Chapter 4

Water Pricing in Selected Non-OECD Countries
Water pricing

In the countries of the former Soviet Union now known collectively as EECCA (Eastern Europe, Caucasus, and Central Asia), 80% or more of the urban population is connected to the public water supply, and more than 60% to public sewer systems. This rather extensive infrastructure is rapidly deteriorating, however, resulting in reduced service quality and increased health and environmental risks. In some countries, more than one-third of the population is using drinking water that does not meet basic hygiene standards; in some sub-regions the proportion can exceed 50% (OECD, 2003a forthcoming). Unlike the situation in much of the developing world, therefore, the challenge here in achieving the Millennium Development Goals related to water lies not in extending networks, but in maintaining them.\(^3\)

Following the rapid decentralisation of responsibility for water management from central to municipal level, it is now common in most EECCA countries for urban water and sanitation systems to be managed by municipal or district water companies owned by local authorities. The rapid removal of state subsidies in the 1990s in the process of decentralisation (except in Turkmenistan), and the inability to compensate through municipal budgets and tariffs, resulted in serious under-funding of water infrastructure. Water services are now provided at prices well below long-run financial and environmental costs, resulting in water overuse and wastage.

Household water use in the EECCA countries is relatively high – between 200 litres per capita a day (lpcd) in small towns and 500 lpcd in large cities – despite significant decreases in some countries (e.g. Moldova). Consumption levels appear to be even higher in certain locations, such as Tbilisi, Georgia (up to 900 lpcd), and Ashgabat, Turkmenistan (700 lpcd). One reason the apparent consumption is so high is that metering is not yet widely used so there is little incentive for more efficient use. Furthermore, consumption data probably include a substantial amount of water that is lost in the distribution network through leakage.

Water metering (especially in apartment buildings) is only gradually being applied. In the Russian Federation and Ukraine, fewer than 30% of connections are metered; by comparison, the proportion is as much as 100% in some OECD and Baltic countries. Even where installed, water meters are not always used for billing purposes; in Almaty, Chisinau, and many other relatively large cities, for instance, utilities sign contracts not with individual
consumers but with associations of apartment owners or housing maintenance companies.

Table 4.1 shows the current situation in the EECCA countries. Recovery levels for operating and maintenance costs from household consumers are frequently less than 50%. In some parts of the Caucasus, cost recovery levels can be as low as 20%. Industrial water tariffs are frequently much higher, since the Soviet system involved cross-subsidisation of household consumers. It is not uncommon for industry to pay five times as much as households, though the differences are now being reduced, and some countries (e.g. Kazakhstan) have undertaken to abolish cross-subsidisation.

Table 4.1. Comparative analysis of tariff policies for water supply in the EECCA

<table>
<thead>
<tr>
<th>Country</th>
<th>Cost recovery level from households (%)</th>
<th>Cross-subsidy ratio/presence</th>
<th>Full-cost-recovery target date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>20</td>
<td>5</td>
<td>2005</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>20-57</td>
<td>5¹</td>
<td>2005</td>
</tr>
<tr>
<td>Belarus</td>
<td>31</td>
<td>48.8</td>
<td>2005 (80%)²</td>
</tr>
<tr>
<td>Georgia</td>
<td>15</td>
<td>yes</td>
<td>2005</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>100</td>
<td>no</td>
<td>1998</td>
</tr>
<tr>
<td>Kyrgyz Rep.</td>
<td>48</td>
<td>yes</td>
<td>2005 (75%)³</td>
</tr>
<tr>
<td>Moldova</td>
<td>50</td>
<td>yes</td>
<td>2003</td>
</tr>
<tr>
<td>Russia</td>
<td>60</td>
<td>4</td>
<td>2003</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>0</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Ukraine</td>
<td>73¹</td>
<td>yes</td>
<td>2005</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>100</td>
<td>no</td>
<td>2001</td>
</tr>
</tbody>
</table>

1. Data are for Yerevan only.
2. The Belarus target is to recover 80% of costs from households by 2005.
3. The Kyrgyz Republic target is to recover 75% of costs by 2005.
4. The figure represents the collection rate: nine out of 27 regions in Ukraine have reached 100% cost recovery for households.


