URBAN WATER REFORM IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

PROGRESS SINCE THE ALMATY MINISTERIAL CONFERENCE

OECD

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EXECUTIVE SUMMARY

At their meeting in Almaty in October 2000, EECCA Ministers of Environment, Finance and Economics, 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". Participants requested that the EAP Task Force prepare a progress report for review at the next "Environment for Europe" Ministerial Conference, in Kiev, May 2003. The present report aims at responding to this request. The report provides a detailed description of the situation and main trends in the EECCA urban water sector. In doing so, it identifies the main trends in the reform process, establishes a detailed set of indicators, and a data base-line against which further progress can be measured at a follow-up conference of stakeholders in 2005.

The municipal water sector reform process in the EECCA region started in the late 1990s. The first steps were the decentralization of the water sector and transformation of water utilities into communal enterprises. These actions were taken without appropriate tariff and institutional reforms in place. The old concept of water as a purely a social service was abolished, and the municipal water industry was expected to be a key player in the transition process to a market economy. At the same time, governments phased out direct subsidies to water utilities, which became self-financed companies. This "shock-therapy" reform appears to have largely failed, and more reforms are now urgently needed.

While the level of connection to water supply and sanitation remains high in most EECCA countries, the actual quality of service provided is continuing to deteriorate, and so is the condition of infrastructure in general. Accident rates in the distribution network are increasing in many places, while continuity of service is decreasing (Figure 2.6) and quality of drinking water remains low.

The deterioration of water quality that goes along with an infrastructure that is slowly falling apart is resulting in levels of water borne

diseases at significantly higher levels than in the EU. In some countries, essentially in Central Asia more than one-third of the population is using drinking water that does not meet hygiene standards, and in some sub-regions this proportion can exceed 50 per cent. Pathogenic micro-organisms remain the most important danger to drinking water in the region, with gastro-intestinal diseases an important cause of child morbidity and mortality in some countries. This is causing significant costs to public health systems and the economy. In Moldova, for instance, the National Environmental Action Plan (NEAP) calculated the social and economic impact of water pollution and reached the conclusion that polluted drinking water leads to between 950 to 1850 premature deaths annually, as well as between 2 to 4 million days of illness annually. The monetary cost to the economy was assessed to be as high as 5 to 10% of GDP.

The deterioration of water services and associated impacts on public health and the environment are likely to accelerate in the future if the status quo prevails given that the deterioration of the infrastructure is expected to follow a curved slope, falling more at later stages. This means that the situation could change quite dramatically in a very short time, and should be borne in mind when judging the figures that are provided in this report.

EECCA countries have been slow to react to this alarming situation, with little progress being achieved in the area of legal and institutional reforms. The governance frameworks for the water sector remain often too complex and sometimes incoherent, hampering decision making in the sector. Very little progress has been achieved in establishing institutional frameworks that allow water utilities to operate as commercial entities. Weak institutional frameworks together with an unfavourable investment climate in most EECCA have been responsible for making the water sector largely unattractive for private sector finance. The lack of reliable sector information further complicates decision making, and several countries have started to introduce measures to improve their information systems recently.

A similarly alarming, and obviously tightly correlated situation, exists in the economic and financial area. EECCA countries generally recognise the need to recover a more significant portion of utility costs from consumers, which are currently equal to or lower than 60% of operational and maintenance costs in most countries. As a consequence many governments have adopted policy targets to achieve cost recovery by the middle of the decade. This will need to be achieved through the reduction of operational costs and, where this is not enough, through increases of water tariffs. The implementation is progressing very slowly, however. This leaves water utilities in a situation where their revenues do not allow them to carry out proper maintenance; sometimes their revenues are even insufficient to cover operational expenses.

The gap between operational costs and utility revenues per m^3 of water sold for a sample of 100 utilities in the Russian Federation is as high as 30%. The non-payment problem, which is widespread, and the high level of operational costs, which often can only be reduced through investment, further exacerbates these problems. As a consequence, domestic sector investment has been insignificant over a very long period of time. ODA in the water sector is unable to compensate for the absence of domestic finance, both because investment needs are much larger than what ODA can provide, but also because of serious obstacles that are preventing more ODA finance from flowing into the EECCA water sector.

While the need to move towards the user-pays-principle is widely recognised in the region, this is already generating and will continue to generate serious social problems. There is evidence that a large portion of the population already pays a significant share of revenues for water services. If water tariffs increase to recover a greater share of utility costs, the number of those who have difficulty in paying their water bills is likely to increase dramatically. In the case of Khmelnitsky in the Ukraine, a 50% increase in water tariffs would result in more than 40% of households having to spend more than 4% of their total expenses on water[1]. In order to prevent sector reform from negatively affecting the poor, and to make reform socially acceptable it is therefore of utmost importance that social protection systems be put in place and reinforced where they exist already, in parallel with the introduction of economic and institutional reforms. This will put additional demands on public budgets at all levels of government, and should be factored into any reform strategy for the sector.

It should be noted that all these problems are exacerbated in small and medium sized cities and towns. Data shows that the deterioration of water infrastructure is most advanced in these types of settlements. At the same time small and medium sized cities also face the toughest financial and economic problems. For instance, in small towns unit operational costs can be up to twice as high as in large cities, and the non-payment problem being far more serious, too. Due to higher operational costs and lower average household income in small and medium sized cities, the social aspects of water sector reform are also expected to represent a far more serious challenge.

[1] This is the rule of thumb benchmark that is frequently considered by donors and IFIs as the maximum acceptable level of household spending on water.

1. INTRODUCTION

The municipal water sector in EECCA is in critical condition and requires immediate and targeted reform actions by governments. More than ten years of low or no investment and poor maintenance resulted in substantial degradation of water facilities and their networks in EECCA. Accident rates in the EECCA water sector are ten to 100 times higher than in western countries. Most of the water utilities have been working under emergency conditions for many years. Municipal investment programmes are being implemented slowly and investments from outside sources face serious institutional obstacles. Targeted assistance for the poor is insufficient and there are few if any for the public to participate in the sector development process. Due to low tariffs, inappropriate accounting practices, and poor payment enforcement, the sector's financial situation is critical.

The policy and institutional reforms required to put the sector on a sound and sustainable basis, and to create the conditions for much needed investments, have generally not been implemented. As a result, water infrastructure is now on the verge of collapse in many EECCA countries with massive implications for public health and the environment. Also, the considerable efforts of International Financial Institutions (IFIs) and donors over the last ten years have had only a modest impact.

The consequences of failing to reform the urban water supply and sanitation sector are now clear:

- Water usage is excessive by international standards, with high levels of wastage by consumers and in distribution networks.
- The supply of water is unreliable and of low quality, with the poor particularly affected.
- Water and wastewater treatment is increasingly ineffective.
- In some countries there have been increases in water borne diseases, adverse impacts on industrial and agricultural productivity and an impairment of the ecological functions of aquatic systems.

At their meeting in Almaty in October 2000, EECCA Ministers of Environment, Finance and Economics, 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 of 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 progress report to be prepared for review at the next "Environment for Europe" Ministerial Conference, in Kiev, May 2003, and 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 World Summit on Sustainable Development in Johannesburg, in 2002, made a major contribution to this by adding a target on sanitation to complementary to that on supply of safe drinking water. 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 Global 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. They could provide direction and support for future OECD/EAP Task Force work in the water sector. As envisaged by Ministers at the Almaty Conference, and a major conference of stakeholders to review progress in implementing Ministers' conclusions is planned for 2005.

The present report aims at responding to the request to monitor the progress in implementing the Guiding Principles that originated from the Almaty Conference. The report provides a detailed description of the situation and main trends in the EECCA urban water sector. In the following sections the

report identifies and measures key indicators for the physical condition of the water supply and sanitation infrastructure and its impacts on public health and the environment, the state of legal and institutional frameworks, the economic and financial situation, and the social dimension of sector reforms. In doing so, it identifies the main trends in the reform process, establishes a detailed set of indicators, and a data base-line against which further progress can be measured at a follow-up conference of stakeholders in 2005. The main progress indicators for each of the reform areas are presented at the end of each chapter.

2. THE PHYSICAL CONDITIONS OF URBAN WATER INFRASTRUCTURES IN EECCA: MAIN TRENDS

The rate of connection to water supply is at a high level and mostly stable

The municipal water service coverage is relatively high in all EECCA countries[2]. Direct water connection rates for urban population range from about 65% in Uzbekistan and Armenia to 88% in some parts of the Russian Federation. In those countries[3] where in depth utility performance studies were carried out connection rates have remained stable, and in some places even increased slightly over the last five years. In cases where an expansion of water supply and sewerage connections was reported, expansion was mainly due to the process of transferring social infrastructures from industries to utilities (many industries used to provide water services to the population during the USSR times). Hence, the increase of connection rates is not real, but merely statistical. The transfer of industry owned and operated water infrastructure into utilities has frequently negatively affected water utilities, as these facilities and networks generally had been kept poorly before the transfer, and water utilities had to make substantial efforts to put the facilities back in order. In several cases including many former military townships in Kazakhstan, Russia, and Tajikistan, such facilities had been abandoned and collapsed.

A reduction of coverage was mainly reported from rural areas where the collective farm economy has collapsed as a consequence of the disintegration of the Soviet Union. A coverage reduction also occurred in a few cities where the entire economy was based on a specific industrial enterprise that had provided water services before the transition.

[2] Almost all of the EECCA population has access to water and wastewater services according to the WHO definitions of the "Access to and improved water source" and "Access to sanitation"[The Little Green Data Book, World Bank, 2002]. EECCA countries define access to water as a direct connection to the water network or as an operational water standpipe in proximity of 200 m, without defining the minimal water consumption. Wastewater service includes either wastewater connection or organised wastewater collection from latrines.

[3] Moldova, the Russian Federation, and Ukraine.

Wastewater treatment and connection to sewage are insufficient, leading to increasing environmental impacts

The level of household connection to sewerage infrastructure is relatively low compared to many OECD countries. Even when households are actually connected to the sanitation infrastructure, the treatment of wastewater is not always assured. While little consolidated information exists about the level of equipment with primary and secondary treatment facilities, it is clear that existing infrastructures often do not operate effectively. Following important reductions in water consumption as a consequence of the collapse of EECCA economies in the early 1990's, the capacity of the existing wastewater treatment plants is often too large. Hence, many of them function below their design capacity (Box 4.1), which causes treatment to be ineffective or impossible. The deteriorated condition of many wastewater treatment plants is another reason for their ineffectiveness. In Kazakhstan, for instance, between 26 and 33% of mechanical-biological treatment plants were found to be in need of rehabilitation[4]. These problems are exacerbated by the chronicle lack of cash for simple operational purposes, the unreliability of key supplies such as electricity, and a frequent inadequacy of infrastructure design to local conditions. As a result many treatment plants have been shut-down in recent years.

As a result of this situation and the parallel collapse of industrial output, municipal water utilities have advanced to be the main polluters of surface water in many places in EECCA. This is the case in Georgia, where municipal sewage is the dominant polluter of rivers, lakes and the Black Sea coastal area, representing about 60% of all wastewater, with phosphates, nitrates and organic compounds being the main pollutants.

[4] OECD-DANCEE, (2001), Municipal water services, Kazakhstan – Background analysis for the financing strategy, Paris.

Table 2.1. Water Supply and Sanitation in EECCA[5]

Country	Centralised water supply					Sanitation (%)		GDP per capita, USD[1]	Population	
	% of population connected to the system		average daily consumption, litre per person	% of drinking water meeting quality standards	average uninterrupted supply, hours	Population connected to sewerage	Wastewater treated by WWTP		total population, mln[2]	% of urban and rural [3]
	urban	rural								
Western EECCA										
Belarus [4]	94	53	194	67- 95 [5]	24	68	99	1,096	10.0	70/30
Moldova [6]	73	--	340	70	18	56	--	374	4.3	54/46
Russia[7]	84	--	250[8]	75 [9]	24	70	91	2,137	144.8	77/23
Ukraine [10]	83	26	319	94	17	53 [11]	97 [12]	781	49.1	68/32
Caucasus										
Armenia [13]	68	32	250 [14]	50 [15]	2-24 [16]	67-89	40-99	702	3.0	73/27
Azerbaijan[17]	95-83	11	270	70	4-6	78	50	696	8.1	53/47
Georgia [18]	95	35	530	70	6-12	60	80[19]	581	5.4	60/40
Central Asia										
Kazakhst.[20]	93	26	220 [21]	74	--	--	--	1,505	14.8	60/40
Kyrgyz.[22]	--	70	--	--	--	--	--	307	4.8	48/52
Tadjikistan	--	--	--	--	--	--	--	161	6.5	33/67
Tukrmen. [23]	80	28	470 [24]	67	6-24	61[25]	--	642[27]	5.5	46/54
Uzbekist. [26]	65	64	--	--	--	--	--	237	25.4	42/58

