



**ENVIRONMENT DIRECTORATE  
ENVIRONMENT POLICY COMMITTEE  
TASK FORCE FOR THE IMPLEMENTATION OF THE ENVIRONMENTAL ACTION  
PROGRAMME FOR CENTRAL AND EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA**

**Progress on implementing the Almaty Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in EECCA**

**Financing water supply and sanitation in EECCA  
Conference of EECCA Ministers of Economy/Finance, Environment and Water and their partners from the OECD**

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## EXECUTIVE SUMMARY

At their meeting in Almaty in October 2000, EECCA Ministers of Environment, Finance, and Economy, Ministers and senior representatives from several OECD countries, as well as senior officials from International Financial Institutions (IFI), International Organisations, non-governmental organisations, and the private sector, recognised the critical condition of the urban water supply and sanitation sector in EECCA and endorsed “Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in the NIS”. Participants requested the EAP Task Force to assess progress in implementing these Guiding Principles for review at a major conference of stakeholders to be held no later than 2005. The present paper responds to the request.

Available data suggest that the overall situation in the water supply and sanitation sector of EECCA, already assessed as critical five years ago, has deteriorated further since then. This appears to be especially true for the quality of water services, where relevant indicators have shown a deterioration in virtually all EECCA countries. At the same time, there is also reason for some optimism as the situation in EECCA, as of today, presents a significantly more favourable context for sector reform than in 2000: the economies of most EECCA countries have significantly improved since the year 2000, which, both at the level of governments and households, creates new opportunities to improve the sector’s performance; and there are now examples of reforms that demonstrate how some of the existing problems can be successfully addressed.

The coverage of urban populations with centralised water services remains high, but disruptions of water supply, pipe breaks, and unaccounted-for water have steadily increased since 2000. Similarly, key financial indicators suggest stagnation at poor performance levels. Tariffs often do not cover operational costs, let alone maintenance and capital costs. Overall, investment falls short by a factor of five to 10 of the level that would be required to maintain and renew existing water infrastructure.

Some indicators have shown positive signs, such as significantly increased levels of metered water connections in virtually all countries, decreasing levels of water consumption, and improved rates of bill collection. These do not suffice however to reverse an overall negative trend: the EECCA water sector is deteriorating further, and so far there are no signs that deterioration will slow or that this trend will be reversed in the near future.

The consequences for public health, the environment, and economic development in the region are serious. The WHO estimates that in the member countries of the UN Economic Commission for Europe<sup>1</sup> more than 13 000 children under the age of 14 die every year from poor water conditions, probably most of them in the EECCA region.

However, while the trend towards further deterioration of water services is broadly the same across the EECCA region, the overall state of water services and their adverse impacts is quite diverse. The situation in the poorest EECCA countries is significantly more alarming than in the more affluent states,

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<sup>1</sup> The UN’s Economic Commission for Europe has 55 member countries from Europe, Caucasus and Central Asia, as well as Canada and the United States.

especially in terms of water quality and resulting health impacts. There is also an important difference between urban and rural areas. Water services in many rural areas have collapsed following the dismantling of the state and collective farm system in the 1990s.

A review of the major institutional and legal reforms in EECCA indicates that many countries have undertaken measures to improve the situation in the water supply and sanitation sector, most of them in line with the recommendations in the Almaty Guiding Principles. In particular, central governments have sought to improve the coherence of the institutional set-up governing the water sector, as well as developing framework legislation to better guide local level actors, mainly in setting tariffs.

However, these measures remain partial. Despite recognition that local authorities lack capacity and resources to manage water systems properly, central governments have done little to address these problems. Those actions that have been taken are still very recent, and their implementation at the operational level has not yielded results yet. Equally, lack of reform at the local level, particularly the establishment of utilities as autonomous, commercially-run institutions, is impeding positive effects from improved institutional and legislative measures taken at the central level.

The focus of policy makers should therefore shift from developing to implementing laws and regulations, and from central to local governments and utilities. Further efforts are needed to integrate water-related objectives into national policies, including Poverty Reduction Strategy Papers, and to take advantage of opportunities to link reform of the water sector to the achievement of the internationally agreed water targets. There are a number of positive examples of reforms at the local level that hold important lessons for how such reforms can be carried out. A key challenge is to find ways to disseminate and scale up these best-practice examples.

## 1. BACKGROUND AND INTRODUCTION

At their meeting in Almaty in October 2000, EECCA Ministers of Environment, Finance, and Economy, Ministers and senior representatives from several OECD countries, as well as senior officials from International Financial Institutions, International Organisations, non-governmental organisations, and the private sector, recognised the critical condition of the urban water supply and sanitation sector in EECCA and endorsed “Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in the NIS”. The Guiding Principles identify the key elements of urban water sector reform, which include:

- Establishing strategic objectives for the reforms;
- Reforming institutions and clarifying the roles of the national authorities, local governments, *vodokanals*, and the public;
- Establishing a framework for financial sustainability of the sector and promoting efficiency and cost-effective use of resources;
- Outlining the sequencing of reforms.

Participants requested that the EAP Task Force develop a focussed programme of work to facilitate the implementation of the Guiding Principles, and asked for a report assessing progress in implementing the Guiding Principles to be prepared for review at a major conference of stakeholders to be held no later than 2005.

Since the Almaty Conference, water has received significant attention and been identified as one of the major development objectives. The Millennium Summit of 2000 set a target to improve access to safe drinking water, which was later complemented at the World Summit on Sustainable Development in Johannesburg, in 2002, with a target with regard to sanitation. In both cases, the target is to reduce by half those without access to these services by 2015. The World Summit also saw the launching of two major initiatives: the Pan-European East-West Environmental Partnership for Sustainable Development, and the EU Water Initiative. Both these initiatives seek to foster East-West co-operation on water and have components that focus on urban water supply and sanitation, and integrated water resource management.

The present paper responds to the request to monitor the progress in implementing the Guiding Principles adopted at the Almaty Conference. The paper provides a detailed description of the situation and the main trends in the EECCA urban water sector. In the following sections the report identifies and measures key indicators for the technical condition of the water supply and sanitation infrastructure, and its impacts on public health and the environment; the state of legal and institutional frameworks; as well as the economic and financial dimensions of sector reforms.

## 2. CURRENT STATE OF THE WATER SUPPLY AND SANITATION SECTOR IN EECCA

A look at some key figures relating to EECCA countries reveals a significant diversity of situations between countries (Table 1). This includes populations (from three million in Armenia to 143 in Russia) and what this entails for the complexity of administrative systems, as well as the distribution of the population between urban and rural areas (urban populations range from 28 per cent in Tajikistan to 73 per cent in Russia) and its incidence on coverage rates with centralised water supply and sanitation. These figures also include per capita gross national income that varies with a factor ten (from USD 210 in Tajikistan to 2 610 in Russia) and what this entails for the affordability of water services for the population and for public budgets.

Countries can be divided into two groups:

### **High-income, high-coverage countries:**

In these countries, access to what the UN qualifies as “improved” sanitation and water sources tends to be nearly pervasive (even though water is still frequently not safe to drink), and the quality of water services from centralised water systems, measured as the level of continuity of service, is still relatively high (close to 24 hours per day, and therefore continual water supply, with few or no daily interruptions of service). As a consequence, these countries perform relatively better on some of the key water-related health indicators, even though their problems are still well in excess of average OECD levels. An exception is Kazakhstan, which, due to its small share of urban population, has significantly more alarming health indicators.

### **Low-income, low-coverage countries:**

In these countries, access to improved sanitation and water sources tends to be much lower, as is the quality of water services. In some of these countries many people would receive water on a scheduled basis, sometimes only every other day for a few hours. Health indicators in these countries are therefore significantly more alarming, with the under-five mortality rate, shown in the table, tending towards low-income country levels in many cases.

Table 1: Key EECCA country figures

| COUNTRY              | Population, total | Urban Population | GNI per capital | Improved water source (% of population with access) | Connected to centralised water supply (% of population) |       | Improved sanitation facilities, urban (% of urban population with access) | Connected to centralised sewer (% of population) | Mortality rate, under-5 | Average daily water supply, urban |
|----------------------|-------------------|------------------|-----------------|---|---|-------|---|--|-------------------------|-----------------------------------|
|                      | (millions)        | (%)              | (USD)           | (%)   | urban   | rural | (%)   | (%)  | (per 1000 live births)  | (Number of hours)                 |
| Armenia              | 3                 | 67               | 950             | 96  | 68  | 32    | 92  | 67-89  | 33                      | 7                                 |
| Azerbaijan           | 8                 | 52               | 820             | 73  | 95-83   | 11    | 77  | 78   | 91                      | 8                                 |
| Belarus              | 10                | 70               | 1 600           | ..  | 94  | 53    | 100   | 68   | 17                      | ..                                |
| Georgia              | 5                 | 57               | 770             | 96  | 95  | 35    | 76  | 60   | 45                      | 18                                |
| Kazakhstan           | 15                | 56               | 1 780           | 87  | 93  | 26    | 86  |  | 73                      | 23                                |
| Kyrgyz Republic      | 5                 | 34               | 340             | 75  |   | 70    | 76  |  | 68                      | 20                                |
| Moldova              | 4                 | 42               | 590             | 86  | 73  |       | 92  | 56   | 32                      | 10                                |
| Russian Federation   | 143               | 73               | 2 610           | 93  | 84  |       | 96  | 70   | 21                      | 24                                |
| Tajikistan           | 6                 | 28               | 210             | 71  |   |       | 58  |  | 95                      | 14                                |
| Turkmenistan         | 5                 | 45               | 1 120           | 77  | 80  | 28    | 71  | 61   | 102                     | ..                                |
| Ukraine              | 48                | 68               | 970             | 100   | 83  | 26    | 98  | 53   | 20                      | 19                                |
| Uzbekistan           | 26                | 37               | 420             | 73  | 65  | 64    | 89  |  | 69                      | ..                                |
| <b>World:</b>        |                   |                  |                 |   |   |       |   |  |                         |                                   |
| Low income countries | 2 311             | 31               | 440             | 61  |   |       | 75  |  | 123                     | ..                                |
| Middle income        | 2 988             | 53               | 1 930           | 81  |   |       | 83  |  | 37                      | ..                                |
| High income: OECD    | 915               | 78               | 29 360          | ..  |   |       | 99  |  | 7                       | ..                                |

Source: World Bank, World Development Indicators, 2003 and 2002 (for water supply and sanitation), OECD (2003), Urban water reform in EECCA – Progress since the Almaty Ministerial Conference, and EAP Task Force Utility Performance Indicators Database.