The lack of revenue available to water utilities is typically exacerbated by dramatically low collection rates from consumers. For example, in Azerbaijan, collection rates rarely exceed 70%, despite aid-funded efforts to improve the situation (World Bank, 2000); and in many cities, the situation is worse. This problem, combined with poor management practices, severely undermines the ability of water utilities to maintain, let alone expand or upgrade, their infrastructure networks.

Water utilities have been reacting to the lack of funding by delaying crucial maintenance work, closing certain wastewater treatment facilities,
and sometimes reducing water services' availability to as little as two hours a day. In Yerevan, Armenia, for example, water is supplied for between two and six hours a day (UNECE, 2000).

While the financial situation could be significantly improved by increasing collection rates and decreasing production costs (e.g. by reducing leakage, improving energy efficiency, and adjusting staffing levels), some tariff increases are probably inevitable. Most EECCA governments have adopted full cost recovery as a medium-term objective (2005) and have developed schedules for achieving that objective. However, implementation has been slow, and progress to date mostly unsatisfactory.

In short, the EECCA countries have seen a very rapid increase in water prices over the past decade (e.g. from less than 4% to 100% recovery of operating costs in parts of Ukraine), and this trend is likely to continue. Even after full recovery is achieved for operation and maintenance costs associated with the present infrastructure, further upward pressures on water tariffs can be expected, especially since the need to improve wastewater treatment infrastructure will grow in political importance in some countries.

Infrastructure financing

Investment in the water sector has been very low in most EECCA countries, largely due to utilities' difficult revenue situations 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 between 1997-2001, and the other half either could not provide information or invested less than USD 0.10 per capita served per year. This means that not only have services not been extended or upgraded, but hardly any rehabilitation has been done. In Moldova, the situation is somewhat better, if still at very low levels, with investment in the range of USD 1.80 to 2.70 per capita – largely thanks to loans provided in projects by donors and international financial institutions. (For comparison, investment per capita in the Baltic states was about USD 40 per year in 1995-96).

This situation stands in stark contrast with actual investment needs in EECCA and further underlines the challenges posed by continued infrastructure deterioration. For instance, data collected for finance strategy planning for the Kazakh urban water sector indicate that half of the supply networks, more than one-fourth of the sewerage networks, and close to one-third of the wastewater treatment plants need rehabilitation (OECD-DANCED, 2001a). Kazakhstan needs to spend the equivalent of USD 230.5 million a year just to operate and maintain the infrastructure in its present (unsatisfactory) condition. This represents about 10% of annual average per capita income in households. The Kazakh finance strategy shows that to meet the financial

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Box 4.1. Applying environmental financing strategies in China

Environmental Financing Strategy is a standardised methodological framework, supported by a specialised software application called FEASIBLE®, to help prepare realistic, multi-year action programmes for environmental sectors that require heavy capital investments in public infrastructure. FEASIBLE® calculates the investment, maintenance, and operation expenditure needed to reach targets set by local policy makers. The result is then compared with expected levels and sources of finance to help policy-makers understand where the main bottlenecks are and what policy intervention is needed to facilitate effective financing of infrastructure development programmes. To date, financing strategies have been prepared for the urban water and wastewater sector in Georgia, Moldova, Ukraine, and Kazakhstan, and for Novgorod and Pskov Oblasts in the Russian Federation.

The FEASIBLE® model is being applied to 14 cities and urban zones in the Sichuan Province of China with a total population of 3 million people. The baseline scenario for this exercise reflects the assumption that status quo trends that existed in 2000 will continue until 2020. Under this scenario, the following conclusions were made:

- Investment needs are several times higher for wastewater collection systems than for wastewater treatment plants.
- Sewer system development will lag behind wastewater treatment plant construction, so that by 2004, new treatment plants will not have enough wastewater.
- The structure of finance sourcing relies much more heavily on public budgets (rather than user fees) than in OECD countries.
- Wastewater fees paid by households, industry, and other consumers cover only about 30% of infrastructure operating costs and less than 20% of operation and maintenance combined.
- Domestic sources of finance (user fees and public budgets) could cover the operating and maintenance costs.
- On average, the current water and wastewater tariffs are affordable, but in most cities the poorest 10-20% of the population will need additional social support.

In a second phase of work, the OECD is working with the Chinese government to simulate how the baseline scenario could be altered through the application of different policy instruments.

needs without increasing tariffs beyond affordability levels, public spending on the water sector would gradually have to rise until it is 20 times the present level, even with substantial foreign investment and donor assistance.

