

## Keeping Water Safe to Drink

**How safe are water supplies?**

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### Introduction

Access to water that is safe to drink is vital to human health and to development. Recognising this, world leaders have set themselves the goal of halving by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation. This is one of the Millennium Development Goals (MDG) to reduce world poverty set out in the United Nations Millennium Declaration in the year 2000, and reaffirmed at the 2002 World Summit on Sustainable Development.

To be credible, all such goals depend on being able to measure progress towards them. A Joint Monitoring Programme (JMP) set up within the UN system monitors progress towards all the MDGs. But the indicators being used for water may be giving a distorted view of the situation because they focus on whether people who previously did not have access to a water supply have acquired it.

This leaves aside the whole question of whether existing water infrastructure is up to scratch. This is particularly a concern in the countries of the former Soviet Union, for example. These countries have extensive water infrastructure, and in theory provide safe drinking water and sanitation. But OECD figures show that many people in these countries are in fact receiving water that is not safe to drink because the water infrastructure – water treatment plants, delivery pipes and waste water facilities – has been continuously deteriorating over the last two decades.

This *Policy Brief* looks at how big a problem deteriorating water supplies are in areas with existing water infrastructure, how to remedy this, and how to improve the monitoring of progress towards MDG water goals to include this issue. ■

**How safe are water supplies?**

OECD work in the countries of the former Soviet Union shows that the official MDG indicators paint an over-optimistic picture of the situation regarding access to water and sanitation in the region.

The UN Joint Monitoring Programme finds that the share of people in the countries of Eastern Europe, Caucasus, and Central Asia (EECCA) with access to an improved drinking water source has risen slightly since 1990. As a result, in 2002, 93% of the population had access to drinking water (Figure 1) and about 70% had access to improved sanitation.

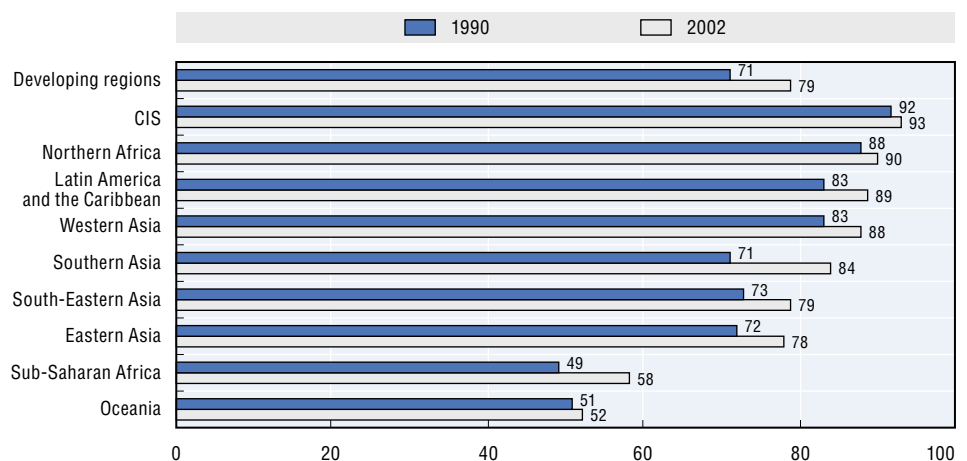
On the basis of these figures, the JMP concludes that for the drinking water target the EECCA region is essentially on track to meet the internationally agreed MDG goals.

Data gathered by the OECD and other organizations, including the World Bank, however, suggest a far more worrying situation. Extensive urban infrastructure built in the Soviet era provides a large share of the population with water taps in their homes. But the system is in such a serious state of disrepair that for many people, having a water tap does not necessarily mean that they have sustainable access to safe drinking water. Indeed, these figures suggest that, far from improving, the situation has deteriorated significantly over the past 15 years.

Why is there such a discrepancy in the figures? The answer is that the official UN statistics for the MDGs only measure whether people have access to an “improved” water source – available at the turn of the tap in your home, from a standpipe, from a protected well, etc. But this does not answer the question whether the water that comes out of the tap is actually safe, whether water is available at all times and whether the system is being looked after to ensure that the water will remain safe in future.