The following sections describe, in more detail, the key trends in the water supply and sanitation sector of EECCA that could be observed over recent years. They present aggregated data, country by country, from the EAP Task Force Water Utility Performance Indicator Database (Box 1), which focuses on urban water systems. While this data confirms the diversity of situations identified above, it shows that there are no signs yet that the water supply and sanitation sector might improve in the future. Almost all trends in the water supply and sanitation sector point in the direction of further deterioration of water services. This includes the group of high-income, high-coverage countries, where these negative trends are not notably different from low-income, low-coverage countries, suggesting that in the municipal water sector these two groups of countries have many, if not most, problems in common.

**Box 1: The EAP Task Force Water Utility Performance Indicator Database**

The data that is presented below, is taken from an EAP Task Force project for the promotion of performance indicator-based benchmarking in EECCA water utilities. The indicator methodology that has been used was developed by the World Bank. The data are based on input from more than 400 water utilities in nine EECCA countries (Armenia, Azerbaijan, Georgia, Moldova, Russian Federation, Ukraine, Tajikistan, Kazakhstan, and Kyrgyzstan) and is essentially based on self-reporting by utilities, following a short training programme on methodology. The surveys were carried out in the years 2002, 2003, and 2004, collecting data over a five-year period, so that the most recent data are for 2003, and the oldest for 1998. In many of the smaller EECCA countries, the survey was nearly comprehensive, covering all major utilities. In Russia, Ukraine, and Kazakhstan, the survey was carried out using a representative sample of regions. Additional data, for Armenia and Georgia, collected using the same methodology, was obtained from the World Bank.

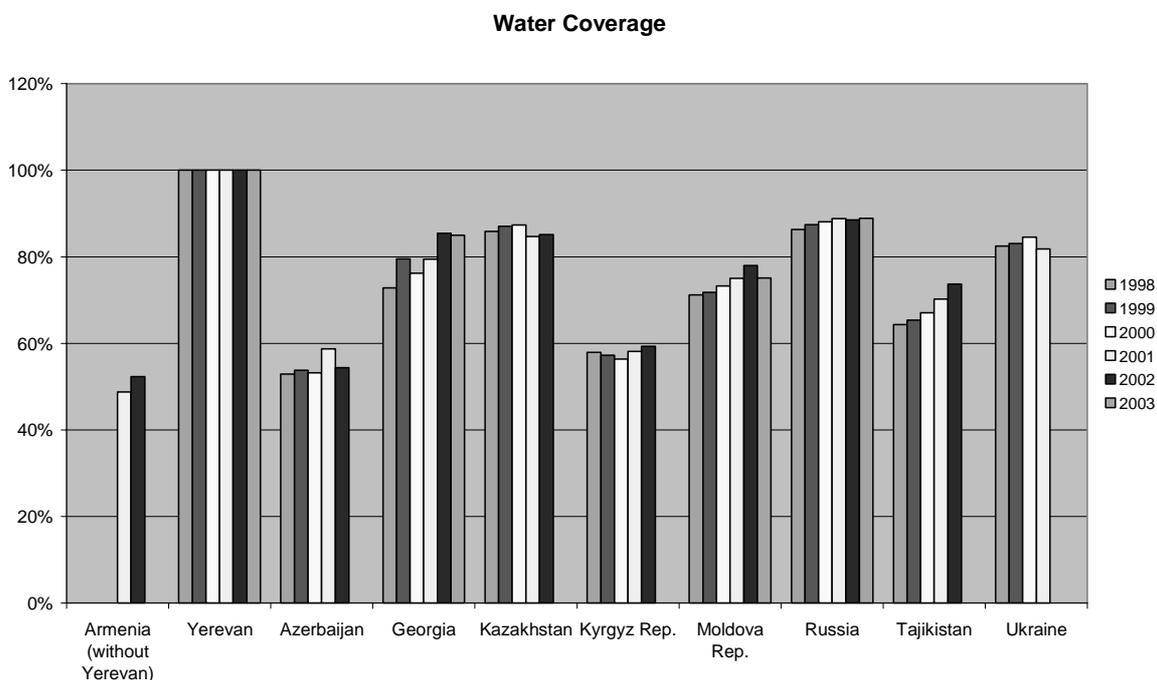
The database contains 32 indicators, including technical (e.g. service coverage rates, unaccounted-for water, pipe breaks, and continuity of service), and financial indicators (e.g. bill collection period, unit operational cost, and average water tariff).

This initiative is in line with the decision adopted by the Commission on Sustainable Development at its thirteenth session to “support, strengthen, and implement voluntary monitoring and assessment of the thematic areas of water, sanitation, and human settlements at the national and regional levels...”. The EAP Task Force plans to continue its monitoring efforts in the future.

**Key technical performance indicators show a steady deterioration of urban water infrastructure over the last years**

Coverage with centralised water supply and sanitation services in urban areas of EECCA is generally at high levels compared to countries that are at similar levels of economic development. Water supply through in-house taps covers between 60 per cent (Kyrgyzstan) and 90 per cent (Russia, Ukraine) of the population (Figure 1). Coverage with sanitation services is somewhat lower at between 24 per cent and 73 per cent. Coverage figures have essentially remained stable over recent years. Where an expansion of water supply and sanitation coverage can be observed, expansion was usually not due to a “real” extension of infrastructure, but rather to the process of consolidating infrastructure in utilities, such as through the transfer of water supply and sanitation (WSS) infrastructure from industries to utilities.

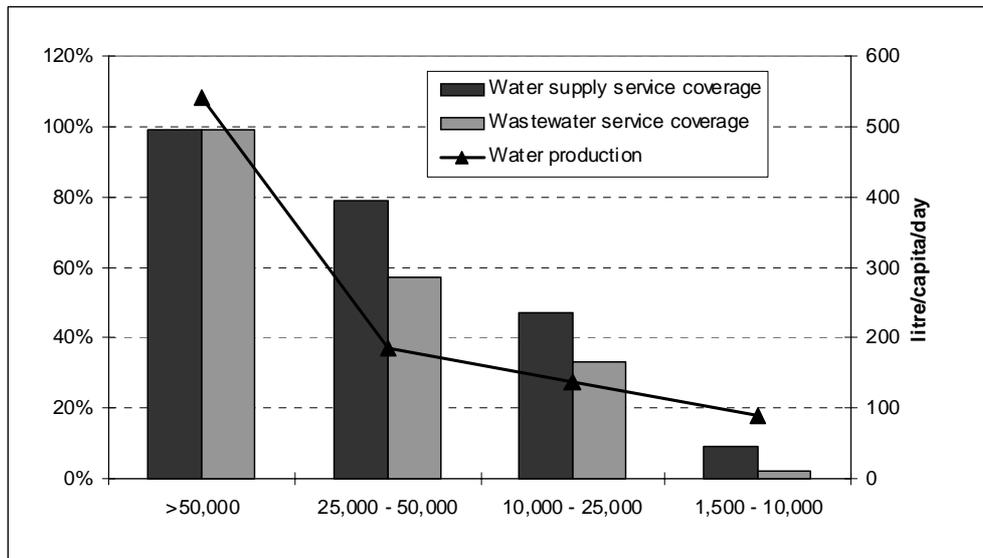
**Figure 1: Coverage of urban population in EECCA with centralised water supply<sup>2</sup>**



Source: EAP Task Force Water Utility Performance Indicator Database

It should be noted that the figures that are shown here only cover the urban populations that are being served by the water utilities from which data was collected. Generally connection rates in rural areas are much lower than in urban areas (e.g. less than 16% of the population in rural areas of Kyrgyzstan), so the actual country average is probably significantly lower once rural populations are included. Significant variation exists within the countries/regions depending on the size of the settlement. Figure 2, for example, demonstrates the distribution of inhabitants connected to centralised water and sewerage systems in Moldova. The bars scaled against the left axis indicate that the coverage of both water supply and wastewater collection is 100 per cent in the largest cities and less than 10 per cent in small towns and villages.

