



## ACCESS TO IMPROVED SANITATION AND WASTEWATER TREATMENT

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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

#### 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 2005. On average, two thirds of the population had been connected by 2005, although there were significant variations. Further, data for the European Region as a whole 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 European Region in 2001, is strongly associated with poor drinking-water quality and hygiene and a lack of sewerage and sanitation. 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 that 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 owing to the absence of adequate sewage disposal systems.

#### PRESENTATION OF DATA

Fig. 1 shows the percentage of the population living in agglomerations of more than 2000 inhabitants with home connections to wastewater treatment facilities in 1980, 1995 and 2005 (or the latest year between 1997 and 2005 for which data are available). The differences between western and eastern European countries are clear.

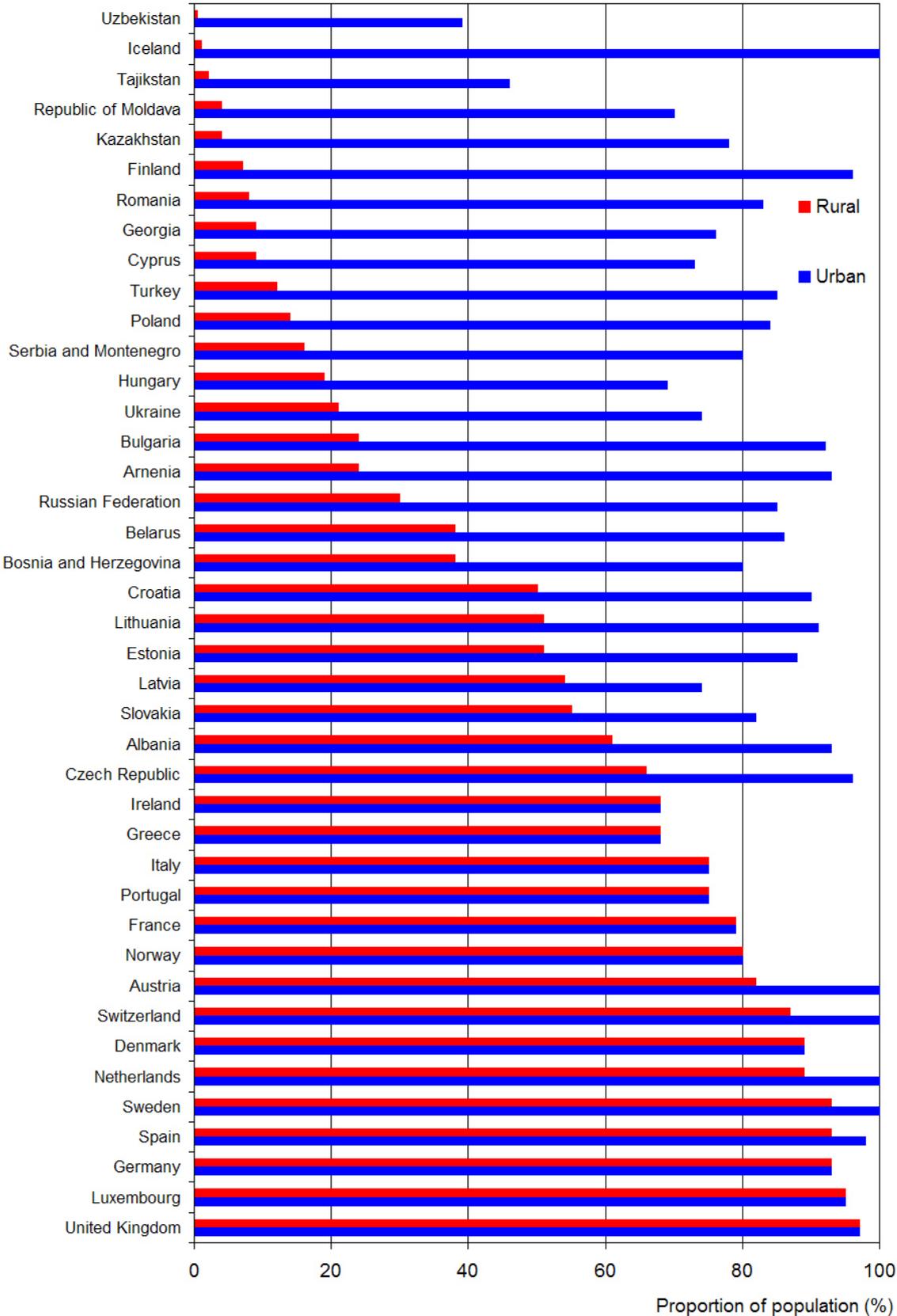
Fig. 2 shows the percentage of the population with home connections to improved sanitation facilities in urban and rural areas for 2006 or the latest available year for all countries in the WHO European Region for which data are available. The data cover populations that are connected to a sewerage system; private septic tanks and dry sanitation are thus excluded.

**Fig. 1. Changes between 1995 and 2005 (or latest available year) in the population connected to wastewater treatment facilities in selected European countries**



Source: EUROSTAT (1).

**Fig. 2. Percentage of the population with home connection to improved sanitation facilities in urban and rural areas, selected countries in the WHO European Region, 2006 or latest available year**



*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.  
*Source:* WHO/UNICEF Joint Monitoring Programme (2).