In Georgia, the equivalent of USD 81.5 million a year is needed to maintain infrastructure in its present (unsatisfactory) condition. This represents about 7% of annual per capita income in households in the capital, Tbilisi, and 11% in rural areas. Even assuming that this financial need is met, including significant donor and loan support, and that appropriate maintenance is carried out, most of the water system will continue to deteriorate in the short and medium term. In this scenario, it will be possible to restore 1999 service levels and quality of service only after 20 years. More ambitious development targets will only be realisable locally, since Georgia is unlikely to be able to afford rehabilitation on a nation-wide scale (OECD-DANCEE, 2001b).

While the financing strategies developed by the OECD and Denmark for several EECCA countries assumed that obstacles to sector investment and tariff adjustment would be removed, this is far from the case. Many country-specific issues hinder the development of water projects. For example, Russian 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 over their water infrastructure. In Kazakhstan, regional anti-monopoly committees (not the municipalities) approve tariffs and the national water agency approves water intake permits and water utility charters. In small countries such as the Kyrgyz Republic, Moldova, and those in the Caucasus, national bodies must approve tariff-related decisions and utility restructuring.

As a consequence, flows of ODA to EECCA have been slow. While most donors regard water supply and wastewater treatment as priority areas for their environmental co-operation activities in EECCA countries (Project Preparation Committee, 2002), bilateral environmental assistance to the region is still relatively small. International financial institutions have undertaken few water projects in EECCA countries; many planned projects have been cancelled, and only a few remain in the pipeline.

Social issues

Affordability

Political resistance to increasing water prices is high in the EECCA countries, and presents a serious obstacle to reform. Water services were traditionally considered social services and were provided at very low prices. Consumers have problems accepting the rapid increase in prices for deteriorating services. In Ukraine, for example, over 1992-2001 water prices...
rose about 15 times faster than prices for other goods and services, while the quality of drinking water and of water services visibly declined. EECCA country investments in water supply and sanitation services as a percentage of GDP are comparable with, and in some cases higher than, the investments in OECD countries (OECD, 2003a forthcoming). This suggests that it is low “ability to pay”, rather than low “willingness to pay”, that is the main obstacle.

Most consumers would be willing to pay more for better water quality and improved reliability. For example, willingness to pay (WTP) studies carried out in Lutsk, Ukraine, showed that 22% of households would be prepared to accept a 10% tariff increase (Romanyuk and Sariglo, 2002). It should be noted, however, that willingness to pay is not the same among all groups of consumers: it is generally higher in families with higher levels of income and with children, and lower among retired people.

Subjective opinions of householders, which can be revealed through WTP studies, need to be supplemented by analysis of economic affordability using more objective statistical data about household income and expenses for water and other goods and services. OECD compared current water prices with household expenses in EECCA (OECD, 2003a forthcoming). The results demonstrate that even at the present low cost-recovery ratios, the average or macro affordability figures are equal to, or higher than, those in the OECD (Table 4.2).

Table 4.2. Macro affordability in selected EECCA countries (2001)

<table>
<thead>
<tr>
<th></th>
<th>Expenses for water supply and sanitation services, USD/household/month</th>
<th>Total income/expenses of households, USD/month</th>
<th>Share of water supply and sanitation services in the income/expenses of households, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water supply</td>
<td>Sanitation</td>
<td>Total</td>
</tr>
<tr>
<td>Armenia</td>
<td>2.23</td>
<td>112.51</td>
<td>Income</td>
</tr>
<tr>
<td>Belarus</td>
<td>0.85</td>
<td>138.10</td>
<td>Income</td>
</tr>
<tr>
<td>Georgia</td>
<td>2.51</td>
<td>126.77</td>
<td>Income</td>
</tr>
<tr>
<td>Russia-</td>
<td>4.45</td>
<td>223.15</td>
<td>Income</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>2.68</td>
<td>116.20</td>
<td>Income</td>
</tr>
<tr>
<td>Ukraine</td>
<td>3.47</td>
<td>113.04</td>
<td>expenses</td>
</tr>
<tr>
<td>Kyrgyz Rep.</td>
<td>1.02</td>
<td>66.53</td>
<td>Income</td>
</tr>
<tr>
<td>Poland (1999)</td>
<td>disposable income</td>
<td>disposable income</td>
<td>2.3</td>
</tr>
<tr>
<td>Germany (2000)</td>
<td>disposable income</td>
<td>disposable income</td>
<td>1.2</td>
</tr>
<tr>
<td>US (2002)</td>
<td>disposable income</td>
<td>disposable income</td>
<td>0.5</td>
</tr>
</tbody>
</table>