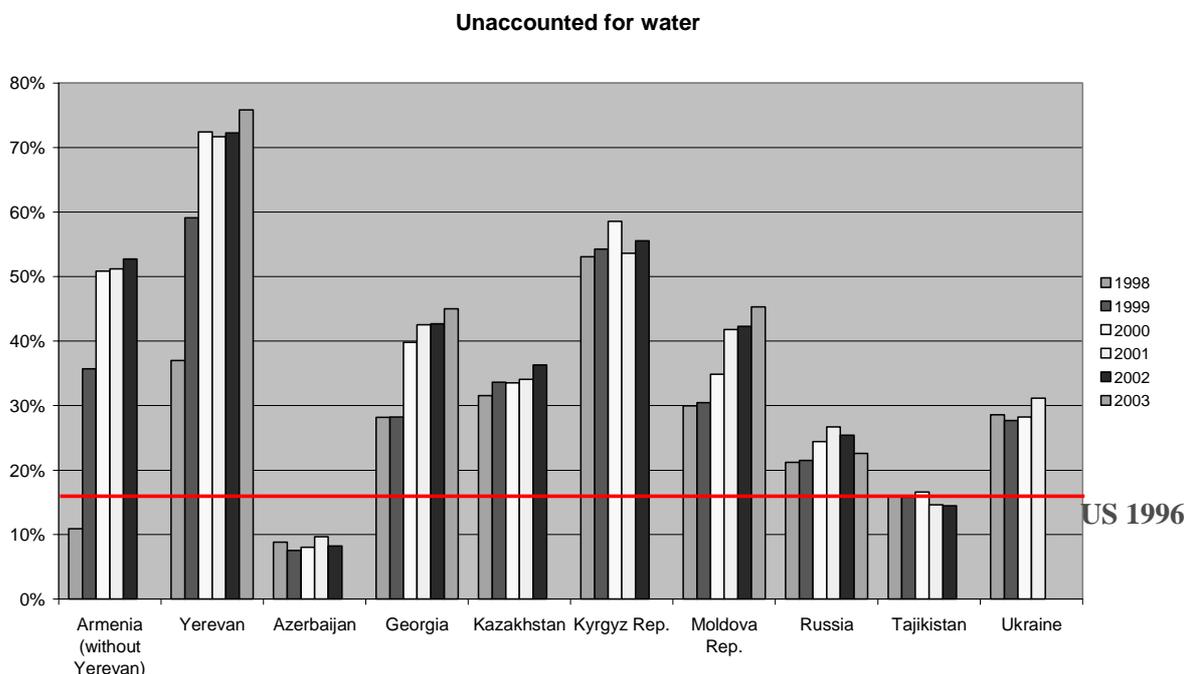
<sup>2</sup> Population with easy access to water services (either with direct service connection or within 200m of a standpost)/total population under utility’s nominal responsibility, expressed as a percentage.

**Figure 2 Coverage by centralised water and sewerage systems and consumption of water in Moldova**

Source: OECD (2003), Financing Strategies for Water and Environmental Infrastructure, Paris.

High connection rates in most urban areas, however, mask the fact that the quality of water supply and sanitation services that is being delivered to utility clients has continuously deteriorated over the same period. Hence, while a large majority of urban populations have access to water utility services, the quality of services is usually insufficient, and this increasingly so. Two indicators demonstrate this situation particularly well. Unaccounted-for water, which is the share of water that is produced, but which either is lost through leakage or stolen from the distribution network, has remained at very high levels in all EECCA countries, and steadily increased in some of them. For instance, unaccounted-for water went from about 30 to 45 per cent in Georgia and Moldova, and it remained at 50 to 70 per cent in Armenia and Kyrgyzstan. The international benchmark for unaccounted-for water is about 20 per cent (Figure 3).

Figure 3: Unaccounted-for water<sup>3</sup>



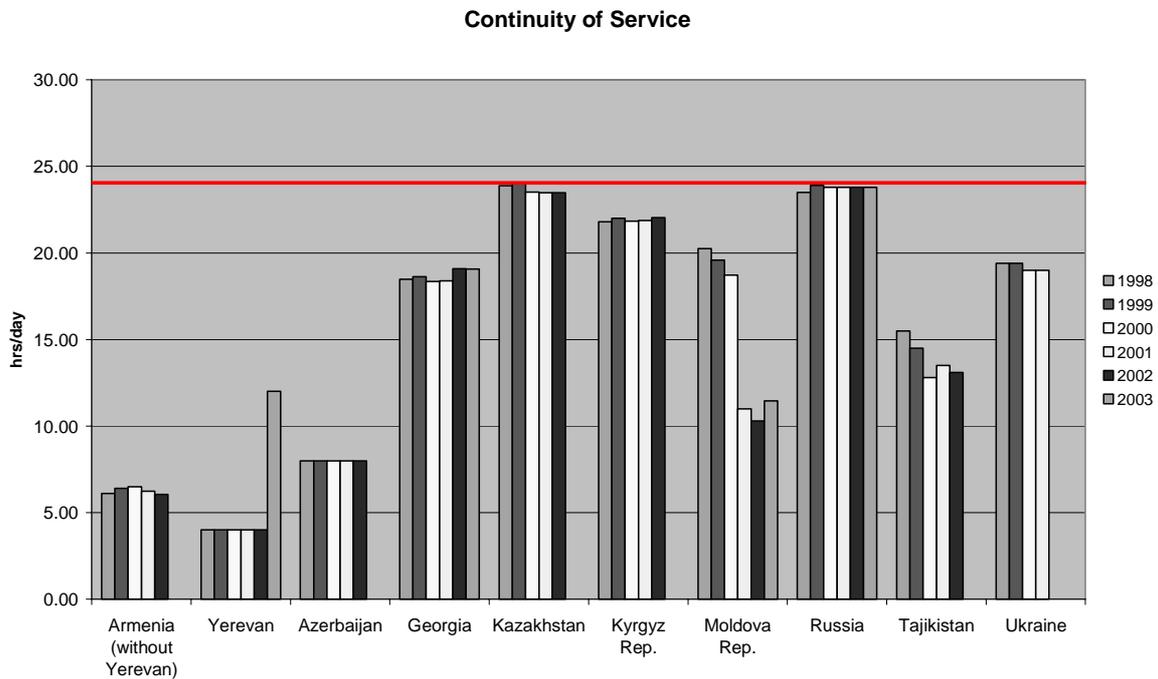
Source: EAP Task Force Water Utility Performance Indicator Database

Similarly, the continuity of water supply has been deteriorating. Apart from Russia, users in all countries surveyed now receive water for less than 24 hours per day. In Azerbaijan and Armenia<sup>4</sup> this can be as low as five to seven hours per day, while it generally remains below 20 hours in most other countries (Figure 4). This, coupled with persistently high levels of pipe-breaks throughout the region, shows a further deterioration of the water supply and sanitation networks. The daily switching on and off of the network (and in many places this happens several times per day), allows micro-biological and other polluting infiltrations to contaminate the network, diminishes the quality of the water supplied, and increases the wear of the infrastructure. Similarly, leaks in the network allow for cross-contamination between water supply and sanitation pipes.

Hence, while water quality tests at intake into the network usually show only a limited number of samples not in conformity with legal standards, this water is contaminated while it is transported to consumers in the distribution network. The leakage in the sewer network results in significant amounts of effluent leaking into the environment, and reaching surface and ground waters.

<sup>3</sup> Difference between water supplied and water sold expressed as a percentage of net water supplied; as volume of water “lost” per km of water distribution network per day; and volume of water “lost” per water connection per day.

<sup>4</sup> It should be noted that the continuity of water supply in Yerevan has improved significantly in the last two years. The private operator of the Yerevan water utility indicates that since the beginning of 2005 about 70 per cent of the population in Yerevan have received water for 24 hours per day.

Figure 4: Continuity of service (hours per day)<sup>5</sup>

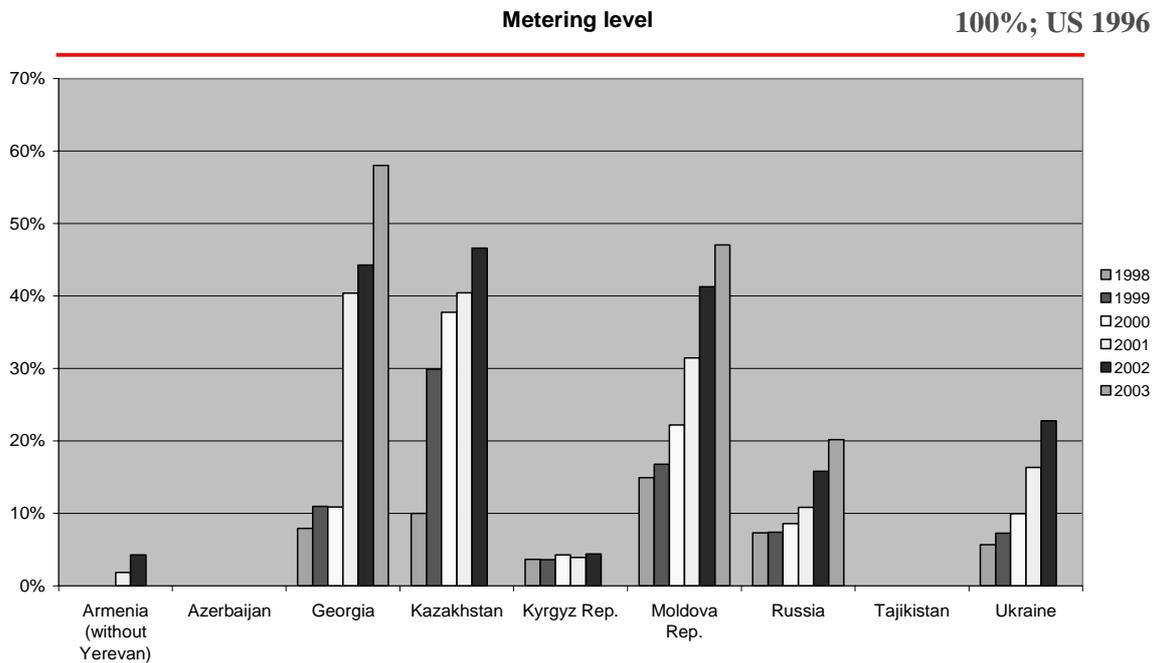
Source: EAP Task Force Water Utility Performance Indicator Database

More positively, many municipalities have been introducing large-scale metering programmes for households. For instance, Moldova, Kazakhstan, and Georgia now feature close to 50 per cent of metered connections (Figure 5).