## HEALTH AND ENVIRONMENT CONTEXT

Wastewater from households and industry places a significant pressure on the water environment through the release of organic matter, nutrients, hazardous substances and pathogenic microorganisms. The majority of the European population lives in urban agglomerations (three quarters in 1999); a significant proportion of urban wastewater is collected in sewers connected to public wastewater treatment plants. Contamination of aquatic resources by wastewater reduces the possible use of the recipient waters for a variety of applications: treatment to drinking-water standards may become technologically more challenging, while direct use in irrigation may pose specific health risks.

The principal effect on health of poor water quality is diarrhoeal disease. In the European Region, the burden of diarrhoeal disease was estimated in 2001 to be 5.3% of all deaths and 3.5% of all disability-adjusted life years (DALYs) in children aged 0–14 years. 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),<sup>1</sup> with over 11 000 deaths and almost 500 000 DALYs in 2001. This suggests that potentially large 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 annually (6). For additional information see ENHIS fact sheet 1.1 on outbreaks of waterborne diseases (7).

## POLICY RELEVANCE AND CONTEXT

### *Pan-European and global context*

The Protocol on Water and Health drawn up by WHO and the United Nations Economic Commission for Europe (UNECE), adopted in 1999, requires all countries to provide sanitation to a standard that sufficiently protects human health and the environment through the establishment, improvement 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.

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”<sup>2</sup> 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 (RPG) to reduce the burden of environment-related diseases in children (10). 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 91/271/EEC of 21 May 1991 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 that are 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 on 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).

<sup>1</sup> 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.

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

## ASSESSMENT

Available data from the European Economic area countries,<sup>3</sup> Switzerland and Turkey show that, on average, 69% of the population of the countries considered in the assessment were connected to wastewater treatment facilities in 2005. There are nevertheless large differences between countries. In the Nordic and some other 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%.

The average population connected to wastewater treatment facilities increased from 58.6% in 1995 to 66.4% in 2002 and 68% in 2003 or latest available year. Between 2003 and 2005, coverage increased to 69%.

A large number of countries have made progress in wastewater treatment coverage since 1995: Austria, Belgium, Bulgaria, Cyprus, Germany, Hungary, the Czech Republic, Iceland, Ireland, Italy, Lithuania, Norway, Poland, Portugal, Slovakia, Spain, Switzerland and Turkey. The most significant improvements are reported in Belgium, Cyprus, Hungary, Iceland, Ireland, Portugal and Turkey.

Council Directive 91/271/EEC 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.

The data from the WHO/UNICEF Joint Monitoring Programme (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. Albania, Belarus, Hungary, Lithuania and Turkey have reported considerable progress in coverage in rural areas between 1995 and 2004. The increase in coverage ranges from 40% to 60% in Albania, from 20% to 40% in Belarus, from 10% to 20% in Hungary and from 40% to 50% in Lithuania. The population with a house connection to sanitation facilities in rural areas in Turkey has increased by three times and amounted to 12.2% in 2004.

Disparities in sanitation coverage between rural and urban areas, and also between the rich and poor, underline the challenges of the decade in meeting the Millennium Development Goals (MDG) target for drinking-water and sanitation. A cost-benefit analysis undertaken by WHO in 2004 (15) found that achieving the MDG target in water and sanitation would bring substantial economic gains: every dollar invested would yield an economic return of between 3 and 34 dollars, depending on the region. The benefits would include not only an average worldwide reduction of 10% in episodes of diarrhoeal diseases but also an increase in gender equality.

## 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 urban wastewater treatment plants" (Table IWQ4). The data include primary, secondary and tertiary wastewater treatment. They do not include connection to privately owned systems such as septic tanks because very few countries have reported this information to EUROSTAT.

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 take into account only domestic connections to a sewerage system and therefore exclude septic tanks and 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. Additional information was extracted from the 2008 country reports, now available at the Joint Monitoring Programme web site (2).

### *Method of calculating the indicator*

The indicator was computed as: connected population/total population × 100.

### *Geographical coverage*

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<sup>3</sup> See [http://en.wikipedia.org/wiki/European\\_Economic\\_Area](http://en.wikipedia.org/wiki/European_Economic_Area).

The EUROSTAT database covers the 27 EU Member States 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 2005: every five years from 1970 to 1990 and annually from 1990 to 2005.

The Joint Monitoring Programme database provides data for five time points: 1990, 1995, 2002, 2004 and 2006.

#### *Frequency of update*

The EUROSTAT database is updated every two years. The JMP 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. Mechanisms for regular reporting, as well as widening the data coverage and improving the estimates of sanitation and wastewater treatment, should be set under the WHO Protocol on Water and Health.

The Global Annual Assessment of Sanitation and Drinking-Water (GLAAS) is a UN-Water pilot initiative, technically coordinated by WHO (16). GLAAS is seeking a new approach to reporting progress in the sanitation and drinking-water sectors in order to strengthen evidence-based policy-making towards and beyond the MDG.

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### **Further information**

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Author: Alexandra Katsiri, National School of Public Health, Athens, Greece.