Macro affordability figures should be treated with caution, as they hide many essential differences among income groups and local conditions. For example, in Armenia, where the level of cost recovery is 20%, at current prices...
9.7% of households already pay more than 4% of their total expenses for water and sanitation services; in the Kyrgyz Republic, 48% of costs are recovered and 18.5% of households pay above 4% at current prices (Figure 4.1).

**Figure 4.1. Water supply and sanitation price as share of household expense (% of households by size of share, 2001)**

![Graph showing percentage of households by water expense size](source)


Micro affordability analysis for Khmelnitski, Ukraine, shows that, at current prices and with 79% cost recovery, 22% of households pay more than 4% of their income for water services. If the price of water were to rise by 50%, the share of such households would reach 43% (Figure 4.2).

**Social assistance**

In the past, EECCA countries used several mechanisms to assure access to water: i) general public subsidies to water utilities; ii) cross-subsidies for households via industrial tariffs; and iii) reduced or zero tariffs for "privileged" consumers, such as war veterans.

Facing serious public budget deficits, most EECCA governments (except Turkmenistan) have increasingly decided to move away from the financing of water supply and sanitation from public budgets and towards financing by water users. For example, in Ukraine the share of public financing of housing and communal services (including water) fell from 4.4% of GDP in 1994 to 0.6% in 2000. (In Russia, by comparison, total public financing for the sector...
Figure 4.2. Water supply and sanitation price as share of household expense in Khmelnytski (% of households by size of share)


remained around 7% of GDP in 2002.) Similarly, cross-subsidies are slowly being reduced, and in some countries (e.g. Kazakhstan), formally abolished.

Governments have had to replace across the board subsidies for all users with targeted subsidies for those who would not otherwise be able to afford their increased water bills (Table 4.3). Ukraine, Russia, and Kazakhstan have established housing subsidy programmes in which the central government provides compensation for household expenditures for housing and communal services (including water) that exceed a certain level of household income (20% in Ukraine, 22% in Russia, and 30% in Kazakhstan). In 2001, 11% of households in Ukraine received this housing subsidy in summer and 17% in winter. Equivalent to USD 100 per year on average, the subsidy represented 36.5% of total income for retired people and single-parent families. Such subsidies, provided as means-tested income support, allow significant savings for public budgets by channelling support to those who really need it. They also helped assure utility revenue during periods of rapid price increases by reducing non-payment.

Armenia and Uzbekistan (and, more recently, Ukraine) have means-tested income support programmes for families, which aim to increase income levels in general but do not target water or other communal services specifically. Such general poverty reduction programmes are a better
Table 4.3. Selected social assistance programmes related to water, selected EECA countries (2001)

<table>
<thead>
<tr>
<th></th>
<th>% of poor in the population (national definition)</th>
<th>Housing Subsidy Programme</th>
<th>Privileges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>% of households receiving the subsidy</td>
<td>Maximum expenses for housing and communal services as % of household income</td>
</tr>
<tr>
<td>Armenia</td>
<td>50.9</td>
<td>0</td>
<td>0.86</td>
</tr>
<tr>
<td>Belarus</td>
<td>28.9</td>
<td>0.61</td>
<td>15</td>
</tr>
<tr>
<td>Georgia</td>
<td>51.10</td>
<td>0</td>
<td>7.50</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>28.4</td>
<td>0</td>
<td>45.10</td>
</tr>
<tr>
<td>Kyrgyz Republic</td>
<td>47.6</td>
<td>7.50</td>
<td>30</td>
</tr>
<tr>
<td>Moldova</td>
<td>no data</td>
<td>0</td>
<td>no data</td>
</tr>
<tr>
<td>Russia</td>
<td>29.1</td>
<td>9.10</td>
<td>22</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>no data</td>
<td>0</td>
<td>3.51</td>
</tr>
<tr>
<td>Ukraine</td>
<td>27.2</td>
<td>13.00</td>
<td>15-20</td>
</tr>
</tbody>
</table>


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.