In Yerevan, Armenia, a metering programme resulted in about 80 per cent of connections being metered by 2004. This has had the effect of driving down consumption as well as production, which in the case of Moldova have decreased by about 60 per cent, with a water consumption level of 150lpcd (litres per capita per day) close to EU levels (Figure 6).

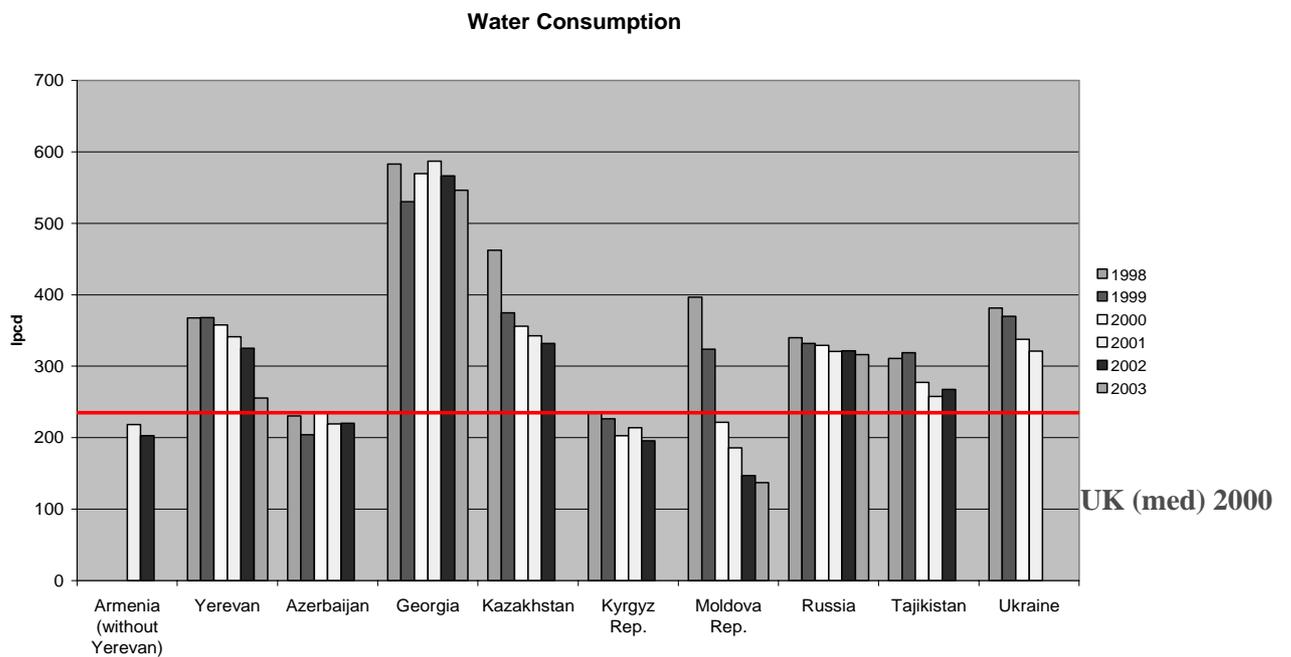
<sup>5</sup> Average hours of service per day for water supply.

Figure 5: Share of metered connections (%)<sup>6</sup>



Source: EAP Task Force Water Utility Performance Indicator Database

Figure 6: Total water consumption (litres per capita per day (lpcd))<sup>7</sup>



Source: EAP Task Force Water Utility Performance Indicator Database

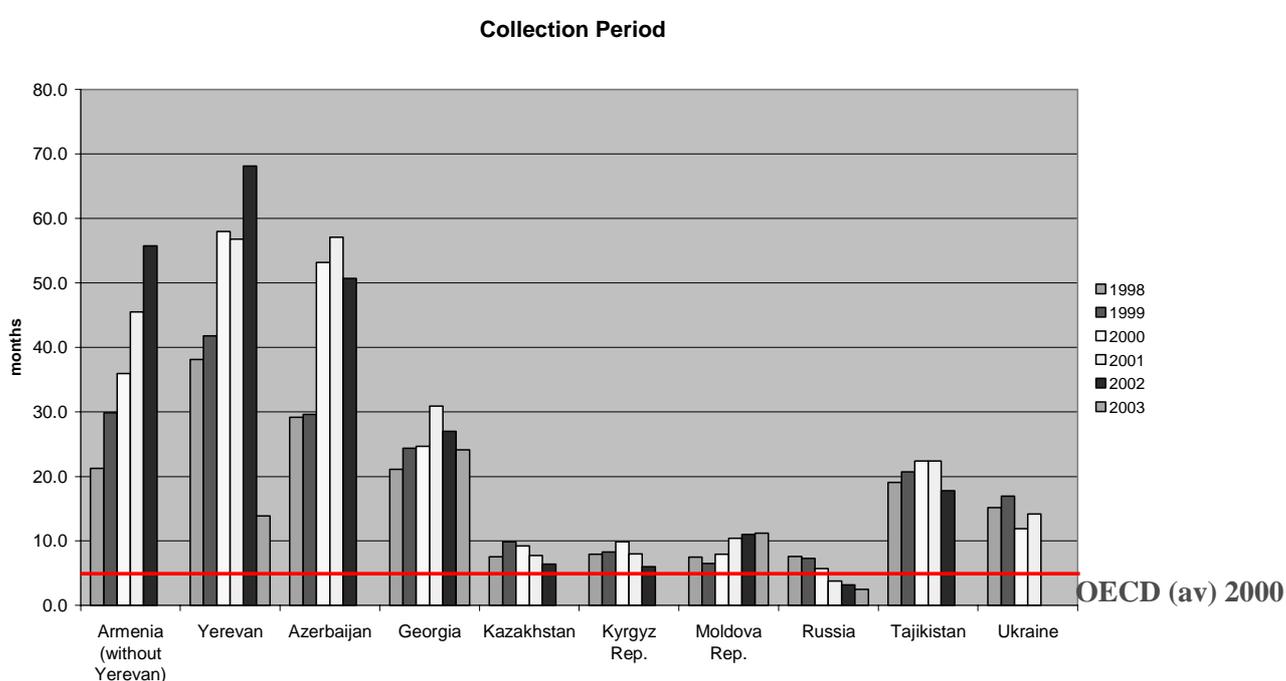
<sup>6</sup> Total number of connections with operating meter/ total number of connections, expressed as a percentage.

<sup>7</sup> Total annual water sold expressed by population served per day; by connection per month and by household per month.

## Key financial utility performance indicators are stagnating at low levels, despite some recent improvements

The widespread dissemination of household water meters is one of the reasons that bill collection rates have improved significantly over the past years. Most countries in the region are now approaching the international benchmark of an average of three months between the billing and collection of payment (Figure 7). Armenia, which until 2002 showed very high and increasing collection periods, has recently introduced an incentive programme that includes partial forgiveness of arrears. This has considerably improved collection rates, which are now approaching 100 per cent. More generally, collection rates have improved following the recovery after the financial crisis of 1998, and due to government policies to end widespread non-payment from its various institutions and administrations.