-- no data
1 and 2 Source: Transition report, 2001 update, EBRD
3 Source: Human Development Report 2000, United Nations
4 Source: official submission by the Ministry of Housing and Communal Services of Belarus, data for 2002
5 Note: 67% of water complies with chemical standards and 95% with biological
6 Source: National Association Moldova Apa Canal and EAP Task Force/OECD, 2002
7 Source: Environmental Performance Review of the Russian Federation, OECD, 1999 and Sivaev/Institute of Urban Economics based on data for Krasnodar, Samara and Perm regions, as well as Norht-West Russia
8 Note: 616 L in Moscow, source: Environmental Performance Review of the Russian Federation, OECD, 1999
9 Source: Environmental Performance Review of the Russian Federation, OECD, 1999
10 Source: Statistical Bulletin for main indicators of water sector performance in Ukraine, 2001, State Committee for Statistics for Ukraine; National Water Sector Strategy and Actin Plan, 2002
11 Note: 57% of urban population and 9% of rural dwellers area connected to sewerage
12 Note: the capacity of existing facilities could provide mechanical and biological treatment for 97% of total wastewater; it is estimated that only 50% is treated in many locations, particularly smaller towns.
13 Source: official submission by the State Committee for water management of Armenia; note: data for Yerevan and 250 villages serviced by Yerevan and Armvodokanal
14 Note: excluding water losses; according to the Environmental Performance Review of Armenia, UN ECE 2000, water consumption norm is 300 litres per person per day for towns, and 400 litres per person per day in Yerevan
15 Note: Environmental Performance Review of Armenia, UN ECE; according to the data from Yerevan and Armvodokanal 100 and 95% of water respectively corresponds to sanitary norms
16 Note: according to the Environmental Performance Review of Armenia, UN ECE 2000, uninterrupted water supply in Yerevan is provided for 2-6 hours per day
17 Source: World Bank, (2000), Azerbaijan – Water Supply and Sanitation Sector – Review and Strategy; the figure for connections to sewage refers only to the Baku area; figures for water consumption, quality and uninterrupted supply are based on an official communication from the Ministry of Housing and Communal Policy of Azerbaijan.
18 Source: Official submission from the Georgian Council of Observers of Gruzvodokanal. Note figures correspond to the orders of magnitude provided in Municipal water and wastewater sector in Georgia – Background analysis for the financing strategy, Paris, OECD-DANCEE, 2001;Only the figure on the share of the rural population connected to water supply differs with 72% in Gruzvodokanal.
19 Note: mechanical treatment
20 Source: Environmental Performance Review of Kazakhstan, UN ECE 2001
21 Note: excluding water losses
22 Source: Environmental Performance Review of Kyrgyzstan, UN ECE, 2000
23 Source: official submission by the State Committee for sanitary water supply of population, Turkmenistan
24 Note: excluding water losses, data for urban areas, consumption in rural areas 60 L
25 Note: data for urban areas, connection in rural areas is 2%
26 Source: Environmental Performance Review of Uzbekistan, UN ECE, 2001
27 Note: According to the national statistics GPD per capita in Turkmenistan in 2001 is estimated 4803 USD; EBRD data is used for all countries of the region for the purpose of comparison

[5] The data for this table has been compiled from a variety of sources, its quality and the methodologies used for data collection and treatment may vary. It is believed, however, that this data provides a reasonable picture of the overall situation in the EECCA water sector.

Water consumption is often excessive, metering mostly absent

Municipal water utilities in EECCA account for 1-15% of the total water consumption in the region[6]. During the last five years, the water demand from water utilities substantially declined in EECCA (e.g., in Ukraine it dropped by 1.7 times during the period from 1990 to 2001[7]). In some places it declined by half due to the reduction of industrial water consumption, cancelling of hot water services, and demand management through metering. Also, high rates of cross-subsidy between industrial and household consumers in some EECCA resulted in some industries and commerce to construct their own intakes and treatment facilities, thereby reducing their demand for water through vodokanals.

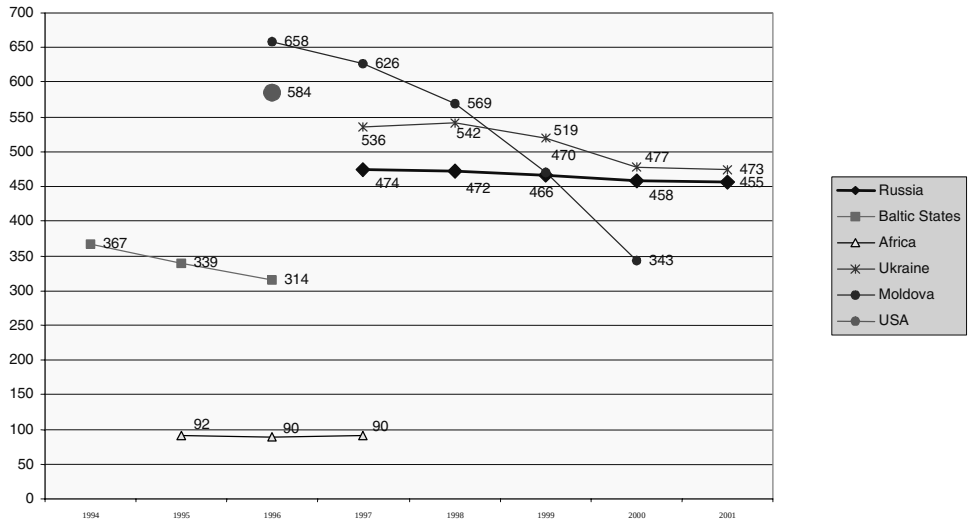
Nevertheless, domestic water use in EECCA remains at relatively high levels at between 200 liters per capita a day (lpcd) in small towns and 500 liters in large cities (Figure 2.2), even though some significant decrease has been observed in some countries (e.g. Moldova, Figure 2.1). In some locations consumption levels may be even higher, such as for instance in Tbilissi, Georgia (up to 900 lpcd) as well as in Ashgabat, Turkmenistan (700 lpcd).

One of the reasons for excessive water consumption is that the use of domestic water metering is not yet widely developed in EECCA, which does not encourage more efficient use of water. Consumption figures should be treated carefully, however, since domestic and production metering are not well developed yet. Hence, it is possible that consumption figures include a substantial part of water that is actually lost in the distribution network.

[6] It varies from 1% in Turkmenistan (Turkmenistan water note, World Bank, 2000) to about 5% in Kazakhstan and in the Russian Federation and up to 15% in Ukraine (UNEP/GRID-Arendal).

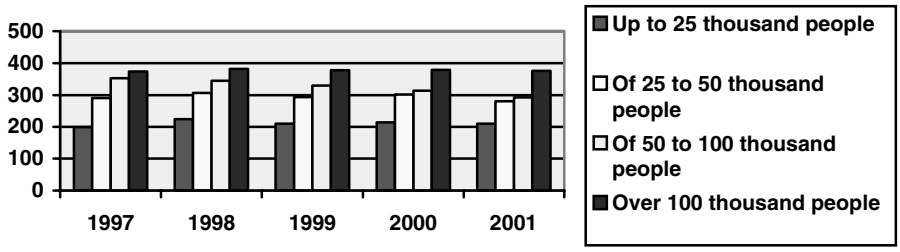
[7] Voda i vodoochistny tekhnilogii (Water and water treatment technologies, bimonthly journal of the Water Utility Association of Ukraine), issue 2-3, September 2002, p.16.

Figure 2.1. Water production in liters per capita a day



Source: OECD EAP Task Force, (2003), Performance of Water Utilities in EECCA – A Synthesis Report, Paris

Figure 2.2. Water consumption in Russian Federation[8] (liters per capita a day)



As mentioned earlier, the majority of water utilities in EECCA do not have internal meters for water production, distribution and consumption. Despite the standard requirement set in the Construction Norms and Regulations (SniP) to have water meters at production and main distribution units, water production is often measured according to the pump capacity and pressure in the system.

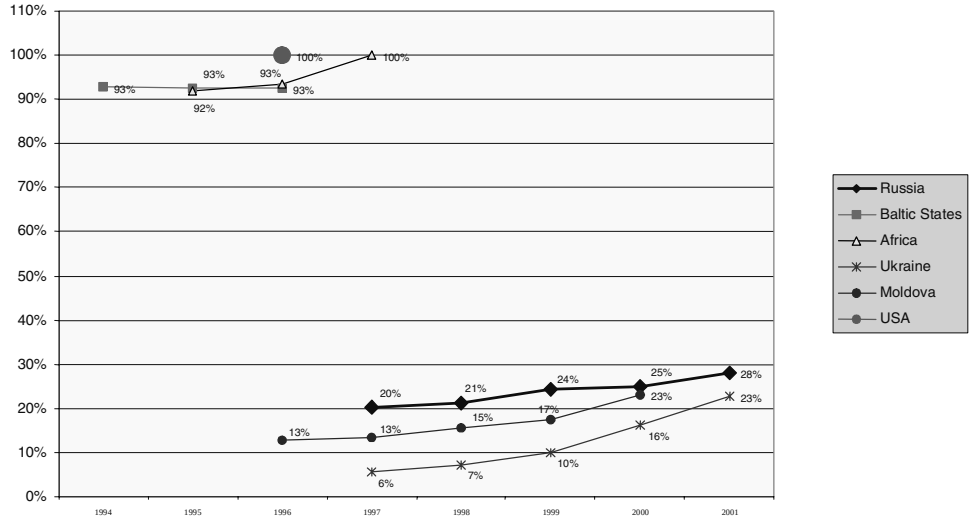
[8] Based on the survey of five regions, OECD EAP Task Force/Moscow IUE, (2002), Indicative Survey of Water and Sewerage Utilities – Final Report on Russian Water and Wastewater Utilities.

Internal water metering and especially metering within multi-apartment buildings are only gradually being implemented. In Moldova, the Russian Federation and Ukraine less than 30% of connections are metered, while this figure can be as high as 100% in some OECD and Baltic countries (Figure 2.3). Even when installed, internal water meters are not always used for billing purposes. Such practices were reported in Almaty, Chisinau, and many other relatively large cities where utilities sign contracts not with individual consumers but with condominiums or housing maintenance companies.

Generally, the impact of installing individual water metering in apartments remains questionable because the legal basis and procedures for metering are unclear. In addition, tampering with the installed meters is widespread and thus utilities are discouraged from using them more widely. Consequently, in all EECCA countries the billing remains essentially based on consumption standards and norms. Due to asymmetric information this provides an opportunity for utilities to make up for internal water losses and water overuse through adjusting the tariff system, instead of reducing losses.

The situation with excessive water consumption is only likely to change in the event of significantly increased water tariffs and more accurate billing according to consumption (e.g. through metering).

Figure 2.3. Proportion of connections with operated meter



Source: OECD EAP Task Force, (2003), Performance of Water Utilities in EECCA – A Synthesis Report, Paris

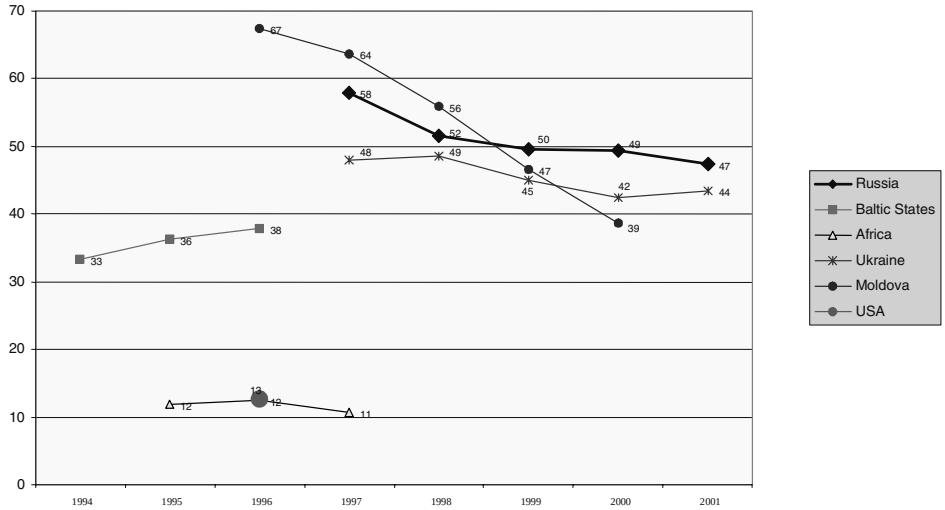
The water network is showing signs of severe deterioration…

Traditionally in the Soviet Union, insufficient attention and resources were dedicated to the maintenance of water infrastructure. The general economic decline, financial constraints of industrial consumers, and reduced water consumption further exacerbated these problems. Hence, the replacement of corroded pipes and other rehabilitation work has been neglected for many years which has resulted in extremely high accident rates. There are now between two and ten accidents per kilometer of pipe a year in most places in EECCA[9] (Figure 2.5), while 0.2-0.3 accidents are considered reasonable in OECD countries.

While such accident rates should lead to significant levels of water losses (more than 50%), the figures seem to show only moderate losses (30-40%, Figure 2.4). In fact figures of unaccounted-for-water have even been decreasing over the last years in those EECCA countries where they have been surveyed. This apparent contradiction is due to the fact that EECCA utilities lack the equipment and willingness to measure losses effectively. Production and internal metering are not a standard practice in EECCA utilities, and the introduction of such meters is frequently considered to be an excessive cost. The fact that under the existing tariff system, water utilities have little or no incentives for providing transparent information (as consumers are billed according to calculated average consumption) further complicates the matter.

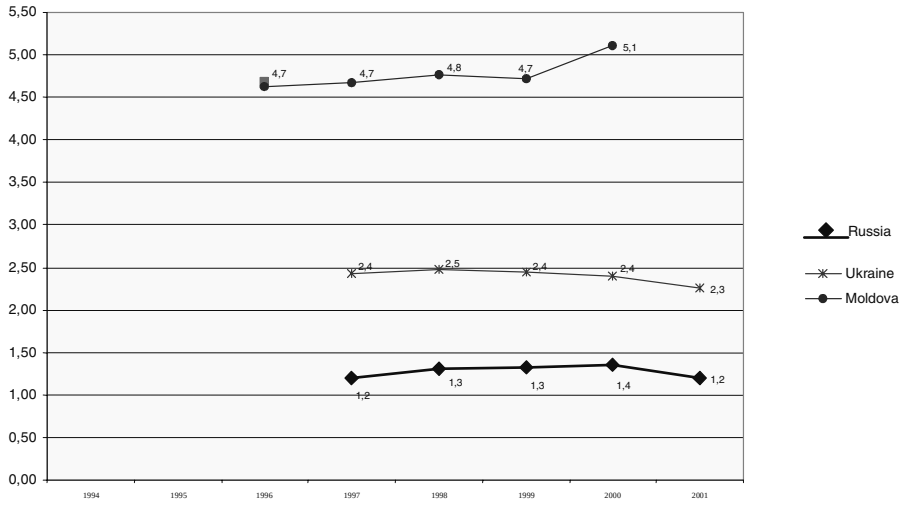
[9] Although the rate was temporarily lower in the mid-1990s due to the reduction of water consumption and water facility operation.