For a more accurate picture of the situation with regard to access to water and sanitation, and particularly sustainability of the safe supply, would require complementary indicators relating to the quality and sustainability of water sources. ■

**Figure 1.**  
**PROPORTION OF POPULATION USING IMPROVED DRINKING WATER, 1990 AND 2002 (PERCENTAGE)**



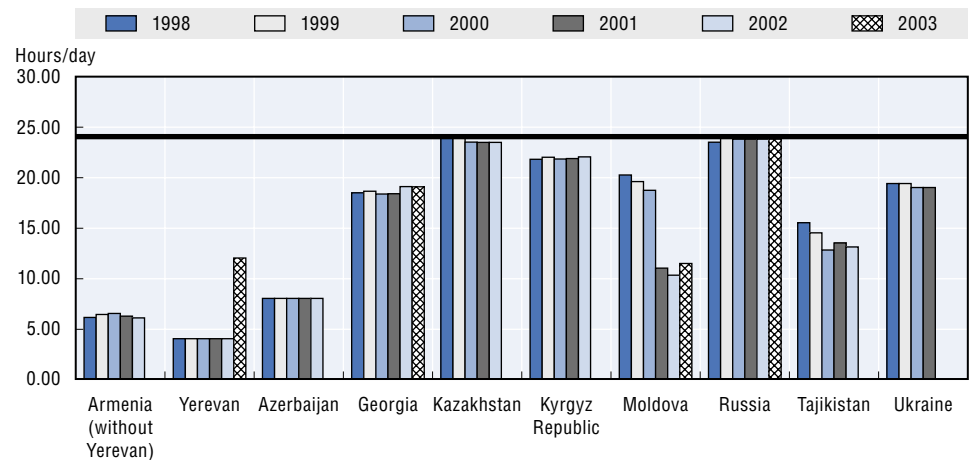
Source: United Nations (2005), *The Millennium Development Goals Report*, New York.

How big is the problem?

Data collected from about 400 water utilities in the EECCA region corroborates this view. It shows that even in urban areas, where people usually receive better quality services than in rural areas, water infrastructure has been continuously deteriorating over the last decade or so, in a number of ways:

- **Leakage** in the water distribution network, either due to the poor condition of pipes, or to illegal siphoning off of water, has remained at very high levels in all EECCA countries; indeed, it has increased in some of them. Leakage went from about 30% to 45% in Georgia and Moldova from 1998 to 2003, and it remained at 50% to 70% in Armenia and Kyrgyzstan. The international benchmark is about 20%.
- **Continuity** of water supply has also been deteriorating (Figure 2). Many people receive water only for a few hours per day, and people living on the higher floors of buildings may not receive any water at all. Apart from in Russia, none of the EECCA countries is providing water to users 24 hours per day, and most are at less than 20 hours. This, coupled with persistently high levels of pipe-breaks throughout the region, shows a further deterioration of the water supply and sanitation networks.
- **Water quality** generally meets sanitary standards when it enters the distribution network, but the water is frequently contaminated by the time it reaches the consumer. Leaks in the network allow for infiltration and cross-contamination between the water supply and sanitation pipes, and result in lower water pressure which disrupts water supply to upper floors. The leakage in the sewer network results in significant amounts of effluent leaking into the environment, and reaching surface and ground waters.

Figure 2. CONTINUITY OF SERVICE (HOURS PER DAY)



Source: EAP Task Force/OECD (2005), Progress on implementing the Almaty Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in EECCA, Paper for “Financing Water Supply and Sanitation in EECCA”, Conference of EECCA Ministers of Economy/Finance, Environment and Water and their partners from the OECD, 17-18 November 2005, Yerevan, Armenia.

This is beginning to have serious effects on **public health**. The World Health Organization (WHO) estimates that in the region covered by the UN Economic Commission for Europe, more than 13 000 children under the age of 14 die every year due to poor water conditions, most of them in the EECCA region, and that the economic and human benefits of improving water supply and sanitation would be very substantial.