Figure 7: Collection period between billing and collection of payment (months)<sup>8</sup>



Source: EAP Task Force Water Utility Performance Indicator Database

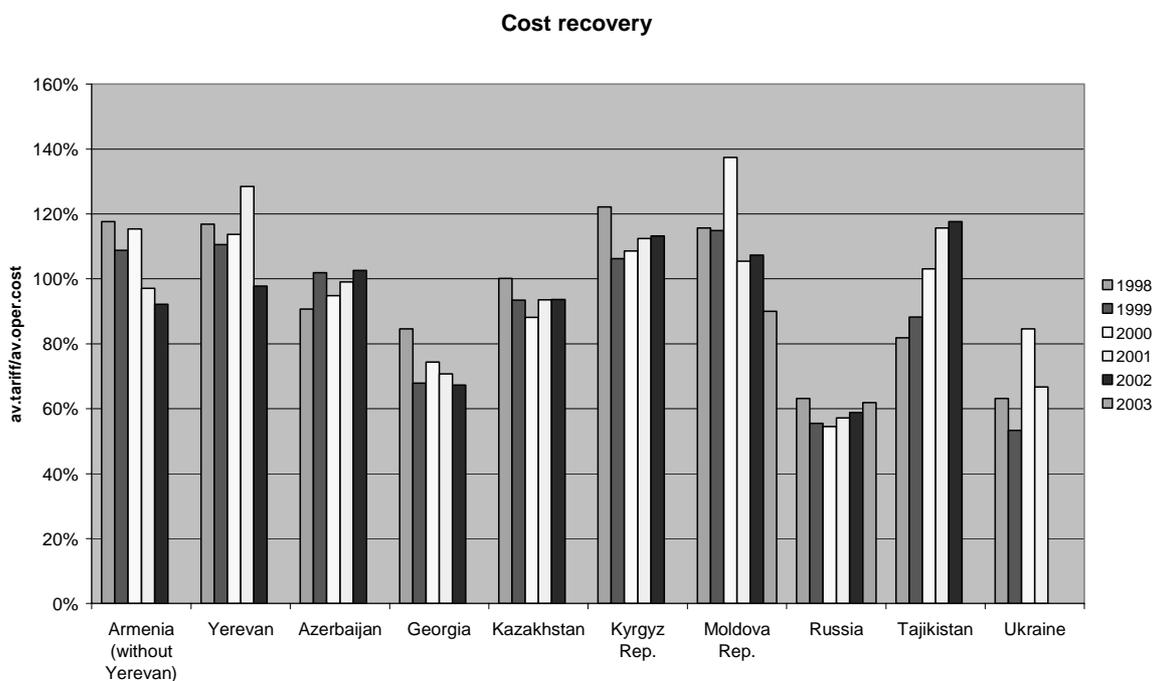
Other financial indicators, however, illustrate the serious financial situation of utilities in most countries. While tariffs have generally increased in recent years (*e.g.* in Russia and Moldova they have almost doubled), the production costs have also increased at a comparable pace. In many countries the ratio between the average tariff charged to households and the unit operational cost remains well below one. In Russia and Ukraine this figure can be as low as 60 per cent, without any signs of improvement over recent years (Figure 8). In other countries, even when this ratio is close to or above the 100 per cent mark, it does not mean that utilities are covering costs, since maintenance and capital costs are not included. If these were to be added, all countries would show cost recovery rates considerably lower than 100 per cent.

As a result of this financial weakness of water utilities, investment has remained at very low levels, with as little as two to four USD of investment per capita in recent years. This is well below the level of investment needed for the maintenance and renewal of infrastructure, estimated at 24USD per capita per

<sup>8</sup> Year-end accounts receivable/Total annual operating revenues expressed in months equivalent of sales.

annum in Kazakhstan and 16USDper capita per annum in Georgia, and provides an additional indication of the continuing deterioration of the infrastructure.

**Figure 8: Ratio between average tariff and unit operational cost**



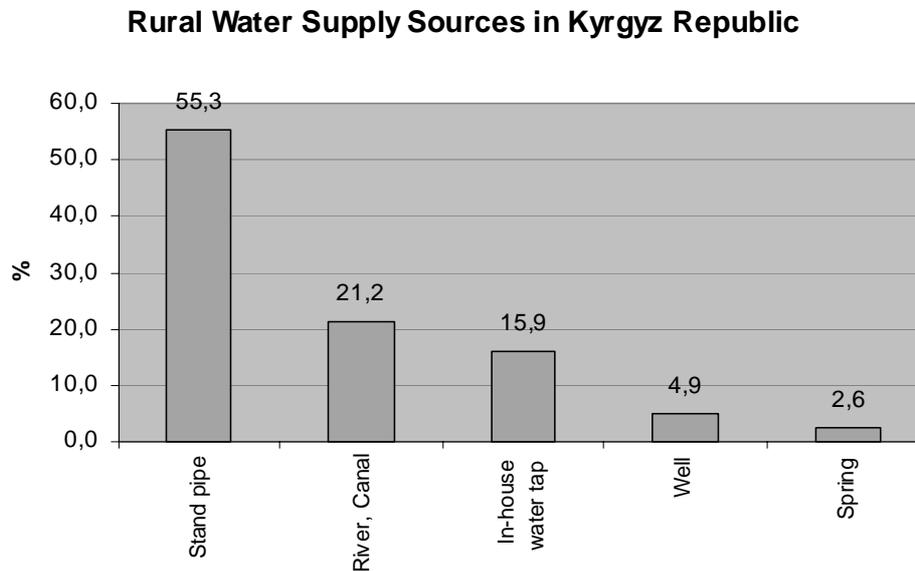
Source: EAP Task Force Water Utility Performance Indicator Database

**The situation in the rural water sector**

The situation in rural areas is significantly more serious than in urban areas, but it is also much less well documented. While in urban areas the quality of water services has suffered over the last few years, such services are often no longer provided in rural areas and people have had to resort to private means of providing themselves with water. In rural areas, state and collective farms have traditionally been responsible for operating and maintaining water systems. Following the break up of the former Soviet Union, and the subsequent dismantling of the state and collective farm system, this infrastructure was neglected, since there were usually no arrangements made to transfer responsibility for operation and maintenance from the state and collective farms to other institutions. As a consequence, much of the infrastructure is now out of operation and many rural inhabitants are forced to put in place private solutions where water quality is usually not monitored.

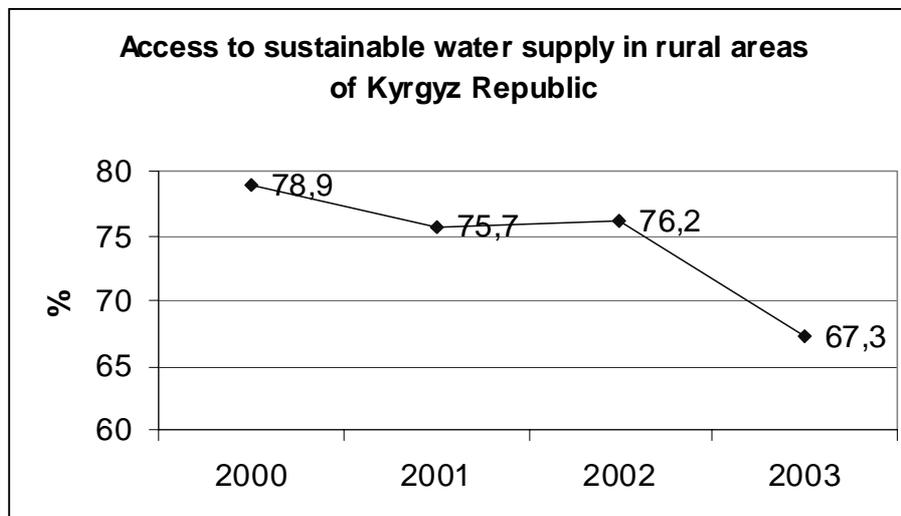
In Kyrgyzstan, for instance, only 67 per cent of the rural population has access to a sustainable water supply (available throughout the year and of sufficient quality for drinking), and this has been continuously decreasing in recent years (Figure 10). Only 16 per cent of the population in rural areas has access to water through in-house water taps, while stand pipes or water collected from canals and rivers remain the main sources of drinking water supply. The most widely used sanitation technology are conventional pit latrines (Figure 9).

Figure 9: Rural water supply sources in the Kyrgyz Republic



Source: National Statistical Office of Kyrgyzstan.

Figure 10 : Access of rural population to sustainable, clean drinking water in the Kyrgyz Republic



Source: National Statistical Office of Kyrgyzstan.

In the Ukraine, more than 70 per cent of the rural population (settlements with a population of less than 20 000) are not connected to centralised water systems, and as much as 91 per cent lack access to corresponding sewerage services. As a consequence these populations have to use water from wells, reservoirs, and open springs, which often do not meet sanitary standards. More than 800 000 people use water from vendors, which usually is of poor quality. In recent years, problems with nitrates, oil, and pesticide and bacteriological contamination of these water sources became particularly acute. As most

people use this water without any treatment an increasing number of outbreaks of infectious diseases have been observed.<sup>9</sup>

A problem that is increasingly being faced in rehabilitating and extending rural drinking water infrastructure is that many people in rural areas are now living at subsistence levels and are unable to generate sufficient cash to pay for water services. Unless subsidies from public budgets are available for these people, water supply and sanitation technologies that are put in place in rural areas have to be simple enough so that they can be maintained and operated by local users themselves.

Given the lack of information on rural water infrastructure and the resulting uncertainty about the actual situation, the needs, and the priority actions that could be taken, the first step that EECCA governments need to undertake is to collect such data on a large scale.

### **Public health impacts are negative, but hard to substantiate in a systematic manner**

The deterioration of the quality of water services in EECCA countries is undeniable. The increasing levels of leakage and discontinuity of service of course indicate a parallel decrease in the quality of water that is being delivered. Whether this has generated an increasing number of health incidents is difficult to establish, however, given the complexity of the issue, with a number of other factors influencing key health indicators (water is often not the only aspect affecting people's health). Data from the WHO Europe "Health for all" database indicates that some of the key indicators for water-borne diseases have been slightly declining in the region over the past years (namely figures for infant mortality and under-five mortality from diarrhoeal diseases)<sup>10</sup>, while others have been steadily increasing (namely the incidence rate of viral hepatitis A).