Figure 2.4. Unaccounted-for-water in cubic meters per km of water distribution network per day



Source: OECD EAP Task Force, (2003), Performance of Water Utilities in EECCA – A Synthesis Report, Paris

Figure 2.5. Number of pipe breaks per year expressed per km of the water distribution network

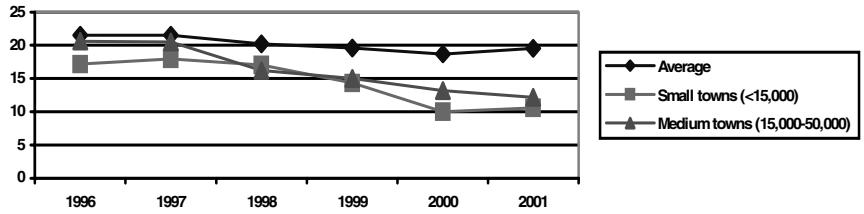


Source: OECD EAP Task Force, (2003), Performance of Water Utilities in EECCA – A Synthesis Report, Paris

…which has a direct impact on the quality of service and public health

Another consequence of the deterioration of the water infrastructure is that water utilities in many EECCA countries find it difficult to provide service continuity. In Moldova, for example, water supply outside the capital city of Chisinau was available only for several hours a day (See Figure 2.6). Nowhere in Moldova is water supplied 24 hours a day. Hot water services have often been discontinued definitely especially in small towns. Similar trends can be observed in Ukraine, Tajikistan, Kazakhstan and some other EECCA. Besides posing a problem to consumers in terms of water quality (when the network is down infiltration into supply mains takes place) and access, this practice contributes to further accelerate the deterioration of the network (due to the shockwave or "hydraulic hammer" that is generated when the supply is re-established).

Figure 2.6. Continuity of service in Moldova (hours per day)



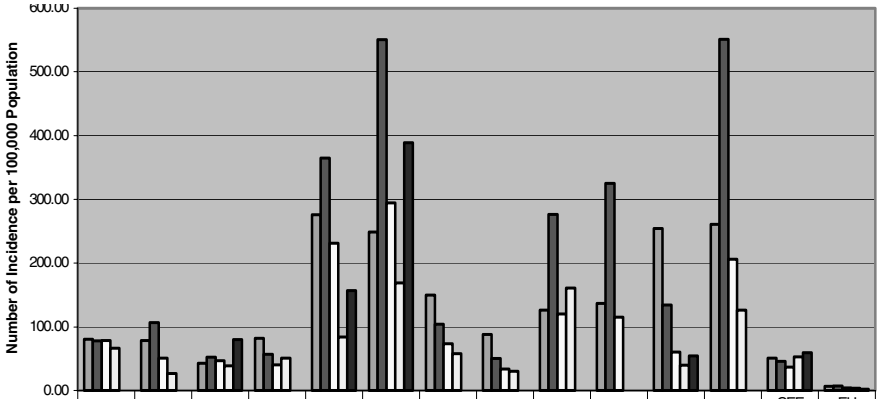
Source: OECD EAP TF/Association Moldova Apa Canal, (2002), Performance indicators: Water utilities in Moldova

The deterioration of water quality that goes along with an infrastructure that is slowly falling apart is resulting in levels of water borne diseases at significantly higher levels than in the EU. In some countries, essentially in Central Asia more than one-third of the population is using drinking water that does not meet hygiene standards, and in some sub-regions this proportion can exceed 50 per cent. Pathogenic micro-organisms remain the most important danger to drinking water in the region, with gastro-intestinal diseases an important cause of child morbidity and mortality in some countries. Incidences of water related diseases, e.g. hepatitis A (Figure 2.7), are high in

many EECCA countries[10]. These figures are supported by the perception in the population. For instance, among Baku's residents in Azerbaijan, 87% perceive piped water to be unsafe[11].

This is causing significant costs to public health systems and the economy. In Moldova, for instance, the NEAP calculated the social and economic impact of water pollution and reached the conclusion that polluted drinking water leads to between 950 to 1850 premature deaths annually, as well as between 2 to 4 million days of illness annually. The monetary cost to the economy was assessed to be as high as 5 to 10% of GDP.

Figure 2.7. Viral Hepatitis A Incidence Rate



	ARM	AZE	BLR	GEO	KAZ	KGZ	MDA	RUS	TJK	TKM	UKR	UZB	CEE average	EU average
1996	80.45	78.95	43.01	82.47	276.11	248.75	149.58	88.11	126.25	137.04	254.12	260.91	51.13	6.56
1997	77.89	107.10	52.38	57.19	364.50	550.84	103.90	50.71	276.53	325.04	134.49	551.34	45.82	7.28
1998	78.61	50.88	46.99	40.27	231.17	294.49	73.20	34.19	120.08	115.30	60.71	206.00	37.11	4.36
1999	66.49	27.28	38.50	51.02	83.85	168.89	58.23	30.51	160.80		39.74	126.23	52.69	3.37
2000			79.56		156.47	388.93					54.65		59.55	2.37

Source: WHO, from the EECCA Environment Strategy Background paper, Pollution Prevention and Control: Improving the management of municipal water supply and sanitation infrastructure

The treatment rate of raw water to achieve potable quality declined due to a lack of the water treatment chemicals, dilapidation of treatment equipment, and financial constraints. As has been stated earlier, wastewater

[10] WHO, from the EECCA Environment Strategy Background paper, Pollution Prevention and Control: Improving the management of municipal water supply and sanitation infrastructure

[11] World Bank, (2000), Azerbaijan – Water supply and sanitation sector – Review and strategy, Washington.

treatment plants are now becoming the main polluters of surface water in a number of EECCA countries and regions. Also, there are numerous cases when decaying sewerage pipes cause secondary cross-contamination of drinking water. Almost everywhere in EECCA, the strict potable water quality standard (legacy of the USSR Sanitary Standard for the water quality, *SanPin*) is being replaced by temporary water quality permits that allow utilities to sometimes significantly exceed SanPin standards. The cost reduction strategy in Turkmenistan, for example, involved a change in chlorination method from liquid chlorine to calcium hypochloride, which substantially increased the rigidity of potable water (with the calcium content up to 2 g/l) and reduced its taste and sanitary parameters.

Consequently, demand for clean potable water from alternative sources is growing rapidly. Water vending, where an entrepreneur delivers water from a "clean underground spring" in mobile tanks, is a profitable business in some large cities in EECCA (including Moscow, Kharkiv, Kiev, Yerevan, and several large cities in Central Asia). Bottled water business is also growing in all EECCA countries, reflecting the decline in tap water quality[12]. In fact, the Russian Ministry of Health recommended wider use of bottled water in its Order in 2000. In the wider Baku area in Azerbaijan 97% of the population reported that they systematically were boiling water for nutritional purposes, and about 20% said they were buying bottled water or water from vendors. It is probable that the wide recognition in the EECCA population that tap water is no longer safe, and the fact that many seem to resort to purification or substitution with water from other sources, has helped to avoid more serious public health impacts.

[12] Russia produced 1,300 million liters of bottled water in 2001 (18% increase from 2000) [www.unipac.ru].

Progress indicators:

Water supply connection

⇒ Connection rate for water supply services (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 in percentage of population).

Water consumption

⇒ Water Consumption (Total annual water sold expressed by population served per day).

Water supply network and accident rates

⇒ Accident rate (Total number of pipe breaks per year per km of the water distribution network).

⇒ Unaccounted-for-water (Difference between water supplied to the system and water sold in %).

The quality of service and water metering

⇒ Continuity of Service (Average hours of service per day for water supply).

⇒ Water metering connection rate (Percentage of connections with operating meters).

Implications for public health

⇒ Viral hepatitis A incidence rate (number of incidence per 100,000 population).

⇒ Under five year mortality rate of diarrhoeal diseases (number of incidence per 100,000 population).

Wastewater treatment connection and environmental impacts

⇒ Connection rate for wastewater services (Population with sewerage services (direct service connection)/total population under utility's national responsibility, expressed in percentage).

⇒ Wastewater processing rate (Percentage of the produced wastewater that undergoes at least mechanical treatment).

3. THE LEGAL AND INSTITUTIONAL SITUATION OF THE EECCA URBAN WATER SECTOR

The legal and institutional framework for urban water supply and sanitation is necessarily complex due to the fact that:

a) Water supply and sanitation services are usually local monopolies, and therefore require careful economic regulation of water prices and quality.
b) Water is a basic human need, and crucial for public health, and its quality and condition of delivery therefore need to meet certain minimum standards.
c) Water is a natural resource that is available in limited quantities and needs to be protected, which requires careful resource management both in terms of its quantity (e.g., the control of water abstraction and its allocation between different uses) and the quality of the water resource (e.g., the quality of the surface and ground water, and the quality of effluents from municipalities, industry and agriculture).

The legal and institutional framework for the urban water sector is a key determinant for the effective operation of water services. Many elements that compose the regulatory systems for the water sector in EECCA were established during Soviet times, often with little attention being paid to their economic and technical implications. In most EECCA countries key elements of these structures are still in place, posing severe problems to sector reforms.

The break-up of the Soviet Union led to the abolishment of central planning for the urban water sector. In many EECCA countries decentralisation of administrative responsibility for water supply and sanitation to the municipal level in the framework of broader administrative reform, has been the major step towards sector reform. The ownership of water utilities has been given to local authorities. Most water utilities were transferred into municipal enterprises; some of them were established as joint stock companies or corporations owned by the local authority or by the state and regional government. In some small towns and rural areas (Armenia, Kyrgyz Republic,

Moldova), there have been attempts to implement community-based water systems.

The combination of these often abrupt changes with institutional and legal legacies from Soviet times has led to a number of incoherent settings in EECCA regulatory systems for the water sector. As stated earlier, recent decentralisation of the sector management significantly reduced the responsibilities of central governments, but failed to define clearly and accurately the exact mandates and legal powers of various actors, as well as to endow them with the necessary capacities and resources to perform their new duties[13]. This is often due to an incomplete decentralisation process, which delegated all responsibilities for water supply and sanitation to the municipal level, but sometimes left crucial functions in the hands of other levels of government. Some of these flaws, which are by no means systemic to all EECCA countries, but may apply with some degree of diversity to individual countries, are briefly outlined in the following.

Investment decisions are sometimes not located at the most appropriate level of government

Although vodokanals are officially autonomous and self-supporting, in practice this is rarely the case. In some EECCA countries investment decisions are still taken at the central level. For instance, in Kazakhstan, the Water Resources Committee, which also issues orders for the design of water supply systems, takes all investment decisions. In Georgia, for investments operated with state and municipal funds, the infrastructure must be designed by the State Institute for Design and built by the local Department of Capital Construction. These institutional set-ups have been reported to potentially lead to non-competitive designs and construction, as well as to investment decisions which do not correspond to local needs.

Despite decentralisation ownership rights are not always located at the municipal level, or not clearly defined

The ownership of water infrastructure assets is another issue of contention. The lack of clear allocation of property rights and of decision-making responsibilities are among the key regulatory obstacles. In most EECCA countries local authorities own the utilities, but the absence of a clear

[13] *"Obstacles and Opportunities to Commercialising Urban Water Services in the NIS"*, ERM, 2000.

identification of assets and the definition of property rights over these assets creates obstacles for efficient management and financing of the sector. In Kazakhstan all assets of Vodokanals are state owned, but it is not always clear which assets are owned by which representative of the state. For example in Kazakhstan the official legal status of vodokanals is "self-supported autonomous" corporation or joint-stock company. It means that officially, the government and its local representatives have limited jurisdiction in the decision making of the vodokanals' operations. However, the local authority (municipal and/or regional) owns the water utility and, *de facto* controls all vodokanal operations, treating it as a water department of the municipality. More generallu, the lack of a clear definition of property rights over water infrastructure seriously limits the ability of municipalities and utilities to use them as collateral for obtaining finance on capital markets. In Ukraine utilities were prohibited to borrow financial resources for investment in 1997-2002.

Actual tariff setting procedures are frequently inadequate, negatively affecting sector investment

Local authorities are also responsible for setting tariffs (e.g. in Moldova, Georgia, Russia and Armenia); rules and procedures for tariff setting remain poorly developed, however. As a consequence tariff setting is perceived as unpredictable and as lacking transparency, and prone to politically motivated decisions rather than sound economic sector management, which is a major impediment to sector investment. For instance, tariffs are frequently set for an undetermined period (except for Moldova and Ukraine), instead of regularly reviewed in the light of the recent evolution of production costs. Even essential procedures for the regular adjustment of tariffs to inflation are generally not in place, or even prohibited (e.g. in Ukraine). This has resulted in massive tariff reductions in real terms, following the financial crisis in 1998. Similarly, important increases of prices for some of the key inputs, such as electricity (which have increased steeply in some EECCA countries following sector reform), could not be factored into water bills.

In some cases the tariff setting authority does not reside with the municipal level responsible for the provision of water services. For instance, in Ukraine, Uzbekistan, Kazakhstan and Belarus, the control of tariff setting resides with regional authorities. This institutional set-up may pose further obstacles for adequate and transparent tariff setting, given the potentially diverging (political) interests of municipalities and regional administrations.

The collection of water charges may not always reside with vodokanals

Collection of revenue from the consumer may also be an issue. In Ukraine and Moldova, it was previously the case that vodokanals would rely on the ZhEKs City Housing Management and Maintenance Company) to collect water charges as part of property rent. The ZhEKs did frequently not pass on the charges, or only part of them to vodokanals. While this is now changing, it still appears to be the practice in some areas of Ukraine.

