis of effluents discharged from wastewater treatment facilities. Member states are required to submit biennial reports to the EU of their progress towards the implementation of the Directive.

The cohesion policy of the EU will continue to support sewage treatment plants from its € 336 billion budget for 2007–2013 for all new member states. Support is greatly needed as current investments in some of the eastern European countries are at the level of € 5–10 per capita and will need to be increased to € 40–50 per capita to comply with the deadlines (12).

ASSESSMENT

An average of 66.5% of the population of the countries considered in the assessment were connected to wastewater treatment facilities in 2003. There are, however, wide differences between countries. In the Nordic and some

Fig. 2. Percentage of the population connected to sanitation facilities in urban and rural areas, selected countries in the WHO European Region, 2004



Note. Privately owned septic tanks or dry sanitation systems are not included in the data. Serbia and Montenegro became two separate Member States of WHO in September 2006. In this figure the data refer to 2004 and relate only to the then entity of Serbia and Montenegro (Serbia). Source: WHO/UNICEF Joint Monitoring Programme (2).

northern European countries, which have the longest tradition of water purification, more than 85% of the population were connected to wastewater treatment facilities. In southern European countries coverage ranged between 40% and 60%, while in some of the new EU member states it was less than 40%. For the period considered, annual data were not available for a number of countries, which makes the derivation of time trends at the European level difficult. The available data show that on average there was a 70% increase in coverage

from 1980 to 2003, with a 20% increase from 1995 to 2003. Some countries, including the Czech Republic, Hungary, Iceland and Poland, have made significant progress since 1995.

The European Urban Wastewater Treatment Directive has resulted in significant improvements in urban wastewater treatment capacity (13). It is anticipated that with the planned increase in capacities of treatment plants and collection networks the situation will continue to improve.

²“Improved” sanitation includes connection to a public sewer or septic system, pour-flush latrine, simple pit latrine or ventilated improved pit latrine.

The data from the Joint Monitoring Programme for Water Supply and Sanitation (14) show a wide difference between urban and rural areas in a number of countries in terms of the percentage of the population with house connections to sanitation facilities. This underlines the urban and rural challenges of the decade in meeting the Millennium Development Goals target for drinking-water and sanitation.

DATA UNDERLYING THE INDICATOR

Data source

1. EUROSTAT (1)
2. WHO/UNICEF Joint Monitoring Programme (2).

Description of data

The EUROSTAT data are derived from the dataset “National population connected to wastewater treatment plants” (Table IWQ4). The Joint Monitoring Programme data are the datasets “san_urb_hc” and “san_rur_hc”, defined as “Percentage of population with

house connections to sanitation facilities in urban and rural areas”. House connections only take into account domestic connections that are connected to a sewerage system and therefore exclude septic tanks or dry sanitation, even if privately owned. Improved sanitation includes connection to a public sewer, connection to a septic system, pour-flush latrine, simple pit latrine or ventilated improved pit latrine.

Method of calculating the indicator

The indicator was computed as: $\text{connected population} / \text{total population} \times 100$.

Geographical coverage

The EUROSTAT database covers 27 EU countries and Croatia.

The Joint Monitoring Programme database covers all Member States of the WHO European Region, including the Commonwealth of Independent States.

Period of coverage

The EUROSTAT database provides data from 1970 to 2003: every five years from 1970 to 1990 and annually from 1990 to 2003. The Joint Monitoring Programme database provides data for four time points 1990, 1995, 2002 and 2004.

Frequency of update

The EUROSTAT database is updated every two years. The Joint Monitoring Programme database is updated when a new questionnaire is filled in.

Data quality

Owing to the voluntary nature of the data collection, the data sets obtained by EUROSTAT and by the Joint Monitoring Programme are not complete and do not relate to the child population.

EUROSTAT checks the data for plausibility, for example, for logical consistency and for extraordinary changes in time series. The data are revised whenever a new questionnaire is filled in.

Because the data collected are useful in a policy context to identify areas with low sanitation coverage, there is a need for improvement in the collection, management and reporting of data. A mechanism for regular reporting as well as a widening in the data coverage and improvement in the estimates of sanitation and wastewater treatment should be set under the WHO Protocol on Water and Health.

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Further information

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