The fact that the deterioration of water services does not show more clearly in the health figures may be linked to an increasing awareness among the population that tap water is no longer safe to drink and the resultant usage of bottled water or purification techniques, such as boiling or filtering. In the greater Baku area in Azerbaijan for instance, 97 per cent of the population reported that they were systematically boiling water for drinking purposes. Similarly, most inhabitants of Tbilisi receiving water from one of two water reservoirs reported that they were systematically boiling water for the same reason.

Despite these preventive measures, there are still many cases of outbreaks of epidemics, following accidents in the water supply system, that are being reported from the region. Only recently, in Yerevan, where indications of water quality have been relatively positive, and 80 per cent of the population say that they never use purification devices, several hundred children had to be hospitalised due to a sewerage spill into the supply network. A similar accident occurred in the town of Sukhodolsk in the Ukraine, where more than 700 people had to be taken to hospitals, about 250 of them children. Almost all of them were diagnosed with viral hepatitis A. Similar episodes are reported from many locations in EECCA.

While some of the problems shown via key water-related health indicators may be declining, the overall levels of these indicators still remain very high compared to OECD figures, often by a factor of 50

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<sup>9</sup> Mama-86 (2004), "Models of the technical solutions of drinking water problems in the urban and rural areas of Ukraine", Kyiv.

<sup>10</sup> It should be noted that the UNECE questions the reliability of these figures. In surveys that were carried out to verify the official health data in the EECCA region, significant discrepancies appeared, with figures for infant mortality rate and under-five mortality rate being significantly (sometimes up to factor three) higher. According to this data, figures for infant mortality in Azerbaijan and Tajikistan would reach similar levels as in India. Possible reasons for such discrepancies may reside in differences in definitions of "live births", as well as a decline in the registration of all births due to increased fees (UNECE [2004], Economic survey of Europe No. 1, Geneva.

or more. The WHO estimates that in the ECE region<sup>11</sup> 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 WHO estimates that the cost benefit ratio of investing in improvements in WSS infrastructure in a group of ECE countries could be as high as 13, with one USD invested yielding as much as 13USD in benefits.

### **Municipal water utilities have become the predominant source of pollution of surface waters**

The level of household connection to sewerage infrastructure is relatively low compared to many OECD countries. Even when households are connected to sanitation infrastructure, the treatment of wastewater is often not assured. While little consolidated information exists about the level of equipment at primary and secondary treatment facilities (tertiary is still an exception in the region), it is clear that existing infrastructure often does not operate effectively and sometimes does not operate at all (Box 2). This is mainly linked to the advanced state of deterioration of this infrastructure, as well as lack of cash for operational purposes.

#### **Box 2: Status of the wastewater capacity and actual flows in some towns in Moldova**

**Orhei** - The capacity of the wastewater network and wastewater treatment plant (WWTP) is 10 000 cu.m/day, and the actual water flow is 2 000-3 000 cu.m/day.

**Cantemir** - The capacity of the pumping station and WWTP is 3 500 cu.m/day, and the actual water flow is 300-500 cu.m/day. Only mechanical treatment is in operation.

**Donduseni** - The capacity of the pumping station and WWTP is 2 400 cu.m/day, and the actual water flow is 300-400 cu.m/day. Wastewater treatment plant is not in operation and partially destroyed.

**Telenesti** - The capacity of the pumping station and WWTP is 3 100 cu.m/day, and the actual water flow is 400-500 cu.m/day. WWTP is destroyed.

**Ungheni** - The capacity of the pumping station and WWTP is 15 000 cu.m/day, and the actual water flow is 4 000-5 000 cu.m/day. Biological treatment is not in operation. Untreated wastewater is discharged into the Prut.

*Source:* OECD EAP TF/Association Moldova Apa Canal, (2002), Performance indicators: Water utilities in Moldova.

As a consequence of this situation, coupled with the decline of many polluting industries in the 1990s, municipal water utilities have now become the main polluters of surface waters in many EECCA countries. In the Russian Federation for instance, communal water systems account for close to 90 per cent of wastewater discharges, of which only 10 per cent are treated according to standards. They are also the source of more than 50 per cent (and up to 90 per cent) of key pollutants that are being discharged into surface waters, such as phosphorus (85 per cent), nitrates (82 per cent), and lead (49.5 per cent).

The lack of adequate wastewater treatment is putting EECCA surface waters under serious environmental stress. According to the European Environment Agency (EEA), some of the major rivers in the Russian Federation and their tributaries are now highly polluted. The main water reservoirs are also highly polluted, especially the Volga cascade. In the Ukraine, all river basins are classified as polluted or very polluted. Similar situations exist in most areas in EECCA that feature a high density of population and economic activity. The EEA also reports that most EECCA countries have problems with the quality of their drinking water supplies. The percentage of samples of drinking water exceeding microbiological

<sup>11</sup> The UN's Economic Commission for Europe has 55 member countries from Europe, Caucasus, and Central Asia, as well as Canada and the United States.

standards is between five and 30 per cent, this excess being higher in non-centralised drinking water sources, primarily in rural areas.

The EEA also reports that up to 90 per cent of nitrogen and phosphorus discharges into the Black and Caspian Seas originate from riverine inputs, which mostly transport municipal wastewaters. Both seas are assessed as being under severe environmental stress, with significant eutrophication problems in both seas, and frequent closures of beaches on the Ukrainian and Georgian parts of the Black Sea coast due to the poor bacteriological state of the water.

### 3. LEGAL AND INSTITUTIONAL REFORMS UNDERTAKEN SINCE THE ALMATY CONFERENCE

Overall, a review of the major institutional and legal reforms in EECCA indicates that many countries have undertaken measures to improve the situation in the water supply and sanitation sector, most of them in line with the recommendations in the Almaty Guiding Principles. In particular, central governments have sought to improve the coherence of the institutional set-up governing the water sector, as well as developing framework legislation so as to better guide local level actors, mainly in setting tariffs. However, these measures remain partial and many of those that have been taken are still very recent, their implementation at the operational level not being effective yet. Also, lack of reforms at the local level (*i.e.* the establishment of utilities as autonomous, commercially-run utilities), is impeding positive effects from improved institutional and legislative measures taken at the central level. The focus of policy makers should therefore shift from developing to implementing laws and regulations, as well as to efforts to support local governments and utilities in implementing the Almaty Guiding Principles. Further efforts are needed to integrate water-related objectives into national policies, including PRSPs, and to take advantage of opportunities to link reform of the water sector to the achievement of the internationally agreed water targets. There are a number of positive examples of reforms at the local level that hold important lessons for how such reforms can be carried out. A key challenge is to find ways to disseminate and scale up these best-practice examples.

Table 2 provides an overview of reforms in some key areas. The rest of this section provides more detail on some reform highlights, including decentralisation, tariff setting, subsidies, collection rates, performance indicators, private sector participation, and public participation.

#### **Decentralisation**

The Almaty Guiding Principles recommend decentralising responsibility for water supply and sanitation services to the municipal level (avoiding excessive fragmentation), while in parallel establishing the legal, regulatory, and institutional framework for sound and sustainable municipal finance and management of the sector.

Responsibility for water was decentralised in many EECCA countries in the 1990s (Ukraine, Russia, Azerbaijan, Moldova, Kazakhstan, Kyrgyzstan), while it remains centralised at the state level in a few others (Belarus, Turkmenistan, Tadjikistan).

**Table 2: Overview of reforms in key areas of the water supply and sanitation sector – selected EECCA countries**

|  | Armenia   | Kazakhstan  | Kyrgyzstan   | Moldova  | Russia  | Ukraine  |
|--|---|---|--|--|---|--|
| <b>Strategic planning and policy priority</b>      | Included in 2003 PRSP   | Set up a national sector programme  | Included in 2002 PRSP  | Included in 2004 PRSP  | Set-up a national programme for housing and communal services (HCS) sector reform, incl. WSS. Also, several regions developed HCS and WSS sector strategies | Developed a national strategy for WSS  |
| <b>Regulatory oversight of utility performance</b> | Central gov. responsible for large utilities<br>Local gov. for rural utilities  | Municipal   | Municipal  | Municipal  | Municipal (predominant) or Region   | Municipal  |
| <b>Asset ownership</b>                             | Central gov. large utilities<br>Local gov. rural  | Municipal (predominant) or private  | Municipal (90%)<br>State (10%)   | Municipal  | Municipal (predominant) or Region   | Municipal (most), few regional or state  |
| <b>Tariff setting</b>                              | Central gov. Public Services Regulatory Commission  | Municipal, pending approval by Regional offices of National Monopoly + Competition Regulation Agency + governor;<br>Cost plus basis | Municipal, pending approval by Regional offices of National Monopoly + Competition Regulation Agency;<br>Cost plus basis | Municipal  | Municipal (predominant), Regions (when region ownership or PSP)   | Municipal  |
| <b>Role of central gov.</b>                        | Has full responsibility for utility sector, incl. capital expenditures  | Little guidance and oversight besides tariffs + capital expenditures  | Little guidance and oversight besides tariffs  | Recommends tariff methodology, but no implementation at municipal level              | Sets framework for tariff setting (currently under implementation)  | Sets framework for tariff setting and monitors performance at regional level                         |
| <b>Subsidies</b>                                   | Income support for the poor   | About USD 750 million over 8 years from a national sector programme;<br>Income support for poor                                     | No subsidies for utilities;<br>Income support for the poor   | None to utilities;<br>Income support for the poor                                    | Municipalities now have to compensate utilities for difference between tariff and cost;<br>Compensation for cost of privileges;<br>Income support for poor  | Central budget subsidies of 80m USD; Compensation for cost of privileges;<br>Income support for poor |
| <b>Legal status of utilities</b>                   | Joint Stock Companies 100% state owned (with few exceptions)  | Joint Stock Companies, municipal or private owned   | Business entities under municipal ownership  | Municipal companies (predominant) or Joint Stock Companies                           | Municipal or State Unitary Enterprises, some joint stock companies  | Municipal or Regional Unitary Enterprise   |
| <b>State of PSP</b>                                | Management contracts with private operators in 2 biggest utilities (66% of population), to be replaced with lease contracts soon;<br>Provision for delegated management in Water Code | Many medium-sized cities have domestic private sector owners;<br>Concession law in place  | No legal framework for PSP;<br>One management contract with international Private Sector in Osh                          | Concession law in place, but lack of guidance for implementation;<br>No cases of PSP | Concession law in place (2005);<br>8% of urban population served by PSP utilities, mostly lease contracts   | Concession law, but very little PSP (domestic operators)   |
| <b>Contracts between utility/municipality</b>      | Performance contracts in most big utilities   |   | No serious contractual relationship between utilities/municipalities   |  | Only a few cases of performance-based contracts   | Only a few performance-based contracts   |
| <b>Strategic planning</b>                          | WSS financing strategy  | WSS financing strategy  | No provisions for public participation   | WSS financing strategy   | WSS financing strategies in several <i>oblasts</i>  | WSS financing strategy   |
| <b>Public participation</b>                        | Public participation in tariff revision possible  |   |  | Law setting right of access to information and consultation of population            | Currently under developed, but new law allows access of public to information from 2006 on  | Public hearings in some municipalities;<br>Law on WSS information                                    |