Decentralisation has frequently led to over-fragmentation of the water sector

While decentralisation is a positive development, which brings decision-making closer to local conditions, it has created certain difficulties. The sudden disintegration of Ministries of Communal Services resulted in significant over-fragmentation of the sector, creating thousands of independent utilities (e.g., more than 4,000 municipal water utilities in Russia, about 600 in Ukraine, near 170 in Kazakhstan, and 52 in a small country like Moldova). This poses problems at several levels: a) the monitoring of these utilities has become an impossible task, and resulted in the disruption of information flows from the sector (see point below). As a consequence central and regional authorities do often not have a clear picture of the sector's situation; b) municipalities, especially in medium and small towns, do not have sufficient institutional and management capacity as well as financial resources to manage and support the sector; c) over-fragmentation prevents the realisation of economies of scale and contributes to increasing the cost of water supply and sanitation services, which is particularly felt in smaller municipalities.

There is a lack of sector data that seriously hampers strategic planning for the water sector

Information about the performance of the sector is an important condition for improving the accountability and management of utilities and for attracting investment into the sector. Rapid decentralisation and restructuring of management led to a disruption in information gathering. Not only local authorities and potential investors, but also water utilities themselves often lack a clear picture of various aspects of utility operation. Decentralisation has also weakened the strategic planning capacity inside of Ministries for Municipal Infrastructure, which are in charge of developing the framework for decentralised water services.

In order to address this problem and to provide decision-makers with information about utility performance several EECCA countries have launched pilot projects to gather utility performance indicators with the support of donor assistance[14]. Performance indicators compiled by an individual utility can be very useful for establishing its performance targets and monitoring trends. They are most useful for comparing utility performance at regional and national levels, and, when integrated, can be used for evaluating water sector performance (See Box 3.2).

The challenge is to establish the data collection function on a sustainable basis in the long term. In some EECCA countries water utility associations have traditionally played a role in sector data collection and processing, but had to disrupt these activities in the process of the decentralisation. If strengthened these associations could carry out such an activity under the supervision of the Ministries for Municipal Infrastructure.

[14] Pilot projects on performance indicators in Russia, Moldova and Ukraine, EAP Task Force/OECD.

Box 3.1. Utility performance indicators

In 2002 National Association of water utilities of Moldova "Moldova Apa Canal" has launched a study of water utilities to improve access to information and compare utility performance. The study covered 42 water supply and sanitation utilities for the period between 1996 and 2000. Using the World Bank toolkit the study collected information on the key indicators of utility performance:

1. *coverage (both water and wastewater)*
2. *water production and consumption*
3. *unaccounted-for-water*
4. *metering of consumption*
5. *network performance*
6. *cost and staffing*
7. *quality of service*
8. *billing and collection*
9. *financial performance (working ratio, debt service ratio)*
10. *capital investment*
11. *environmental indicators*
12. *cost and resource efficiency*

The results of the study revealed several trends, e.g., 48% reduction of water consumption per capita and a growing number of metered connections; high level of deterioration of infrastructure and low levels of investments (except for municipalities receiving foreign loans). Small towns presented a particularly difficult situation: higher production costs of utilities, low recovery of costs by tariffs and more interruptions in water supply.

These results could help focus national and local reforms and identify priorities for actions and investments. They are used for the selection of the utilities for the World Bank Water Supply and Sanitation Project.

Similar studies are carried out in the Russian Federation (about 100 utilities in Rostov, Leningrad, Perm and Samara oblasts and Krasnodar Krai), and Ukraine (about 75 utilities in Kharkov, Nikolayev and Zakarpatskaya oblasts).

Source: EAP Task Force/OECD, World Bank, Benchmarking of Water and Sanitation Utilities

Overly stringent standards for effluent waters, drinking water quality, and construction further hamper sector reforms and investment

The EECCA system of environmental quality (ambient) standards is comprehensive and ambitious, covering hundreds of pollutants and mandating very low concentrations of contaminants. EECCA countries apply risk assessment as a standard setting methodology, contrary to the risk management approach used in OECD countries. Ambient standards are determined exclusively on the basis of zero human exposure. In determining the standard, consideration is not given to the technical or economic feasibility of meeting the quality standard, i.e., risk management factors. Since any risk level is considered unacceptable, the maximum number of pollutants are regulated for the maximum number of people, without setting any priorities. Devoid of any inputs from the regulated community and the public, standard setting has remained a routine scientific exercise rather than a policy process.

The result is a set of environmental standards, many of which are technically or economically not achievable. There are examples of effluent limits being more stringent for some parameters than the standards for drinking water, and many significantly exceed EU norms (Table 3.1). For instance, in some cases sulfate limits for wastewater may be lower than the statutory maximum allowable concentration (MAC) for fishing bodies[15].

Table 3.2. Comparison of the EU and Russian Standards

Parameters	Allowable concentration, mg/l		EEC minimum percentage of reduction, %	Population, thousand
	EEC	Russia		
BOD_5	25	30 (total)	70-90	Any
COD	125	15	75	-/-
Suspended solids	35	+0.25 to current	90	-/-
Total phosphorus (P_{tot})	2 1	0.2 (as P)	80	10-100 >100
Total nitrogen (N_{tot})	15 10	- -	70-80	10-100 >100
Ammonia nitrogen ($N\text{-}NH_3$)	-	0.39	-	-
Nitrate nitrogen ($N\text{-}NO_3$)	-	9.1	-	-

Source : EAP Task Force working paper, 2002

As a result of this situation "temporary" (higher level) discharge limits are used in practice (even though they are not allowed in the law in some countries, as in Ukraine). These limits are negotiable between the utilities and regional environmental authorities on a case by case basis as part of the permitting process. Environmental agencies have wide discretionary powers and few guidelines for negotiating the temporary limits, which creates space for corruption. The system of temporary limits has not served its purpose of providing a step-by-step approach to the attainment of environmental quality standards. In many cases, the temporary (but routinely renewed) limits have been set at values close to actual pollution levels, yielding no incentive to

[15] EAP Task Force working paper, Effectiveness of water protection legislation in Russia and the NIS: Practical analysis, 2002.

enterprises for pollution reduction. In other cases utilities prefer to pay environmental charges and fines since it is cheaper than pollution control measures. A similar situation exists with respect to construction standards, which force utilities to construct over-dimensioned and technically inadequate infrastructure.

In some countries steps were taken towards reforming overly strict water standards. Ukraine, for example, has declared its intention to harmonise its legislation with that of the European Union. New rules were introduced which set out less stringent requirements for the quality of discharged waters and brought them closer to the EU legislation (the new norm for BOD and suspended solids for waste water is now 15 g per litre)[16]. At the same time the costs of bringing the performance of the water sector into compliance with EU requirements are going to be very high and the governments need to be aware of the financial needs to implement their political statements (See Box 3.3).

Box 3.2. Costs of compliance with EU requirements for wastewater treatment in Ukraine

There is little information about the costs of compliance with EU requirements in EECCA. A study was conducted for the Khmelnitska oblast in Ukraine (population of 1,442,000) to estimate the capital investment needs to comply with the EU Directive 91/271 concerning urban wastewater treatment plants.

The costs of upgrading and construction of waste water treatment plants were estimated at 88-141 million EURO, depending on assumptions concerning the rate of nitrogen removal in existing plants. The total investment needs including the extension and development of the sewerage systems is 189,8 million EURO.

The total investment to finance the compliance with the EU Directive in this Oblast of Ukraine is estimated around 132 EURO per capita.

Source: "Costs of Ukraine's Prospective Approximation, with Environmental Regulations of the European Union", Krakow University of Economics, 1999

[16] G. Semchuk, Group of Senior Officials on the Reforms of the Urban Water Supply and Sanitation in the NIS, First Meeting, Kiev, September 2001, Report, EAP Task Force/OECD.

Performance targets for utilities are not clearly and fully set-out

In a context of largely decentralised responsibility for urban water services, such as in most EECCA countries, regulation of utilities is largely operated by individual contracts between municipalities and utilities. The introduction of contractual relations between consumers and utilities has been very slow in EECCA. While some municipalities have developed vodokanal "charters" which set out some performance targets, they are usually too ambiguous with regard to financial and technical performance objectives, and need to be upgraded to include all terms and conditions of regulation (price, quantity and quality). There is hence an urgent need to improve the contractual relationship between vodokanals and municipalities. The development of model performance agreements could help to accelerate this process.

The sector is not yet attractive for private sector participation

There is a growing interest in EECCA in involving the private sector in the operation of water utilities. This is generally motivated by two factors: first, the commercial and technical know-how that the private sector can mobilise, resulting in more efficient and cheaper provision of water services; and second, the financial resources that the private sector can mobilise, thereby relieving pressure on limited public budgets.

There are only a very few examples of private sector participation (PSP) in EECCA so far. The most prominent is probably a management contract in Yerevan, Armenia in the framework of a World Bank project. Several other projects to involve the private sector are in difficulties or have been cancelled. Negotiations on a concession agreement in Almaty are advanced, but have been dragging on for more than five years now. A final agreement has not been reached yet, which makes it increasingly difficult for the private operator to maintain its involvement. The development of a project to involve the private sector in the city of Bukhara, Uzbekistan, has recently been stopped. Also, several projects are under preparation in the IFI pipelines.

In addition to PSPs that involve the international private sector, there are a few examples of PSP with the domestic private sector. For instance, in Ukraine, three utilities were reported to be privately owned, and 15 had the status of joint stock companies.[17] In the Russian Federation a water utility

[17] NIKTI Institute presentation at the National Ukrainian Water Utility Meeting in Donezk, 4-5th November 2002.

managed by a domestic private company was reported in the city of Syzran (Box 4.1). This case revealed a number of legal obstacles for further promotion of private sector participation, which need to be addressed at national and local levels.

Box 3.3. Reforming the water utility in the city of Syzran, Russian Federation

The city of Syzran in Samara region (Russia) has decided to invite a consortium of five private companies with major operations in the city to manage its water utility. The primary goal of this decision was to halt the accelerating deterioration of water infrastructure and to attract additional investments into water infrastructure development. Municipal property was transferred into a trust managed by a newly established private company in the form of a concession-type contract for five years. It was expected that the private investment would be refinanced through increased efficiency of the company and the reform of tariff policy.

After one year of existence the implementation of the project gave positive results overall, for instance, the new management achieved a substantial increase in bill collection to the level of now 93%. The introduction of contractual relations significantly improved relations between the municipality and the utility. The involvement of the private company facilitated additional investments. It remains to be seen if these improvements can be sustained in the long term.

At the same time the implementation of the project revealed certain weaknesses of the project design and identified more general regulatory obstacles. The contract between the municipality and the private company did not specify from the outset key elements such as the tariff formula and requirements for quality and quantity of these services, which led to conflicts. Another obstacle that occurred is due to the fact that Russian law stipulates that when the management of municipal infrastructure is transferred from the municipality to a private entity, the regulatory responsibilities must be transferred from the municipality to the regional administration. This significantly complicated the agreements concerning tariff policy.

Source: M. V. Musatkin, (2002), Experience with the implementation of a management contract in the Syzran Vodokanal, presented at the 2nd meeting of the OECD/EAP Task Force Group of Senior Officials with responsibility for Urban Water Reforms, 2-3 December 2002, Paris

Several EECCA countries have undertaken steps to develop concession law to facilitate private sector involvement into utility sectors. Concession law has been adopted in Ukraine; in Russia its adoption by the Duma was expected at the end of 2002, but has been postponed. Russian draft law, for example, provides state guarantees for legal protection of the concessionaire and legal guidance on concession contract, including proprietary rights, terms and conditions of concession agreements[18]. While concession laws can help to improve the framework conditions for private sector participation,

[18] Draft Federal Law "On Concession Agreements with Russian and Foreign Investors", Russian Federation, 2001.

alone they are not sufficient to attract more private finance into water services. The lack of reforms in the EECCA water sector appears to be the single most important obstacle to PSP.

This fact is reflected in a survey of private sector assessment of country risks in the CEEC/EECCA region[19]. Table 3.2 shows how private operators perceive different risk categories in countries in Central and Eastern Europe and in EECCA. The key risk elements that are problematic in EECCA countriesare macro economic and political risks, but also risks which are more specific to the water sector, such as breach of contract, water tariffs and financial risks.

Table 3.2. Risk assessment per CEE/EECCA country from a survey of private water operators

Country	Operat-ion risk	Water tariffs low	Low profit expec-tations	Strong compe-tition	Financial risk	War, civil disturb-ance	Regula-tory risk	Legislat. does not permit	Breach of contract	Macro economic risk	Political instability	Political inter-ference	Recipient not inter-ested	Other
Poland	0,8	1,3	0,9	1,1	1,1	0,3	1,3	0,4	1,0	1,3	0,6	1,4	0,8	0,8
Czech Republic	0,6	0,9	1,0	1,6	1,0	0,3	0,7	0,3	0,9	1,1	0,6	1,4	0,4	0,0
Estonia	1,3	0,7	0,7	1,3	1,0	0,3	1,7	0,3	1,0	2,0	0,7	1,3	0,0	0,0
Latvia	1,3	0,7	0,7	1,3	1,0	0,3	2,0	0,3	1,0	2,0	0,7	1,7	0,3	0,0
Lithuania	1,3	0,7	0,7	1,3	1,0	0,3	2,0	0,3	1,0	2,0	0,7	1,7	0,3	0,0
Slovakia	0,7	2,0	1,5	1,1	1,4	0,4	1,6	0,7	1,3	1,3	0,9	1,4	0,4	0,0
Hungary	0,5	1,8	1,2	1,3	1,3	0,5	1,4	0,5	1,2	1,0	0,5	1,7	0,7	0,0
Slovenia	0,7	0,8	0,7	1,0	1,0	0,5	1,2	0,5	0,7	1,5	1,1	1,0	0,0	0,0
Croatia	1,1	2,0	1,3	1,0	1,7	1,3	1,7	0,9	1,4	2,0	1,3	1,4	0,0	0,8
Turkey	1,0	1,3	0,8	1,7	2,1	0,8	1,5	0,3	1,5	2,0	1,5	1,8	0,5	0,0
Russian Federation	1,5	1,7	1,2	1,0	1,5	0,8	1,5	1,5	1,7	1,9	0,8	1,6	0,3	0,8
Azerbaijan	1,6	1,8	1,8	1,0	2,0	1,6	1,4	1,6	1,8	2,2	1,6	1,7	0,6	1,0
Kazakhstan	1,8	1,5	1,5	0,8	2,0	1,5	2,0	1,4	2,0	2,3	1,6	2,0	0,8	1,3
Uzbekistan	2,0	2,0	1,5	0,8	2,3	1,8	2,0	1,4	1,8	2,0	1,8	2,3	0,8	1,3
Turkmenistan	2,0	2,0	1,5	0,8	2,0	1,8	2,0	1,8	2,0	1,5	1,6	1,7	0,8	2,0
Kyrgyz Republic	2,0	2,0	1,8	0,8	2,0	1,8	2,0	1,8	1,8	2,3	1,6	2,3	0,8	0,7
Tajikistan	2,0	2,0	1,5	0,8	2,0	2,3	2,0	1,8	2,0	2,0	2,0	2,3	0,8	1,3

Legend: (3) = this is the main reason/risk (2) this is a main reason/risk (1) this is a reason/risk (0) this is no significant reason/risk					
	Colour code:	< 0,75	0,75 - 1,5	1,5 - 2,25	> 2,25

Source: OECD/World Bank (2002)

Besides the obstacles mentioned above, another problem with PSP is a frequently encountered lack of political willingness to involve the private sector in the management of water utilities in EECCA. It appears that a number of IFI projects have not emerged from the project pipeline due to the fact that they require the involvement of private operators in service contracts.