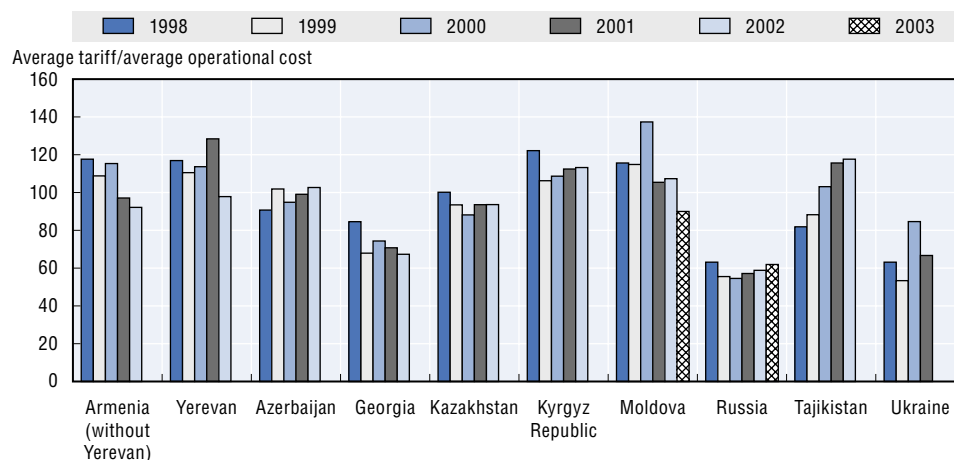
The situation is generally much worse in **rural** areas of EECCA where 36% of the population live, due to the collapse of water services following the dismantling of the collective farm system. In Kyrgyzstan, for instance, access to sustainable water supply decreased by 12% between 2000 and 2003.

The main reason for the worsening situation is lack of **finance**. Between 50% and 90% of water utility revenue is currently generated by user charges and the remainder mostly comes from public budgets. However, these funds are not enough to cover the cost of operating the system, let alone maintenance and capital costs. In a number of countries, utility revenue covers only about 60% of operating costs, let alone maintenance and capital costs.

To achieve the MDGs on water supply and sanitation, it has been estimated that a total of about EUR 7 billion would be needed annually for operation, maintenance and capital investment, which is roughly double the current level of finance.

Given this financial shortfall, most utilities in the region have had to decrease the levels of service that they provide in order to save on costly inputs such as electricity and chemical reagents for water treatment. In addition, utilities have been unable to carry out basic maintenance, further accelerating the deterioration of infrastructure. This has significant negative impacts on public health and the environment, as pointed out earlier. ■

**Figure 3.**  
RATIO BETWEEN AVERAGE  
TARIFF AND UNIT  
OPERATIONAL COST  
(COST RECOVERY)



Source: EAP Task Force/OECD (2005), Progress on implementing the Almaty Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in EECCA, Paper for “Financing Water Supply and Sanitation in EECCA”, Conference of EECCA Ministers of Economy/Finance, Environment and Water and their partners from the OECD, 17-18 November 2005, Yerevan, Armenia.

**How to pay  
for improvements?**

Improvements of operational efficiency, particularly leakage control and energy efficiency will be needed. Better demand side management through household metering also promises to help reduce the costs of municipal water infrastructure. All of this requires significant up-front investment. At the same time, there are significant opportunities to increase water utility revenue by improving the collection of user charges, which can be as low as 30-40% of billed services.

But even if this is being done, water tariffs for households will have to increase, sometimes very significantly. In some countries tariffs are extremely low, so that increases can take place without generating major affordability issues. In others, especially where poverty is widespread, affordability may be an important constraint.

Social assessments in a number of EECCA countries show that, if tariffs were increased to recover a greater share of the costs of water provision, as much as 50% of the population may in some cases have to pay more than the 4% of income threshold that is often used as a “rule-of-thumb” to determine the maximum acceptable level of household spending on water.

To ensure that tariff reforms are socially acceptable, they need to go hand in hand with sufficient improvements in service quality to ensure that consumers are willing to pay, as well as measures to support the poor such as lower tariffs or income support.

But higher tariffs will not be enough to meet the financing shortfall. Public spending on the water sector will also need to be significantly increased, in some countries to as much as 3%-4% of public budgets for the urban water sector alone. Given the strong competition for public budgets from other social and economic sectors, this might be difficult to achieve.

In extreme cases, policy makers may have to consider the trade-off between providing better water for some, or some water for all. In Georgia, where 50% of the population lives below the poverty line and 17% in extreme poverty, an OECD study found that the MDG targets on water can only be achieved if existing urban infrastructure is scaled back. This could mean that about 5% of the urban population would be served through municipal standpipes instead of in-house connections. But even to achieve that, household tariffs would have to be set at the affordability limit, and about 3% of public budgets would be spent on the urban water sector.