Note: 1. PSP = Private Sector Participation.

While most countries with centralised responsibility for water supply and sanitation suffer from the usual rigidities and inefficiencies that this form of governance induces, the process of decentralisation has brought its own set of problems. In some cases decentralisation created inconsistent institutional arrangements, with the ownership of WSS assets and responsibilities for investment, tariff-setting, operation, and maintenance residing with different institutions. Many of these inconsistencies have now been removed and these functions are now usually concentrated at the level of local governments. However, the absence of comprehensive inventories of WSS assets, and of correctly functioning property registers in most EECCA countries still hampers the effective functioning of decentralised water management.

In contrast to most other EECCA countries, in 1990 s Armenia chose to recentralise responsibility for, and ownership of, WSS infrastructure. In a small country like Armenia (about three million people), this was perceived to be the most effective way of speeding up the pace of reforms. Now that many reforms are well under way, Armenia is gradually decentralising responsibility for water again, using an institutional set-up that it previously pilot tested in one region.

### **Tariff-setting**

Inadequate and poorly developed tariff rules and tariff-setting procedures have been one of the main causes for the poor financial situation of the sector. While the situation remains unsatisfactory in a number of countries with the absence of regular tariff reviews, and an inadequate definition of the cost items to be considered for tariff calculation, there are a number of positive developments too. Ukraine and Russia for example, have made significant efforts to improve their tariff-setting frameworks, with the objective of better reflecting the economic realities, as well as seeking to insulate tariff-setting from excessive political interference. In the Ukraine, the 2004 law on Communal and Housing Services requires the regulator to compensate utilities for below-cost tariffs (Box 3), which if enforced, should be a strong incentive for local authorities to effectively implement cost recovery tariffs. While these reforms point in the right direction most are still very recent and time will be needed for effective implementation at the local level and for results to materialise.

Measures such as those taken in Ukraine and Russia will result in increased water tariffs in the short term, if properly implemented. However, this may pose serious problems for low income groups. For instance, in Armenia, about half of the population would have to pay more than four per cent of their income if tariffs were to be increased up to cost recovery levels. As a consequence Armenia is working to improve its income support programme for the poor, in particular through improved targeting of the programme, while considering the possibility of state subsidies to allow tariffs to remain at lower levels in the medium term (these issues are discussed further in document ENV/EPOC/EAP/MIN(2005)6).

**Box 3: Ukrainian Law on Housing and Communal Services (passed in June 2004)**

- Introduced a requirement that the Cabinet of Ministers of Ukraine should determine a procedure for setting tariffs for water supply and sanitation services. Before the adoption of the Law, the State Committee for Housing and Communal Economy Affairs developed guidelines and adopted them by its decrees;
- Granted an exclusive right to local government authorities to set tariffs at the local level for utilities in any ownership form;
- Introduced the principle of full recovery of economically justified costs. The law explicitly bans approval of tariffs for housing and communal services below the level of economically justified costs for their production;
- Where a regulator decides to set a tariff below the economically justified costs level, the regulator is obliged to provide to the regulated utility a subsidy from the local budget to cover the gap between the approved tariff and economically justified costs for provision of services.

Under the Ukrainian Law on Housing and Communal Services, tariff-setting procedure for water supply and sanitation services is determined by the Cabinet of Ministers of Ukraine, which considerably limits room for arbitrary political interference on the part of the local authorities.

**Subsidies**

Another sign that EECCA governments are increasingly recognizing that local authorities in charge of water infrastructure are in need of support, is the recent creation of central budget funds to subsidize investment. Both the Ukraine and Kazakhstan have set in place such funds with the objective of providing municipalities and utilities with financial support for investments for the prevention of accidents or to improve the efficiency of water systems. In the Ukraine the amount of money allocated for this purpose was about EURO 80 million in 2004. Kazakhstan allocated about USD 750 million over eight years.

Central governments have also made efforts to honour their financial commitments *vis-à-vis* utilities, most notably by resuming payment of compensation for social services provided through utilities (such as privileges that involve reduced tariffs for certain categories of the population). Also, budget entities (such as administrations, hospitals, etc.) have resumed the payment of their water bills, which in the late 1990s had become the exception rather than the rule. A more detailed discussion of the role of central government in financing municipal water infrastructure is provided in paper ENV/EPOC/EAP/MIN(2005)6.

**Improving collection rates**

Collecting payments from water users has been a significant problem in the past. This is an area where many EECCA countries have achieved important improvements recently. For instance, in Russia and the Ukraine collection rates improved from just over 50 per cent in 2000 to close to 90 per cent in 2004. Even more impressive is the achievement in Armenia where, thanks to a programme for the forgiveness of arrears (Box 4), collection rates went from between 10-20 per cent in 2001 to close to 100 per cent in 2004.

Renewed economic growth in the EECCA region has facilitated improved collection rates by generating more tax revenue and industry profits, as well as allowing salaries to be paid on time. Also, many utilities have improved their billing systems, so as to issue bills and register consumers more systematically than in the past.

**Box 4: Implementation of the Household Arrears Restructuring Programme in Armenia**

In November 2002 the National Assembly passed Law No. 441-N, which created an effective incentive framework for improved bill collection by writing off a portion of past arrears for households that install water meters within six months.

Arrear write-off procedure. All the water arrears incurred prior to 1 January 2000 will be written off for water users provided they pay 50 per cent (for households who receive round-the-clock water supply) or 30 per cent (for households who receive a scheduled supply) of the arrear accumulated between 1 January 2000 and 9 December 2002. Those covered by the national family assistance programme (PAROS) and entitled to poverty benefit are required to pay reduced rates of 30 per cent and 15 per cent respectively. Those who have duly paid their water bills throughout this period will be credited 70 per cent of payments made between 1 January 2000 and 9 December 2002 as advance payment for future bills. This settlement is made on the condition that a water meter is installed at the expense of the household, and that current payments are made in full and in a timely manner

It should be noted that the government decree does not obligate households to install meters. However, it is a prerequisite for the arrear write-off.

Programme results. The Household Arrears Restructuring Programme has had a major positive impact on the collection rate. This is because an alternative to installing meters was to pay the full arrears over the entire period of default without any relief. The increased collection rate resulting from the implementation of the Programme facilitated financial rehabilitation of the water supply and sanitation utilities.

The same Programme accounts for mass installation of individual water meters in the households, which also increased the collection rate because, first, this lowered the bill, and, second, increased public confidence in the bills issued. By incorporating the promotion of individual meter installation as one of the key components of the Programme, the Government accomplished several things at once: it improved the financial standing of the water utilities and enhanced transparency in the sector.

**Performance-based contracts between utilities and municipalities**

The Almaty Guiding Principles recommend that municipalities use performance-based contracts to create a framework where utilities can be held accountable for their performance. Such contracts are crucial in helping to establish utilities as autonomous and commercially-run entities, as they require a clear definition of the scope of the contract (*i.e.* the assets that the utility is responsible for operating), the objectives (*i.e.* performance indicators and objectives that the utility is supposed to achieve), as well as the means (*i.e.* tariff levels over time and subsidies) that are put at the disposal of the utility to achieve these objectives (see document ENV/EPOC/EAP/MIN(2005)5 for a more detailed discussion).

Even though the legal status of many water utilities in the region has been modified to that of private business entities (such as joint stock companies), this has not in itself helped to render them more autonomous. In most EECCA countries, the vast majority of water utilities (about 95 per cent) continue as extensions of the city administration, thus incurring political interference in day-to-day operations, as well as the use of revenue for non-water purposes.