[19] OECD and World Bank, 2002, Private Sector Participation in Municipal Water Services in Central and Eastern Europe and Central Asia, Conference Proceedings, 10-11 April 2002, Paris.

Progress indicators:

⇒ Legal and institutional provisions that ensure:
- The coherent allocation of responsibilities and decision-making for water services, i.e. with respect to investment, ownership of assets and the collection of bills.
- The independent, transparent and predictable regulation of commercially-based tariff setting.

⇒ Preparation and promotion of contracts between municipalities and utilities based on performance targets (number of performance contracts signed).

⇒ Introduction of procedures to collect information on specific performance parameters from water utilities and to regularly provide this information to the regulatory bodies (number of countries which introduced utility performance data collection procedures).

⇒ Implementation of reforms of environmental and technological standards for the water sector using WHO guidelines and/or EU directives as a benchmark (number of countries which started the reform of their water standards).

⇒ Development of legal and regulatory provisions for the promotion of private sector participation (number of PSPs in the water sector).

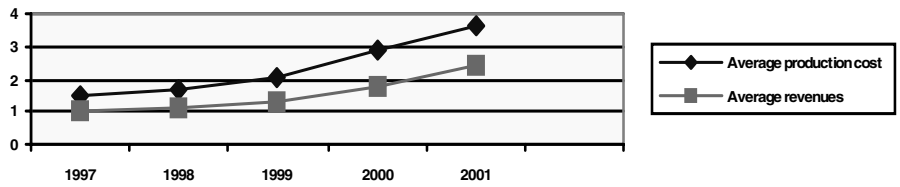
⇒ Development and implementation of training programmes for sector management staff.

4. THE ECONOMIC CONDITION OF URBAN WATER UTILITIES IN EECCA

Water tariffs are insufficient to cover utility operation and maintenance costs

Most EECCA governments now recognise the difficult situation of urban water infrastructures and have undertaken action that will help lay the basis for its renovation and rehabilitation. The sector faced hardships during the transition period when financial support from the state and municipalities disappeared. As a consequence most EECCA countries recognise that to achieve the financial sustainability of water utilities, a greater share of costs needs to be recovered from consumers through tariffs. Most countries are therefore currently implementing water tariff reform, with the objective of recovering 100% of operational and maintenance costs by the middle of the decade. However, the reform process is slow. At present tariffs are still far from reflecting the real cost of service, and they frequently fail to cover not only sector investment but also operational and maintenance costs of the water utilities (Figure 4.1).

Figure 4.1. Average production cost and revenue for the Russian Federation (in RUR/cub.m)



Source: OECD EAP Task Force, (2003), Performance of Water Utilities in EECCA – A Synthesis Report, Paris

The official cost-recovery rate for water services from the population varies between 15% in Georgia and Armenia to 100% in Uzbekistan and Kazakhstan, with the majority of countries at well below 50% (Table 4.1). It is necessary to point out, however, that the official cost-recovery rate can be substantially higher than it is in reality. One reason for this is that the official cost recovery rate does not always include all elements of the water utility cost structure, especially investment, but in some cases also abstraction and discharge fees, are frequently not accounted for in these figures. Another reason for the probable overestimate of official cost recovery levels lies in the method used for the assessment of asset value, which tends to underestimate asset value[20]. As a consequence the depreciation component in tariffs may be far too low. In one case it was reported that assets had to be re-valued by a factor of 20, with a significant impact on the tariff level needed to achieve cost recovery.

National economic and financial regulation affects the water sector as well as all other sectors of economy and it is sometimes difficult making meaningful cross-country comparison of the economic performance of the water sector. It is important to notice that the EECCA countries are at different stages of transition to the market economy and the meaning of, for example, "cost-recovery" may substantially differ from one country to another. For instance, several countries of the region (e.g., Belarus, Uzbekistan and Turkmenistan) have closed economies where prices may sometimes be severely distorted due to the heavy subsidies that some industries receive (especially the energy sector), or due to currency exchange rates which do not reflect the market situation.

Even though there is some uncertainty about the reliability of cost recovery figures, it is clear that at present tariffs do not allow utilities to collect adequate revenues to maintain services and the infrastructure in reasonable shape. Depending on the extent to which it will be possible to reduce costs, it is likely that tariff levels will need to increase gradually over time to ensure a sustainable financial basis to utility operation. The absence of a clear framework for tariff setting and adjustment to inflation has frequently undermined efforts in this direction in the past and therefore constitutes a key element for reforms[21].

[20] This is due to the fact that EECCA utilities usually use historic values, rather than replacement values.

[21] Sometimes tariffs may remain unchanged for three or more years without adjustment for inflation. Furthermore, in all EECCA countries, water tariff regulation is not linked to inflation, particularly to electricity prices. The energy cost constitutes up to 50% of the water services cost. The absence of an automatic procedure for adjustments to inflation frequently contributes to widening the financial losses of water utilities.

Table 4.1. Comparative Analysis of Tariff Policies in Water Supply Sector in EECCA

Country	Cost Recovery level from households	Cross-subsidy ratio	Full cost recovery target date	Level of local tariff regulation	Tariff regulation formula	Formal tariff regulation procedure
Western NIS						
Belarus [1]	31,4	48,6	2005 (80%)[2]	national, local	cost +	No
Moldova	50	5	2003	local	costs +	No
Russia	60	4	2003	local	costs +	No
Ukraine		5.6	1998	local	cost + or price cap	No
Caucasus						
Armenia[3]	20	5[4]	2005	local	costs +	No
Azerbaijan	20-57	5	2005	local	cost +	No
Georgia	15	Yes	2005	local	costs +	No
Central Asia						
Kazakhstan	100	No	1998	regional	costs +	No
Kyrghyzstan	48	Yes	2005 (75%)[2]	local	costs +	No
Tadjikistan						
Turkmenistan	0	N/A	No	national	costs +	No
Uzbekistan	100	No	2001	regional	costs +	No

Source: OECD EAP Task Force, (2002), Key issues and recommendations: Affordability, Social Protection and Public Participation in Urban Water Sector Reform in EECCA, Paris
1. Source: Ministry of Statistics of Belarus/Novak.
2. Note: Belarus established a target to recover 80% of costs from households; Kyrgyz Republic has a target of 75% recovery.
3. Source: State Committee for Water Sector under the Government of Republic of Armenia/Aivazian
4. Note: data for Yerevan only

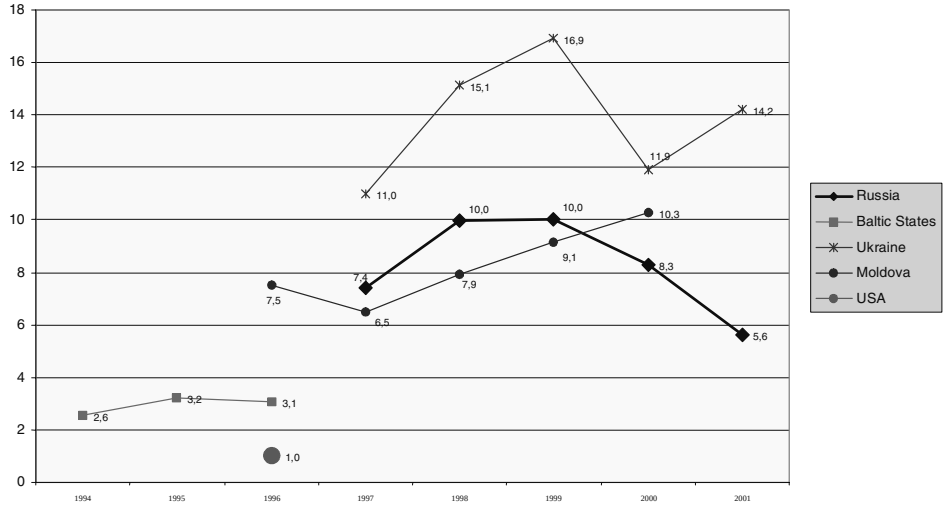
Non payment is widespread and further erodes utility revenue

Non-payment for water services is widespread and in some cases can be as high as 60 to 70%[22] of billed services. Figures for Ukraine and Moldova show average collection periods of between ten and 14 months, which compares to one to three months in the OECD and Baltic countries (Figure 4.2). Collection periods of more than six months are generally considered critical by international standards. Non payment is not only a problem with household consumers, but also in budget entities (i.e. public administrations) in many EECCA, and therefore is at least partially the direct responsibility of the State.

[22] World Bank, (2000), op. cit.

As water utilities rarely have a right to write-off the bad debt accumulated due to non-payment and at the same time they cannot disconnect such consumers from water services, there is little that they can do. Municipalities tend to maintain this system as it gives them an additional power over the utility. It is clear that such policy has negative effects as it discourages payment discipline, creates "indirect" financial relations between the utility and municipal budget, and adds to the financial burden of the utility. It also creates a potential long-term political problem for the municipality, since non-payment is difficult to remove once it has become a habit and is considered a right by consumers.

Figure 4.2. Collection period (months)



Source: OECD EAP Task Force, (2003), Performance of Water Utilities in EECCA – A Synthesis Report, Paris

The combination of insufficient tariff levels with widespread non-payment and lack of reforms also poses a major liability to national economies, as sector debt continues to accumulate. The accumulated municipal sector debt reached 10 billion USD in the Russian Federation and close to 2 billion USD in Ukraine (see Figure 4.3[23]). The simple write-off of such debt would result in major impacts on inflation and the energy sector, which has become the main creditor of the water sector.

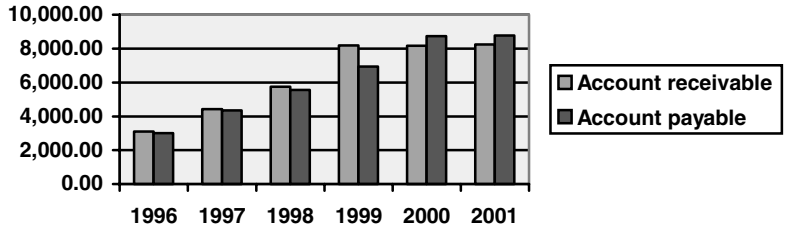
[23] Some reduction of these debts after recalculation into a hard currency terms gives false impression, as the most of debt is 3-4 years old; $1=UAH 5.20 (2001).

The excessive usage of cross-subsidies between industry and household consumers tends to worsen the revenue situation of utilities

In order to increase affordability of water services, most EECCA countries use cross-subsidies between industry and household consumers. In many EECCA countries tariffs for industry may therefore be five times as high as for households, and in some cases even more. Cross-subsidies are formally prohibited only in Kazakhstan. Russia, Ukraine and Moldova are currently trying to reduce the cross-subsidy level, although without much success. In Turkmenistan water is provided free of charge to consumers, and paid for from the public budget.

1. Overuse of the cross-subsidy mechanism, even for the purpose of resolving short-term social problems related to water supply to the public, resulted in a substantial reduction of water sales to the industrial consumers. Many industrial consumers started to build independent water intake facilities to substitute for vodokanal services. These actions reduced the revenue base for the utility, increased vodokanals' over-capacity problems and resulted in a more drastic tariff increase for the population (e.g., in Moldova, Ukraine and some regions of Russia).

Figure 4.3. Account receivable and account payable of the communal services in Ukraine (in million UAH)[24]



Cost reduction potentials are large, but require substantial investment

Utility unit operational costs in relation to water production and annual billed water in EECCA is generally high compared to western standards. In particular, labour costs as a proportion of the total operational costs has been increasing. For example, the average number of staff expressed as per thousand of water service population in Moldova is 4.98, Russia - 4.61 and Ukraine –

[24] Voda i vodoochistny tekhnilogii, issue 2-3, September 2002, p.15.

5.65 (2001), which is almost ten times higher than that in the US (0.6 person per 1000 consumers)[25].

Energy efficiency of water services requires a special attention. Very few utilities have energy saving tools in place (e.g., consumption adjustable pumps and similar equipment). EECCA generally accepted solutions for the water services that rarely consider low-energy or no-energy consumption options (e.g., direct pumping into the system with very few water reservoirs, or a WWTP is always preferred to lagoon-type of wastewater treatment). In addition the high levels of leakage requires the production of more water, further increasing energy usage. As a consequence electricity may represent as much as 50% of operational costs in some EECCA utilities. Utility performance data shows that the electricity consumption per unit of water produced is slowly increasing over time (in Moldova the average increased from 1.18 KWh/m3 to 1.27 KWh/m^3 between 1996 and 2000, in the Russian Federation from 0.70 to 0.77 KWh/m^3 between 1997 and 2001), while the unit cost has been multiplied by a factor of two to three (in Moldova a factor of three and in Russia a factor of two, expressed in national currency).