EECCA countries also need to improve the governance frameworks for the water sector, to ensure that additional finance is being used in the most effective and efficient way. This includes measures to make water utilities more independent, commercializing their operations, introducing tariff-setting mechanisms that allow for the greatest possible level of transparency and predictability, and applying sound financial planning methodologies. ■

## How can external finance contribute?

Except in a few very poor countries, domestic rather than external resources will be the dominant source of finance. In the EECCA region, official development assistance (ODA) for the water sector is roughly at USD 100 million per year. Even if this figure were to be doubled or tripled it would still be a relatively small share of the overall EUR 7 billion that is needed for water supply and sanitation in the region.

Private sector finance has played a very minor role in the past and this situation is likely to continue in the near future. Private operators are keen to become involved in projects where they can contribute know-how (e.g., management and lease contracts), but reluctant to bring in finance. Nevertheless, external finance can play an important catalytic and demonstration role. External finance can support financial and governance reforms in the sector, build capacities, and introduce international disciplines and good practices. On the other hand, care must be taken to avoid crowding out domestic financial sources, inducing subsidy dependence, or removing incentives for essential reforms.

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### Box 1. TOOLS FOR WATER REFORM

The EAP Task Force has developed a number of tools to support reform of the water sector in EECCA countries, including:

**Financing Strategies:** A computer tool (FEASIBLE) that helps public authorities to identify realistic infrastructure development objectives, taking account of the associated costs and available financial resources. The tool helps clients to develop their understanding of the real financial needs and to adjust their objectives accordingly.

**Municipal planning:** A Multi-Year Investment Planning Tool for municipalities (MYIP): that allows municipalities to plan their water sector and other investments on a three-year horizon. It helps establish some basic financial planning capacity in local governments.

**Financial planning for utilities:** A complementary tool to the MYIP which enables utility staff to develop basic skills in sound financial planning and to prepare corporate development plans.

**Benchmarking water utility performance:** This tool, based on a methodology developed by the World Bank, supports the development of more performance-oriented thinking in utilities and governments and can be integrated into day-to-day utility management routines as well as into contracts between municipalities and utilities.

**Guidelines for performance-based contracts between municipalities and utilities:** These provide a general introduction to performance-based contracting, including their key contractual elements and practical experience in developing such contracts.

**Good Practices for public environmental expenditure management:** This is a pragmatic checklist to assess the performance of programs and institutions that manage public environmental expenditure, and guidelines to improve their performance.

**Handbook for appraisal of environmental projects financed from public finance:** This tool aims to help governments develop ways to carry out effective appraisals of water and sanitation projects in order to support the effective allocation of scarce public funds.

The OECD supports countries in the region through work carried out in the framework of the Environmental Action Programme (EAP) Task Force for EECCA Countries, for which the OECD serves as the secretariat. This includes support for legal and institutional reforms as well as assistance to improve the financial situation of the water sector. Under this programme a range of tools to support improvements in water governance have been developed and could now be applied throughout the region (Box 1). ■

### Where to go from here?

The policy implication of the current situation is that official MDG data about access to water supply and sanitation may be misleading EECCA governments and donors, and this could affect their decisions when developing co-operation projects and setting priorities for their assistance in the water sector.

It may therefore be appropriate to develop complementary indicators and targets to better reflect conditions in contexts where infrastructure exists, but is deteriorating. Examples of such indicators include continuity of water supply, leakage in the distribution network, pipe breaks, and quality of water at the tap. The OECD is working with the UN's Joint Monitoring Programme to identify and test such indicators.

However, the generally limited availability of data in developing countries will be a key constraint in selecting additional indicators. Additional financial resources for data collection would therefore most certainly be needed to expand the monitoring effort on water and sanitation.

At the same time, EECCA governments need to recognize the serious situation of the water supply and sanitation sector and the threats to public health and the environment that it holds. They will need to assign a higher priority to water and sanitation in national development plans, and build significant additional spending into their medium term expenditure programmes, as well as implementing improvements to governance systems that will ensure that additional money is being used in the most effective manner.

Similarly, donors and international financial institutions need to significantly increase ODA for water supply and sanitation in EECCA which has been stuck at roughly USD 100 million per year since the mid-1990's. These funds would need to be directed particularly to the poorest countries in the region where affordability constraints will be most serious. But it is not just a supply problem; it is also a demand-side problem. The capacity to prepare bankable projects needs to be strengthened in both municipalities, utilities and in central state institutions. ■

### For further information

For further information about the OECD's work on water and sanitation in the EECCA region, please contact Peter Borkey, tel.: (33-1) 45 24 13 85, e-mail: [peter.borkey@oecd.org](mailto:peter.borkey@oecd.org). ■



### For further reading

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