However, there is now a small number of examples in EECCA where the relationship between municipalities and utilities has been restructured successfully, providing utilities with more autonomy in their operations, and municipalities with the tools to assess their work (Box 5). The key challenge for policy is therefore to effectively disseminate and scale up the positive experience that exists in cities such as Surgut.

**Box 5: Surgut's Municipal Services Development Project**

The City of Surgut is the largest city of the Khanty-Mansi Autonomous *Okrug* (administrative region) in Western Siberia with a population of 282 000. The City is regarded as among the best Russian municipalities based on financial strength and city management.

In 2001 the City of Surgut elaborated the Municipal Services Development Project in order to upgrade and rehabilitate its municipal water and district heating services and therefore to put these on a financially sustainable footing. The Project includes capital investments, which yield high economic and financial rates of return, reduce energy consumption, and increase efficiency in the provision of water, wastewater, and district heating services. It also includes an institutional development component to improve financial and operational performance of Surgut municipal utilities. Total Project costs are EUR 87.5 million, of which EUR 45 million is from an EBRD loan. The loan agreement was signed with the European Bank for Reconstruction and Development in June 2002.

The City is responsible for project implementation and all debt service of the loan including interest, fees, and principal repayments. However, debt service payments will be met from income from the municipal utility companies "Gorteploset" and "Gorvodokanal" (hereinafter the "Utilities") that provide district heating, water supply, and wastewater services in Surgut.

To enhance the institutional capacity of the municipal Utilities, the Project includes technical assistance for implementation of a Financial and Operational Performance Improvement Programme aimed at enhancing their commercial viability and administrative and managerial capacities. In 2004 the municipality and the Utilities entered into service contracts.

Main objectives of the service contract for the municipality:

- Replacement of administrative relations by contractual relationship;
- Equal allocation of rights and duties among the parties - the municipality and the Utilities - when providing municipal services, such as water supply, wastewater disposal, and heat supply to the population;
- Change-over to capital costs financing incurred by rehabilitation and extension of a municipal infrastructure by the Utilities as an alternative to the budgetary financing;
- Introduction of commercial management at the Utilities; transference of the Utilities to direct contractual relationship with the population and other consumers of services; to ensure the Utilities' survival in a competitive environment;
- Increase of capitalization and market value of the Utilities before their privatisation.

The contract's duration is 30 years. It provides for a two-year transition period during which the following action should be taken:

- Defining and charting distribution perimeters and geographic zones;
- Primary inventory of fixed assets for the purpose of their classification and determination of the following: function, geographical location, renewal character, acquisition date, acquisition price, technical condition, depreciation, net balance value, replacement cost, etc.;
- Analysis of fixed assets' physical state, deterioration rate, and further operating possibility. Reveal new priority works to be overhauled/reconstructed or replaced in order to update the utilities' investment programme;
- Development of a medium-term programme for new construction and extension of municipal infrastructure works;
- To define basic principles and tariff regulation procedure for the services provided by the Utilities with consideration of current laws;
- Creation of a financial management service for each Utility, introduction of a budgeting system to the utilities; analytical reporting regarding types of activity, functions, and geographical zone groups;
- Introduction of a management information system;
- Pursuant to the contracts, the municipality delegates to the Utilities exclusive right to operate services under the concession for the period of 30 years. The municipality shall not take any administrative or other decisions that may limit or prevent the Utilities from performance of their exclusive right to operate these services. Moreover, the municipality shall compensate the Utilities' losses incurred due to the municipality's actions or failure to act regarding

the services. The contracts define terms and procedures for tariff establishment, and penal sanctions for failure to accept tariffs in time.

Principal efficiency indices applied in the service contracts:

- Operating efficiency of the transferred services as volume of water sold to volume of water produced, excluding leakage;
- Total leakage, which includes transportation and delivery leakage, and commercial losses;
- Share of metered connections;
- Collection ratio;
- Average service coverage;
- Service coverage by geographical zones;
- Average investment for new connections.

Annually the municipality prepares and publishes, in the local press, a memorandum on the Utilities' operating efficiency based on the efficiency indices.

Source: Project Implementation Unit of Surgut's Municipal Services Development Project, 2005

### **Private sector participation**

Following the Almaty conference there was a lot of hope that the private sector might play an important role in supporting water sector reforms, including through investment, but also fears that the private sector might use the weak governance of the sector to abuse monopoly power. In the last five years the involvement of the private sector has generally remained at a very low level. There are only very few cases of private sector participation (PSP) in the region, most of them being management or lease contracts where the private sector has very limited risk. Most international private sector actors have become more risk averse, which has largely discouraged them from entering EECCA markets which feature unfavourable investment climates. High levels of perceived political and regulatory risk, lack of reforms at the local level, and reluctance of municipal authorities to engage in PSP arrangements have also deterred stronger private sector involvement.

There are some exceptions to this general situation though. One is Armenia, where almost all major utilities have come under private sector management, and cover about 65 per cent of the population. These management contracts have been put in place in the framework of a number of IFI and donor assistance programmes and take the form of management contracts involving international operators. The other is the Russian Federation, where a number of domestic private sector operators have been created over the past two years. These new operators have been moving into the water market very aggressively, establishing mostly short term lease contracts in about 20 cities, covering approximately eleven per cent of the urban population in Russia. In some cases, the involvement of the private sector has helped to improve the operational efficiency of utilities, but whether this trend is sustainable and whether domestic firms are able to improve water services for the population in the long run still remains to be seen.

### **Public participation**

The Almaty Guiding Principles recommend that “the public should be directly engaged in the reform process”, including “through the participation in key decision processes, as well as the provision of information so as to ensure that the interests of all stakeholders are protected”.

While many EECCA countries seem not to have achieved big progress in this area, a few countries have undertaken measures. There are now a number of EECCA government agencies that have set up public relations offices, created web pages, and organise seminars and conferences. Some governments

also started publishing national reports on water, *e.g.* the Ukrainian Law on Drinking Water stipulates that the relevant sector authority publishes an annual national report on drinking water quality and on the situation in the water supply and sanitation sector. A number of water utilities (*e.g.* Moscow, St Petersburg, Kiev) have established public relations units, telephone “hot lines”, as well as launched information campaigns. These routinely inform the population about current problems and solutions, initiate public discussions, and work with debtors on an individual basis.

Several countries have also taken legal dispositions to allow for public participation in decision making. For instance, the Armenian Water Code contains a provision to involve civil society groups in the tariff approval process. Similarly, Moldova has set in place a law that stipulates the consumer’s right of access to information, as well as an obligation to consult the population for key decisions.

According to NGOs who are working in the field, and despite some positive examples, overall, the level of public involvement in the reform process in EECCA has remained very low. Even where legal requirements for a public participation process have been set in place, this may often be done in a “stealthy” manner. The main problems appear to be the lack of information about such public participation procedures (in some cases authorities might deliberately choose to give such processes a low profile), the information on planned reforms that is made available to the public, as well as its quality. These factors tend to significantly reduce the potential for the active engagement of civil society groups.

#### 4. CONCLUSIONS

Available data suggests that the overall situation in the water supply and sanitation sector of EECCA, which had already been assessed as being in a critical condition five years ago in Almaty, has been deteriorating further since. This appears to be especially true with respect to the quality of water services, where relevant indicators have been deteriorating in virtually all EECCA countries. The situation in rural areas appears to be even more critical than that of urban infrastructure, even though a lack of data makes it difficult to assess the exact extent of the problem. As a consequence, the risks for public health and the environment emanating from water supply and sanitation have continued to grow over the past years, inflicting significant economic, environmental, and human costs on these countries. The most serious situation with respect to the incidence of water on public health exists in a group of low-income, low-coverage countries, which includes most of the Caucasus and Central Asia.

Hence, despite the significant progress in bringing about institutional and legal changes in the water sector that has recently been achieved in some EECCA countries, the quality of services that consumers are receiving has not improved. Several factors may help to explain this apparent contradiction:

1. Many changes have only been put in place fairly recently, and there is an important time-lag between the moment where legislation or institutional change is enacted and the moment where it is fully implemented and starts to produce results. This is compounded by the fact that the most recent performance figures that are available are usually two years old and therefore do not reflect the present performance of the sector.
2. Some reforms may lead to the temporary deterioration of performance before the situation starts to improve. For instance, the introduction of household water meters, due to the reduction in consumption that it induces, usually results in decreased revenue for utilities, as well as increasing unit costs (as fixed costs need to be covered through fewer units of water sold). Only once regulators have been convinced that water tariffs need to be increased significantly to reflect increased unit costs, will the financial situation of utilities substantially improve.
3. Due to the inter-dependencies between different types of reforms (*i.e.* at different levels of government) some reform efforts may have been neutralized due to inaction at another level. This is most obviously the case with the lack of reforms that seems to exist at the local level. While central governments in some EECCA countries have undertaken measures to improve the coherence of the institutional system, vesting most regulatory powers in local administrations, a lack of commitment and/or capacity in municipalities to use their new powers to the benefit of the population has largely neutralized these improvements. To date, very few water utilities have been established as autonomous, commercially-run entities. Instead, many municipalities still regard water utilities as instruments to further their short-term political objectives. The reasons are an important lack of resources and capacity to deal with these issues at the local level. Central governments, some of which have started to realize this, should put more effort into helping overcome this situation.