Over-capacity of the infrastructure due to the design and collapse of industrial demand further contributes to increased unitary costs. For instance, insufficient volumes of collected wastewater do not allow for an operation of treatment plants at the optimal level, resulting in the over-consumption of energy and poor treatment of wastewater. Box 4.1 illustrates the extent of over-capacity for wastewater treatment in a number of towns in Moldova.

[25] World Bank, http://www.worldbank.org/html/fpd/water/topics/bench/usa_wtavg_050400.xls

Box 4.1. Status of the wastewater capacity and actual flows in some towns in Moldova

Orhei - The capacity of the wastewater network and 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

While the lack of finance for investment in cost saving equipment, rehabilitation, and capacity adjustment is one explanation for the inefficiency of many water utilities in EECCA, water utilities also lack incentives to reduce costs. Currently, all EECCA countries employ the "cost-plus" tariff scheme to regulate water utilities. It implies that utilities receive an agreed fixed portion of "profit" on top of the cost of service, which gives them no incentive to reduce costs. An alternative to "cost plus" is the "price-cap" tariff scheme, where the regulator sets a ceiling for the water tariff that utilities are allowed to charge to consumers. Any reduction of costs hence directly contributes to increasing utility profits. The Government of Ukraine has approved the "price-cap" methodology as an alternative to "cost-plus". However, its actual implementation is rather slow.

Investment flows into the sector are insignificant compared to actual financial needs

Investment in the water sector has remained at very low levels in most of EECCA, largely due to the difficult revenue situation in utilities and the scarcity of public funds. Utility performance data for the Russian Federation indicate that about half of utilities surveyed did not invest at all in the last five years, and the other half either was unable to provide information on this item or invested less than 0.1 USD per capita served per year. This means that no extension or up-grade of services has taken place, but also that barely any rehabilitation has been carried out. In Moldova the situation is somewhat better, even though still at very low levels, since investment has been in the range of 1.8 to 2.7 USD per capita, largely due, however, to loans provided in the

framework of IFI and donor projects. For comparison in the Baltic countries this figure was about US$40 in 1995-1996[26].

This is in stark contrast with actual investment needs in EECCA, and further reinforces the evidence of a continued deterioration of water infrastructure. For instance, data collected in the framework of a finance strategy for the Kazakh urban water sector indicate that half of the supply networks, more than a quarter of the sewerage networks and close to one third of the wastewater treatment plants need rehabilitation[27]. In Kazakhstan the yearly expenditure needed to operate and maintain infrastructure in present (unsatisfactory) condition is 32.79 billion KZT, equivalent to 230.4 M USD. Knowing that household charges are currently accounting for 60% of water sector financing, and assuming that this proportion would be stable in the future, it requires about 24 USD/c/a (per capita of people connected to water services, which is 5.5 million people in Kazakhstan). This figure represents about 5.2% of annual average per capita household income (468 USD/c/a in 2000) in Kazakhstan. The Kazakh finance strategy shows that in order to meet the financial needs without increasing tariffs beyond affordability levels[28] would require the gradual increase of public spending for the water sector to up to 20 times its present levels, even when accounting for substantial foreign investment and donor assistance.

The situation is even more alarming in Georgia, where the yearly expenditure needed to maintain infrastructure in present (unsatisfactory) condition[29] is 163 M GEL, equivalent to 81.5 M USD. Knowing that household charges are currently accounting for 47% of water sector financing, and assuming that this proportion would remain stable in the future, it requires 16.5 USD/c/a (for a total population of 2.3 million in Georgia). This represents about 3.3% of annual per capita income in households in the capital city of Tbilisi (500 USD/c/a in 2000), and 5.1% of per capita household income in rural areas (325 USD/c/a in 2000). Even when this financial effort is provided, including significant donor and IFI support, and appropriate maintenance measures are carried out, most parts of the water system will continue to deteriorate in the

[26] http://www.water.hut.fi/bench/baltics.html#Indicator

[27] OECD-DANCEE, (2001), op. cit.

[28] The affordability limit in the study is considered to be at 4% of household income spent on water services.

[29] Characterised by frequent absence of proper chlorination, generally low pressure in the system, supply of drinking water frequently interrupted and lack maintenance of both water supply and sewage systems.

short and medium term. In that scenario it will be possible to restore 1999 service levels and quality only after 20 years. More ambitious development targets may only be realised locally, since Georgia is unlikely to be able to afford rehabilitation on a nation-wide scale[30].

While the financing needs are thus huge and external funds will be needed, there are still many obstacles to sector investment and tariff adjustment. In fact, many country specific issues hinder the development of water projects. For example, Russian national law limits access to information on network and water intake for cities with populations above 1 million. Ukrainian municipalities with populations below 500,000 cannot obtain sovereign guarantees. In Kazakhstan, regional anti-monopoly committees (but not municipalities) approve the tariffs, and water intake permits and water utility charters need an approval by the national water agency. In small countries (such as Kyrgyz Republic, Moldova and the Caucasus), any tariff-related decisions or restructuring of utilities require an approval by national bodies.

As a consequence, official development assistance (ODA) has been slow to come to EECCA. While most donors regard water supply and wastewater treatment as priority areas for their environmental co-operation activities in EECCA[31], bilateral environmental assistance to the region is still limited compared to other regions[32]. Also, few IFI-funded water projects have been implemented in EECCA. Many of the previously planned projects have been cancelled and only a few currently remain in the pipeline.

IFIs participation in water sector development is limited to a number of projects in large cities (see Annex 2). This includes most capital cities (Chişinâu, Kiev- EBRD; Yerevan, Tbilissi, Baku, Dushanbe- World Bank, Bishkek- ADB), and a few secondary cities (Zaporizh'e, Kharkiv, Lviv- EBRD, St. Petersburg, Samarkand, Bukhara, Karaganda, Atyrau, and some others- World Bank). A World Bank project in the Russian Federation for 13 cities (all below the population of 500,000) just became effective in 2002. Another one for Moldova will be negotiated soon. Annex 2 presents the information about

[30] OECD-DANCEE, (2001), Municipal water and wastewater sector in Georgia – Background analysis for the financing strategy, Paris.

[31] "Compilation of PPC Donor Profiles: A survey of donor funding for environmental assistance to Central and Eastern Europe and the NIS." The Project Preparation Committee, June 2002.

[32] EAP Task Force, (2002), Trends in environmental expenditure and international commitments for the environment in Eastern Europe, Caucasus and Central Asia 1996-2001

the main projects in the region. While IFI assistance to the water sector has been largely focused on large cities, the overall level of finance has remained at very low levels. Information from the Project Preparation Committee at the EBRD indicates that EBRD and ADB have committed less than 230M USD to the EECCA water sector. This compares to EBRD financing of water and sewage in the CEEC/EECCA of almost one billion USD.

In addition to specific water investment, there are several Social Investment Fund projects in the region, as well as a number of Global Environmental Facility (GEF) projects. While the latter generally involve rather low financing volumes, the former tend to provide financing for the water sector (as much as 30 to 50% of funds can be allocated to the water sector), but without addressing the sector problems in a strategic way, that would at achieving long term financial sustainability. Also, several bilateral investment projects were implemented in the region, primarily with Danish and Dutch support, but data is lacking to assess project volume and focus.

IFIs and donors continue their efforts to develop more projects for the region, and the World Bank recently decided to focus its attention to the small and medium sized cities. The fact that several water projects in the region were recently cancelled at the preparation stage or immediately before negotiations shows, however, that there are some serious obstacles to greater flows of ODA into the water sector. Some of the reasons for this difficult situation are: a lack of project preparation capacity at the municipal level; legal obstacles to information disclosure to foreign consultants on municipal water systems; and sometimes the perception in EECCA countries that foreign investment is not needed or is too expensive.

The prospects for private sector investment in the short and medium term are similarly unfavourable (see Table 3.2 in Chapter 3). Only a few international projects with private capital have so far been implemented. Currently, Almaty is the only city in EECCA to have introduced a concession, following four years of negotiations. But even there the concession has not started its operation due to the refusal of the State Anti-monopoly Committee to approve the concession contract. The only known BOT has been implemented in Moscow with a German partner in the early 1990's. Strict construction and environmental standards generally used in EECCA dissuade potential investors, who feel that although local utilities do not observe such high standards, foreign private operators are expected to maintain the standards in their operations.

In summary, it appears that even the simple operational and maintenance of water services at current levels will require significant financial efforts from consumers, public budgets and foreign aid. Going beyond the

maintenance of the actual level of water services will significantly increase the financial gap that exists between investment needs and available finance. In some EECCA countries the rehabilitation and expansion of services towards a better quality on a nation-wide level are clearly not affordable, involving the need to make difficult choices on where investment will be made. This assumes, however, that major reforms to facilitate investment are carried out in the short term, unless even the simple maintenance of water services at current levels will not be achieved, resulting in further deterioration of services.

The most alarming situation exists in small and medium sized cities which require special attention in the reform process

It is in towns and cities with a population of less than 100,000 that the water infrastructure has been deteriorating most dramatically and that the economic problems of the sector are most severe. Small and medium cities and towns[33] suffer from a number of "handicaps", which are: a smaller potential for economies of scale, significantly lower average revenues in the population, and lack of capacity and access to capital markets. Medium sized towns with a population between 25,000 and 100,000 are in a particularly difficult situation as they cannot resort to low cost solutions as is possible in small municipalities: high-rise apartment complexes dominate instead of private housing that is prevalent in smaller cities; community driven approaches are not viable due to the complexity of the water systems requiring special skills and knowledge.

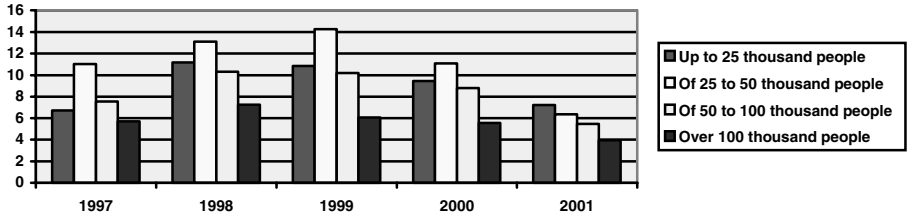
Hence, all the problems that have been discussed in previous sections are exacerbated. Unit operational costs in small and medium sized cities of the Russian Federation and Moldova are about 50 to 100% higher than in the largest cities (Figure 4.4). In the same time the ability to pay for water services is significantly lower than in large cities, due to lower average revenues per capita. This and the fact that water tariffs in small, medium and large cities are roughly the same, explains why the non-payment problem appears to be much more widespread in small and medium sized cities. Data from the Russian Federation (Figure 4.5) and Moldova indicates that average collection periods are roughly twice as long in small cities (20 months in Moldova, 7 in Russia) than in large cities (10 months in Moldova, 2.5 in Russia). This situation is reflected in systematically better average working ratios in large cities (about 85% in Russia), than in small cities where operational expenses may

[33] We consider the following definitions: small towns have a population of less than 25,000; medium cities less than 100,000; and large cities more than 100,000.

dramatically exceed operational revenues (about 150% in Russia, and about 121% for small towns in Moldova in 2001).

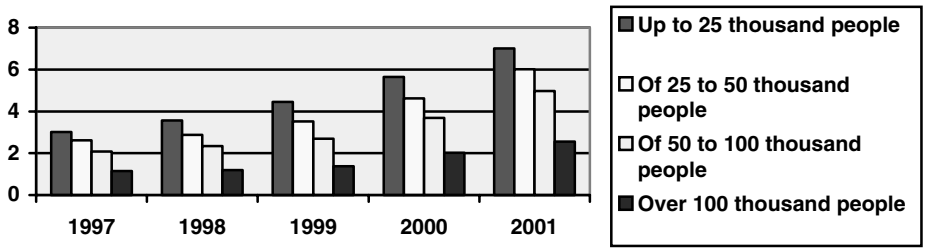
As a consequence of this situation, towns with a population of less than 100,000 frequently have higher accident rates, sometimes twice as high as in large cities (Figure 4.6). It is also in medium and small towns that accident rates have been increasing more rapidly, indicating an accelerated deterioration of infrastructure. At the same time the continuity of services is lower with an average of 10-12 hours per day in Moldova (compared to close to 24h in large cities). Given this situation it is likely that the impacts on public health are most severely felt in small and medium sized cities, even though there is no data to sustain this suspicion.

Figure 4.4. Unit operational cost (rubles/cu m sold) by size of the city in the Russian Federation



OECD EAP Task Force/Moscow IUE, (2002), Indicative Survey of Water and Sewerage Utilities – Final Report on Russian Water and Wastewater Utilities

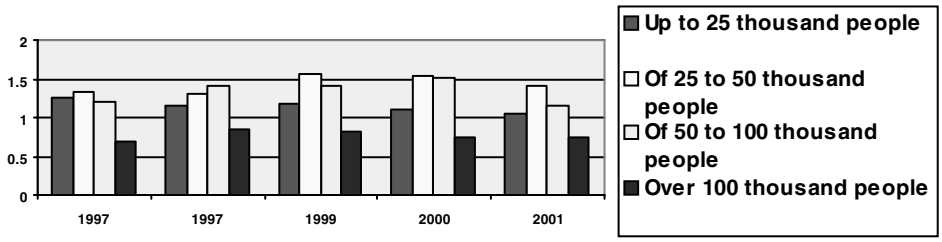
Figure 4.5. Collection rate[34] in months by size of the city in the Russian Federation



OECD EAP Task Force/Moscow IUE, (2002), Indicative Survey of Water and Sewerage Utilities – Final Report on Russian Water and Wastewater Utilities

[34] Year-end accounts receivable/Total annual operating revenues expressed in months equivalent of sales.

Figure 4.6. Pipe breaks per km of network by size of the city in the Russian Federation



OECD EAP Task Force/Moscow IUE, (2002), Indicative Survey of Water and Sewerage Utilities – Final Report on Russian Water and Wastewater Utilities

Progress indicators:

Water tariff and cost recovery levels

⇒ Cost recovery rate (expressed in percentage of operation and maintenance costs recovered through tariffs).