Most EECA countries still provide subsidies through a system of privileges that grants discounted or free services to certain categories of citizen (e.g. police, judges, war veterans). These programmes do not target the poor and cannot be justified economically, but there is political resistance to removing them. Only in Moldova and Armenia have some of these privileges been eliminated.

Means-tested income support is one of the most effective and efficient tools for social support to the poor. In OECD countries, tariff-based measures are often used in addition to (or sometimes instead of) income subsidies. Such measures include "lifeline" and increasing-block tariffs to promote lower water consumption and thereby lower water bills. No use of tariff-based measures has been observed so far in EECA countries, mainly because there is so little individual metering.

In addition to economic mechanisms to ensure that the poor have sufficient water, technical and legal policies can be used at both national and local level. These include alternative water supply, disconnection policies, and arrears management. In most EECA countries, water service customers can in theory be disconnected for non-payment, though in practice this rarely happens because of technical difficulties and political opposition. Since there is such a high level of non-payment, however, arrears management measures,
such as debt restructuring and forgiveness, are commonly used. While debt restructuring can be an effective tool, debt forgiveness has certain limitations as a policy option.

Depending on growth in household income, the affordability situation is likely to deteriorate significantly in a number of EECCA countries as utility reforms progress. Making these reforms socially acceptable will probably necessitate additional spending from already stretched public budgets, and it is not clear where this money will come from.

Public involvement

Where there is a "crisis of trust" between water users and water producers, poor information provision is among the main reasons. Local governments and utilities in EECCA countries seldom study consumer opinion and preferences. Consumers often do not know about measures planned for the sector. Furthermore, they seldom know how much water they use or what the real costs of water services are. There is a need to improve basic information about water quality, methods of additional water treatment, hygiene, and the potential for water conservation.

Public and consumer participation in decision making remains a controversial issue. Some consumer groups and NGOs believe they should have the right to participate directly in all decisions in the sector, including tariff setting and the degree of private-sector participation. While such an extreme interpretation of the right to participation would probably result in inefficient sector management, key areas of decision making do need to become much more transparent in many countries. Public access to information on decision making has been improved in a few cases in recent years, however. Ukraine’s new law on drinking water, for example, provides a legal basis for public hearings on key issues in sector reforms. Kazakhstan’s Antimonopoly Committee organizes public hearings in cities and towns where tariff reforms could raise public concern.

Another reason for the "crisis of trust" between consumers and utilities lies in the unclear legal and institutional framework for service provision and difficulties in resolving conflicts. Individual households do not have direct contractual relations with water utilities, but interact with a housing maintenance agency or other intermediary service provider that has no incentive to assure the quality and efficiency of services. Quality parameters for water services are not clearly identified, are not well known to consumers, or are difficult to verify. Court procedures are too complicated for resolving disputes between water consumers and providers, and other methods have not yet been developed.

EECCA countries are working to address these problems. In Ukraine, for example, a model contract between consumers and providers was developed,
but has proved difficult to implement. Some countries have sought to develop associations of apartment owners as legal entities representing consumers vis-à-vis water and other utilities. Certain utilities have improved their customer relations units and launched telephone hotlines; in some cases, consumers have received detailed bills with information about consumption and price. NGOs active in water campaigns work to educate consumers about water quality and conservation.

Notes

1. Most water pricing work being done by the OECD in non-OECD countries concerns Eastern Europe, the Caucasus, and Central Asia, although there has been a recent expansion to analyse water problems in other countries, such as China (see Box 4.1).

2. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

3. These issues were addresses in a conference of Ministers of Environment, Finance, and Economics of the EECCA region (Almaty, October 2000). Ministers recognised the critical situation of water infrastructure, and adopted Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in EECCA. The OECD-EAP Task Force was invited to develop a work programme to support and monitor implementation of these Guiding Principles.

4. See www.water.hut.fi/bench/baltics.html#indicator

5. The affordability limit was assumed to be 4% of household income.

6. Characterised by frequent absence of proper chlorination, generally low pressure, frequent interruptions in drinking water supply, insufficient maintenance of water supply and sewerage systems.

7. A 50% increase, despite a cost recovery rate of 79%, assumes overestimation of the actual cost recovery level, and the need to phase out cross-subsidies between household and industrial consumers.