⇒ Collection rate (expressed in months of collection).

Investment flows into the sector

⇒ Capital investment into municipal water sector from all sources (including domestic public budgets, tariffs and foreign investment) per capita per year.

Cost reduction potentials

⇒ Number of personnel (per 1,000 consumers).

⇒ Energy consumption (per cubic meter of produced water per year).

⇒ Unit operational cost ($US/cu.m of W&S).

Small and medium sized cities

⇒ Accident rate in medium sized cities (Accident/km/yr).

⇒ Continuity of service (h/24h).

⇒ Electricity consumption (kWh/cu.m).

⇒ Unit operational cost ($US/cu.m of W&S).

⇒ Investment and aid policies in EECCA governments, IFIs and donors are focused on small and medium cities.

5. URBAN WATER SECTOR REFORM AND THE SOCIAL DIMENSION

Water affordability is posing severe constraints on the achievement of the user pays principle

Water prices, while representing a relatively small share of household income, is a very politicised and emotional issue around the world, and in EECCA. There is a lot of political resistance, especially in national and local elected bodies, to increasing water prices in EECCA which presents a serious obstacle to sector reform. Water services were traditionally considered as social services and were provided at very low prices; thus the consumers have problems accepting a rapid increase of prices for deteriorating services. In Ukraine, for example, during the period of 1992-2001 water prices have grown about 16 times faster than prices for other consumer goods and services, while the quality of drinking water and of water services have visibly gone down. The situation in the region is aggravated by the widespread poverty and growing disparities in income distribution, which objectively reduce the ability of the population in general, and of specific groups in particular, to pay for these vital services.

At the same time, studies, which have been undertaken to measure willingness to pay (WTP) for water in the region, suggest that most consumers would be willing to pay a higher price for a water service of higher quality, including the quality of the water supplies and the reliability of the service. WTP studies carried out in Lutsk, Ukraine, showed that 22% of households would be prepared to accept a 10% tariff increase. It should be noted however, that the willingness to pay is not universal among various groups of consumers: it was higher in families with higher levels of income and with children, while pensioners were less prepared for the price increase.

Subjective opinion of households, which can be revealed through the WTP studies, needs to be supplemented by the analysis of economic affordability for the consumers using more objective statistical data about household income and expenses for water and other goods and services. A

recent study carried out for the Group of Senior Officials/EAP Task Force has compared the current water prices with household expenses in the EECCA region. The results demonstrate that even at the present low cost-recovery ratio the average or macro affordability figures are equal or higher than OECD figures. When the cost recovery rate goes up the relative share of water expenses may become higher than in the OECD counties and reach closer to or even exceed the "rule of thumb" of 4% often used by IFIs for their investment projects.

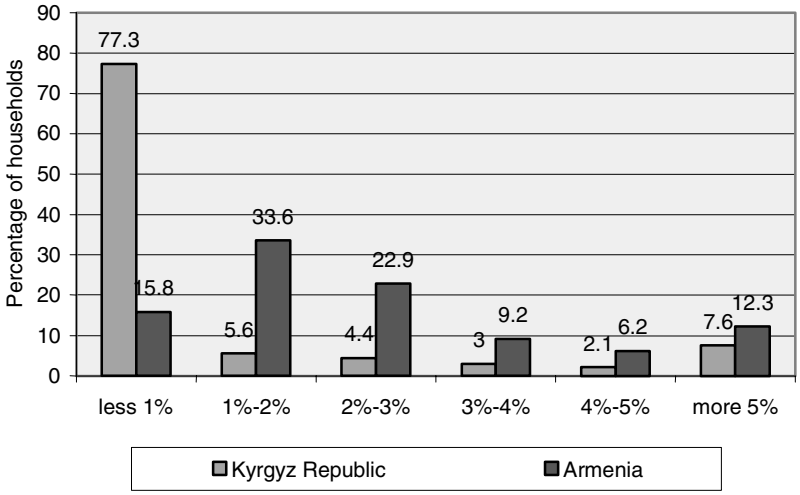
Macro affordability figures should be treated with a lot of caution as they hide many essential differences for various income groups and specific local conditions. For example, in Armenia and Kyrgyzstan, the level of cost recovery is 20% and 48% respectively (Figure 5.1). However, at current prices 9.7 and 18.5% of households pay more than 4% of their total expenses for water and sanitation services.

Table 5.1. Macro affordability, 2001

Country	Expenses for water supply and sanitation services, $/household/month	Total income/expenses of households, $/month	Share of water supply and sanitation services in the income/expenses of households, %		
			water supply	sanitation	total
Armenia	2.20	112.51 income	1.74	0.22	1.96
Belarus	0.85	138.10 income	0.37	0.24	0.62
Georgia	2.51	126.77 income	1.93	0.05	1.98
Russia	4.45	223.15 income	1.06	0.94	1.99
Uzbekistan	2.68	116.20 income	1.14	1.17	2.31
Ukraine	3.47	113.04 expenses	1.86	1.22	3.07
Kyrgyzstan	1.02	66.83 income	1.10	0.43	1.52
Poland, 1999		disposable income			2.3
Germany, 2000		disposable income			1.2
USA, 2002		disposable income			0.5

Source: OECD EAP Task Force, (2002), Key issues and recommendations: Affordability, Social Protection and Public Participation in Urban Water Sector Reform in EECCA, Paris

Figure 5.1. Price of water supply and sanitation as a share of household expenses (percentage of households according to the share of water bill in their total expenses), Kyrgyzstan and Armenia, 2001,

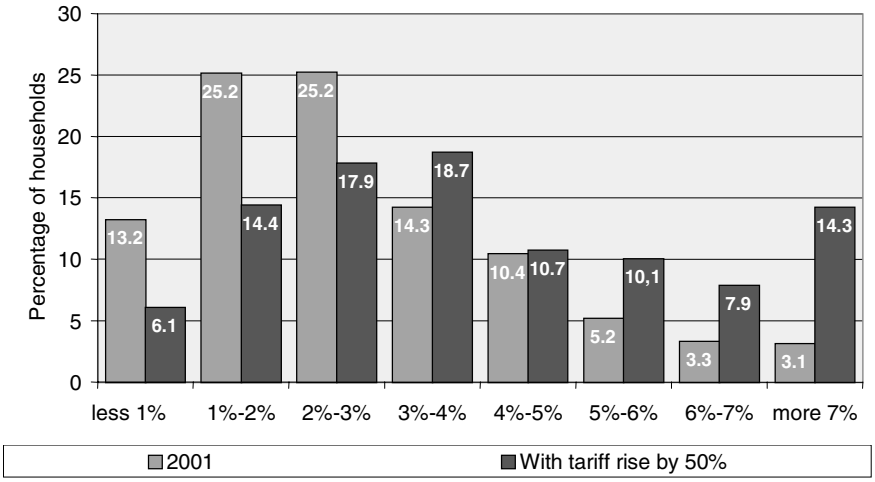


Source: OECD EAP Task Force, (2002), Key issues and recommendations: Affordability, Social Protection and Public Participation in Urban Water Sector Reform in EECCA, Paris

Micro affordability analysis in the city of Khmelnitski (Ukraine) has shown that at current prices with 79% of cost recovery, 22% of households pay more than 4% of their income for the water services (Figure 5.2). If the price of water goes up 50%[35], the share of households in this category will reach 43%.

[35] The 50% increase, despite a cost recovery rate of 79%, supposes an over-estimation of the actual cost recovery level as well as compensation for decreasing levels of cross-subsidy between household and industrial consumers.

Figure 5.2. Bill for water supply and sanitation services as a share of total household income, (percentage of households according to the share of water bill in their total expenses), Khmelnitsky (Ukraine), in 2001 and if increased 50%.



Source: OECD EAP Task Force, (2002), Key issues and recommendations: Affordability, Social Protection and Public Participation in Urban Water Sector Reform in EECCA, Paris

Analysis of macro and micro affordability carried out in selected EECCA countries demonstrates that already now, at a relatively low level of recovery of operation costs of utilities through tariffs, the water bill has become a heavy load on household budgets, especially for low income families. When the rate of cost recovery increases according to national objectives, a large share of households might need to spend a significant amount of their income on water. If water becomes too expensive the consumers could refuse to pay for it, or they may need to reduce their water consumption below the socially optimal level causing negative externalities such as an increase in water related diseases and others. Therefore, the governments need to take into account the macro and micro affordability levels when establishing or reforming national policy of state support to the sector or to the low-income population.

Mechanisms to support water consumption for the poor are in place in some countries, but will need to be reinforced as economic reforms proceed

Water is a basic human need as well as an economic good. The governments are responsible to ensure that all the members of society have access to safe water for basic human needs. In the past EECCA countries were

using the following mechanisms to ensure assess to water: (1) general public subsidy for the water utilities, (2) cross subsidy for households by industrial users and (3) reduced or zero tariffs for so called “privileged” consumers. The non-payment phenomenon stated earlier is an indirect and involuntary form of subsidy.

Facing serious public budget deficits, most EECCA governments (except Turkmenistan) have decided to move from the financing of water supply and sanitation from public budgets, i.e. by taxpayers, to financing by water users. For example, in Ukraine the share of public financing of the housing and communal services, including water, decreased from 4,4% of GDP in 1994 to 0,6% of GDP in 2000; while in Russia the total expenses for the sector remain around 7% of GDP in 2002. Similarly, cross subsidies are slowly but gradually being reduced, and in some countries formally banned (e.g. in Kazakhstan).

At the same time governments had to replace the former “across the board” subsidies of all users with a targeted subsidy for the poor, otherwise unable to afford the cost recovering water bill. Ukraine, Russia and Kazakhstan have established programmes of housing subsidies. Under such programmes central governments provide compensation of household expenditures for housing and communal services (including water) when expenses exceed a certain level of total household income (e.g. 20% in Ukraine, 22% in Russia and 30% in Kazakhstan). In 2001 in Ukraine 11% of households received the housing subsidy in summer and 17% in winter, 100 USD per year on average. For pensioners and single families this subsidy represented on average 36,5% of their income. Housing subsidies, provided as a form of means-tested income support, allowed significant savings for public budgets by channelling support to those most in need. At the same time, housing subsidies can help to ensure revenue for utilities during the period of most rapid price increase, by reducing non-payment.

Armenia and Uzbekistan, and more recently Ukraine have launched programmes to provide means-tested income support for families, which aim to increase the income level in general, but do not target water or other communal services specifically. Such general poverty reduction programmes are a better alternative to housing subsidies when the water bill is not significant in household expenses, but may be insufficient when a major water tariff reform is planned.

In addition to this new form of means-tested income support programmes, most EECCA continue the provision of subsidies through the system of privileges. Under this system certain categories of citizens are granted

discounted or free services based on their social status (e.g. police, judges and war veterans). While these programmes do not target the poor and cannot be justified economically, there is a political resistance to remove them, even if budgets are not able to finance such programmes. So far only in Moldova and Armenia have some privileges been eliminated.

Table 5.2. Summary of the main social assistance programmes directly or indirectly related to water for selected EECCA countries, 2001

	Share of the poor in the population (national definition)	Housing Subsidy Programme		Privileges (share of recipients as % of total population)	Poverty reduction programme
		share of households receiving the subsidy	maximum expenses for housing and communal services, as % of household income		
Armenia	50.9	0		0.86	yes
Belarus	28.9	0.81	15	15.89	no
Georgia	51.10	0		no data	no
Kazakhstan	28.4	7.50	30	no data	no
Kyrgyzstan	47.6	45.10	25	no data	no
Moldova	no data	0		7.10	no
Russia	29.1	9.10	22	33.01	no
Uzbekistan	no data	0		3.51	yes
Ukraine	27.2	13.03	15-20	14.00	yes

Source: OECD EAP Task Force, (2002), Key issues and recommendations: Affordability, Social Protection and Public Participation in Urban Water Sector Reform in EECCA, Paris

Means-tested income support is the preferred tool to provide social support to the poor in many countries. At the same time this form of social assistance does not provide incentives for water saving. In OECD countries tariff based measures are often used as an addition or sometimes an alternative to income subsidies. Such tariff-based measures include lifeline and raising block tariffs, which allow households to reduce water consumption, thereby reducing their water bills. The use of the tariff-based measures is not reported in EECCA, the main reason being the low level of use of individual meters.

In addition to economic mechanisms to ensure water consumption by the poor, there are other technical and legal tools, which can be used at the national and local level, including alternative water supply, disconnection policy and arrears management. In most EECCA consumers can be disconnected from the water services for non-payment, but due to technical difficulties and political opposition this measure is rarely used in practice. Due to high level of non-payment by consumers, arrears management, such as debt restructuring and forgiveness are also used in some EECCA. While debt

restructuring is an effective tool, debt forgiveness should not be promoted as a universal approach due to its negative effect on payment discipline.

Depending on the growth in household income and the extent to which present tariffs already recover operational and maintenance costs, the affordability situation is likely to deteriorate significantly in a number of EECCA countries in the course of economic reforms of utilities. Making these reforms socially acceptable will necessitate additional spending from already stretched public budgets to protect the most vulnerable sectors of the population.

Consumer and public involvement is insufficiently developed in EECCA, which threatens public support for water sector reforms in general

Apart from the common concerns related to increasing prices -- low quality of drinking water and unreliable services -- consumers also complain about the lack of information about decision-making in the sector and difficulties in resolving conflicts with water utilities. All EECCA countries have joined the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters. While this Convention does not directly target the water sector, the application of its principles to the water supply and sanitation sector could help to significantly improve public acceptance and support of the sector reforms.

Poor information provision is among the main reasons for the crisis of trust between water users and water producers. Local governments and utilities do not study consumer opinion and preferences. Consumers often do not know about measures planned in the sector at the national or local level, such as tariff reform, or utility reform including private sector participation. Besides, consumers are usually unaware of the real costs of water and their level of water consumption. There is a need to improve information about water quality, methods of additional water treatment and hygiene, as well as potential for water saving. There are a variety of measures that EECCA countries have introduced recently to improve information provision for decision-makers and for consumers. Some local governments and utilities undertook consumer surveys. Selected utilities improved their customer relations units and launched telephone hot lines; there are examples of providing consumers with detailed and informative bills containing information about consumption and the price of water. There are NGOs which are active in water campaigns aiming to educate consumers about water quality and water saving issues.

Public and consumer participation in decision-making remains a controversial issue. Some consumer groups and NGOs believe that they should have the right to direct participation in all sector decisions, including on water tariffs and private sector participation. However, such an extreme interpretation of the right to participate in decision-making is frequently considered to be inefficient sector management. Meanwhile, the key areas of decision-making remain extremely non-transparent. There are few examples of improving public access to information on decision-making. The new Law of Ukraine on Drinking Water, for example, provides a legal basis for public hearings on the key issues of sector reforms. The antimonopoly committee in Kazakhstan also organises public hearings in cities and towns where tariff reforms could raise public concerns. More efforts are needed to strengthen public scrutiny of development plans at the municipal and regional levels.

Another reason for the crisis of trust between consumers and utilities lies in the unclear legal and institutional setting of service provisions and difficulties in resolving conflicts. Individual households do not have direct contractual relations with the water utility, but interact with an intermediary service provider (often known as ZHEK), which has no incentive for ensuring the quality and efficiency of services. Quality parameters of water services are either not clearly identified, or unknown to consumers, and are difficult to verify. Court procedures are too complicated for resolving disputes between water consumers and providers, and softer administrative methods are not yet well elaborated. Several EECCA countries make attempts to resolve this problem. In Ukraine a model contract between consumers and providers was developed, but its actual implementation remains difficult. Some countries make efforts to develop housing condominiums as collective legal entities representing consumers vis-à-vis water and other utilities.

Progress indicators:

⇒ A clear requirement for the tariff-setting authority to assess the affordability of water tariffs, including benchmarks of affordability, e.g. as a share of water bill in household expenses.
⇒ Implementing measures to support access to water for the poor, giving the preference to targeted income subsidies.
⇒ Phasing out water privileges that do not target the poor.
⇒ Introduction of measures to deal with the indebtedness of households.
⇒ Arrangements to assess consumer satisfaction through consumer complaints or consumer surveys.
⇒ Legal provisions to promote public participation and public hearings in the water sector.
⇒ Share of the poor or other groups eligible for social assistance receiving water or related assistance.

ANNEX 1

STATUS OF IFI PROJECTS IN THE EECCA URBAN WATER SECTOR[36]

IFI	Project	Status
ADB	Technical assistance in urban water supply and sanitation (Azerbaijan)	Approved 2001 (740,000USD grant)
	Rural water supply and sanitation in Northern Kazakhstan (includes several small towns up to 50,000	Disbursement ($35 million, 2000)
	Communal water supply and sanitation project (Kyrgyz Republic)	Disbursement ($36 million, 2000)
	Western Uzbekistan water supply project (Uzbekistan)	Approval expected 2002 (38M USD loan)
	Urban water supply (Uzbekistan)	Approved 2001 (36M USD loan)
EBRD	Baku water rehabilitation (Azerbaijan)	Under implementation (23.2M EUR loan)
	Almaty potable water and sewerage (Kazakhstan)	Signed 2000 (7.5M EUR loan)
	Chisinau water services rehabilitation (Moldova)	Under implementation (23.2M EUR loan)
	St. Petersburg water and environmental services improvement programme (Russian Federation)	Under implementation (17.9M EUR loan)
	Kaliningrad water and environmental services (Russian Federation)	Under implementation (18.3M EUR loan)
	Yaroslavl municipal water services development programme (Russian Federation)	Board approved 2002 (16.3M EUR loan)
	St. Petersburg southwest wastewater treatment plant (Russian Federation)	In development (20M EUR loan)
	Zaporizhzhia water utility development and investment programme (Ukraine)	Under implementation (28.5M EUR loan)
NEFCO	Completion of southwest water treatment plant in St. Petersburg (Russian Federation)	Approved 2001, under negotiation
	Municipal wastewater treatment in St. Petersburg (Russian Federation)	Approved 2001
	Municipal wastewater treatment: Kaliningrad water services rehabilitation (Russian Federation)	Approved 2001
	Water treatment in Lovozero (Russian Federation)	Approved 2001

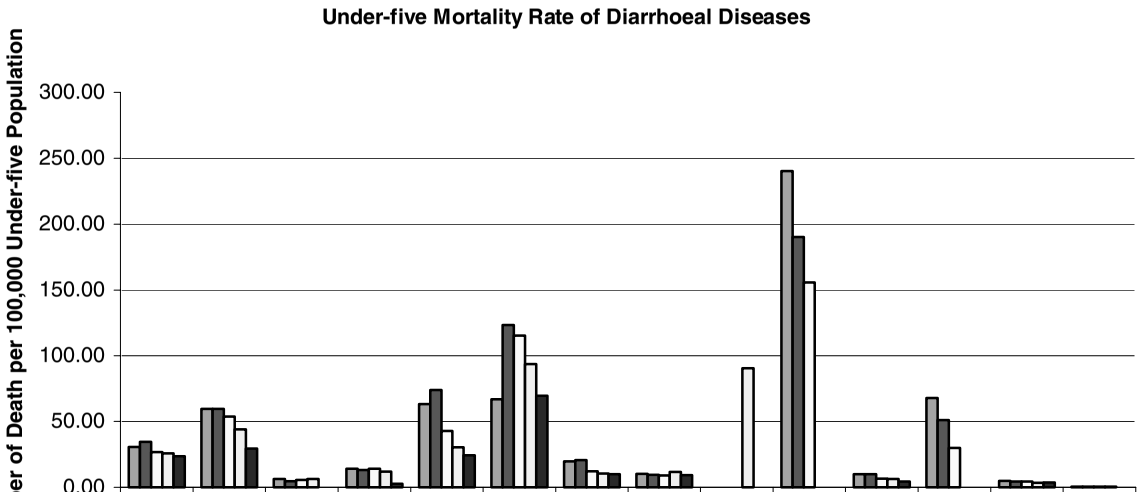
[36] Source: "Compilation of PPC Donor Profiles: A survey of donor funding for environmental assistance to Central and Eastern Europe and the NIS." Project Preparation Committee, June 2002.

	Water treatment in Murmansk, Murmanvodokanalstroy	Approved 2001
	Municipal water, sewerage, energy, and waste project in Novgorod (Russian Federation)	Approved 2001, under negotiation
World Bank	Armenia: Yerevan Water Supply and Sanitation	Under implementation (IDA $20 million)
	Azerbaijan Baku Water Supply (supplementary loan)	Negotiations ($10 million)
	Georgia Tbilissi Water and Sanitation	Final negotiations (IDA $20 million)
	Kazakhstan Atyrau water	Under implementation ($17 million)
	Kazakhstan Northeast Kazakhstan water (Temirtau, Karaganda and Kokshetau)	Negotiations ($80 million)
	Kyrgyz Republic Rural water project (about 10% on municipal water)	Under implementation (IDA $$12 million)
	Moldova Pilot water and Sanitation	Final negotiations (IDA $10 million)
	Russian Federation water and sanitation project	Under implementation ($122.5 million)
	Tajikistan Dushande water project	Under implementation (IDA $17 million)
	Turkmenistan Dashhovuz water	Under completion
	Ukraine Lviv water and wastewater project	Approved $24.25 million
	Uzbekistan Bukhara and Samarkand water supply project	Appraisal $20 million
GEF waste-water related	Rostov Nutrient and Methane Discharges Reduction Grant	Under preparation $10.8
	Moldova Nutrient reduction Grant	Under preparation $5 million

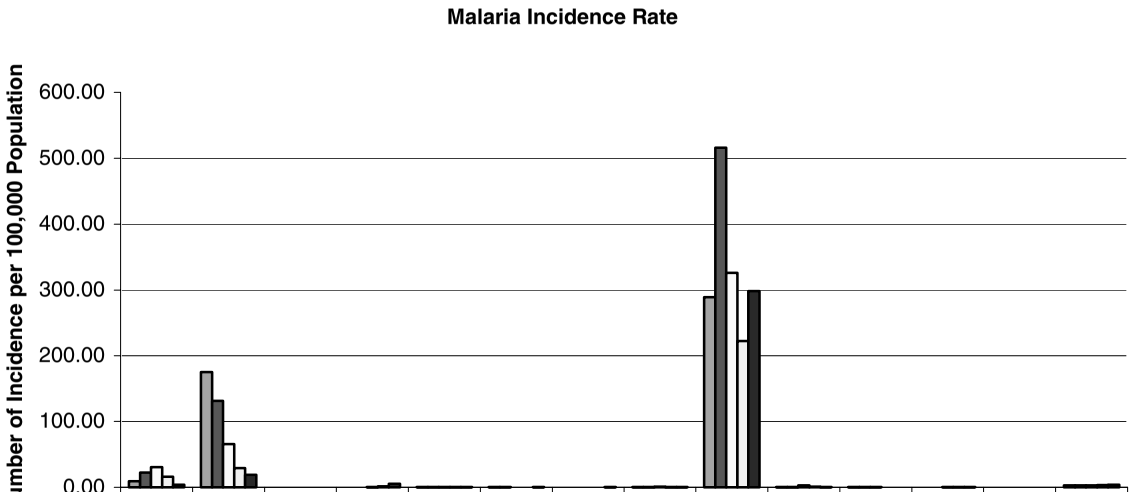
ANNEX 2. WATER RELATED DISEASES IN THE EECCA, CEE AND EU[37]

Table 1. Under-five Mortality Rate from Diarrhoeal Diseases
Table 2. Malaria Incidence Rate
Table 3. Infant Mortality Rate

[37] Health for All Database, Regional Office for Europe, World Health Organisation.

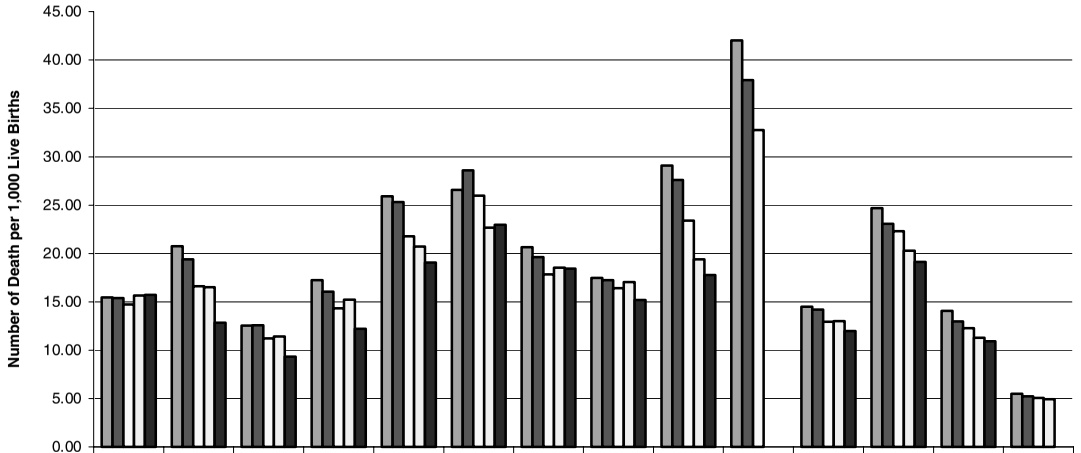


	ARM	AZE	BLR	GEO	KAZ	KGZ	MDA	RUS	TJK	TKM	UKR	UZB	CEE average	EU average
1996	30.55	59.45	6.26	13.99	63.42	66.97	19.72	10.19		240.30	9.85	68.13	4.84	0.42
1997	34.40	59.49	4.65	13.06	74.03	123.32	20.61	9.47		190.31	9.93	51.09	4.48	0.47
1998	26.64	53.68	5.51	14.02	42.82	115.31	12.03	8.94		155.82	6.62	29.91	4.49	0.56
1999	25.83	43.98	6.28	11.96	30.39	93.67	10.47	11.64	90.59		6.33		3.34	0.52
2000	23.60	29.50		2.63	24.39	69.81	9.92	9.34			4.36		3.75	



	ARM	AZE	BLR	GEO	KAZ	KGZ	MDA	RUS	TJK	TKM	UKR	UZB	CEE average	EU average
1996	9.20	175.41	0.08	0.09	0.55	0.55	0.19	0.41	288.88	0.31	0.32	0.22	0.15	2.83
1997	22.21	131.51	0.11	0.02	0.65	0.28	0.09	0.55	516.17	0.30	0.31	0.22	0.15	2.87
1998	30.46	65.40	0.13	0.39	0.58	0.24	0.09	0.74	325.85	2.91	0.28	0.31	0.16	3.05
1999	16.21	29.00	0.12	1.25	0.36	0.10	0.02	0.54	222.51	1.12	0.19	0.35	0.15	3.36
2000	3.71	18.96		5.50	0.25	0.25	0.66	0.55	298.08	0.54		0.51	0.12	3.66

Infant Mortality Rate



	ARM	AZE	BLR	GEO	KAZ	KGZ	MDA	RUS	TJK	TKM	UKR	UZB	CEE average	EU average
1996	15.48	20.77	12.53	17.25	25.93	26.58	20.65	17.50	29.10	42.01	14.51	24.70	14.04	5.48
1997	15.41	19.40	12.56	16.06	25.34	28.61	19.63	17.25	27.60	37.91	14.19	23.08	12.97	5.21
1998	14.73	16.62	11.22	14.32	21.78	25.99	17.86	16.44	23.40	32.78	12.94	22.32	12.27	5.05
1999	15.67	16.53	11.42	15.25	20.72	22.68	18.54	17.07	19.40		13.01	20.29	11.26	4.94
2000	15.75	12.83	9.31	12.21	19.08	22.98	18.44	15.22	17.80		11.96	19.13	10.90	