

# **EAP Task Force**

**CONSUMER PROTECTION AND PUBLIC PARTICIPATION  
IN THE REFORMS OF THE URBAN WATER SUPPLY AND SANITATION IN THE NIS**

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## **AFFORDABILITY OF URBAN WATER SERVICES IN THE NIS**

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## **1. Introduction**

### **1.1 Background and objectives**

The Almaty “Guiding Principles for Reform on the Urban Water Supply and Sanitation Sector in the NIS” specify that gradual tariff increases required to achieve financial stability of the sector “should take full account of affordability constraints and be part of a strategy for service improvement which has been developed through a participatory process”.

The Group of Senior Official on Urban Water Reforms in the NIS, established under the EAP Task Force framework, discussed social aspects of water sector reforms at their first meeting in Kiev, September 2001, and called for the development of Guidelines on Consumer Protection and Public Participation (the Guidelines).

Affordability of water services is often debated in hot and emotional political discussions without sufficient analytical and factual grounding. In the NIS there were few attempts to study the issue, including national and regional environmental financing strategies (EFS) for urban water supply and sanitation sector<sup>1</sup>. The EFS included assessment of affordability of urban water services for the population at large (macro affordability) but did not pay sufficient attention to the low end of income distribution which represents groups of most poor and vulnerable consumers (micro affordability).

However, recent study on Water Prices in CEE and CIS Countries<sup>2</sup> and EBRD feasibility studies<sup>3</sup> revealed that even in relatively rich cities in Russia, with relatively low unemployment rate and reasonably high average monthly salary, water and heating bills are not affordable for some 5-6% of population, particularly those with monthly income less than minimal living standard.

This discussion paper aims to provide an overview of “affordability constrains” related to water sector in the NIS, and to identify main issues to be addressed by the Guidelines, and to formulate preliminary recommendations for methodologies, policy and institutional measures required to ensure economic affordability at macro and micro level, in broader sector reform, including reform of tariffs.

### **1.2 Data sources**

Main data sources for the paper were the following: latest issues of the CIS and Ukrainian statistical year books (2001), household income and expenditure surveys and statistical year books for selected regions of Russia (2000-2001), the above national and regional EFS for urban water supply and sanitation sector elaborated for Georgia, Kazakhstan, Moldova and for Novgorod and Pskov regions (oblasts) of Russia, as well as draft EFS for the Kaliningrad oblast.

It should be noted that official NIS statistics is in general neither complete nor always reliable. Data is usually published with long 1.5-2 year delays and most recent figures are very seldom available, therefore the data the author refers to is sometimes for different years (mostly for 1998-2000 with few figures for 2001).

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<sup>1</sup> EFS were elaborated by COWI, OECD EAP TF and DEPA/ DANCEE for Georgia, Kazakhstan, Moldova as well as for Novgorod and Pskov regions of Russia.

<sup>2</sup> Water Prices in CEE and CIS Countries, A Toolkit for Assessing Willingness to pay, Affordability and Political Acceptability, EBRD, 2002

<sup>3</sup> Surgut Municipal Services Development Project, Feasibility Study, EBRD, 2002

Data on affordability of housing and municipal services (HMS) is not readily available for all NIS, therefore data presentation is not always of the same level of detail and its reliability is often questionable, so the author had to widely use other NIS experts' estimates as well as interviews.

### **1.3 Structure of this paper**

**Section 2** - discusses current access and service coverage for both drinking water supply and sanitation for selected NIS and regions of Russia; household consumption levels (norms and actual, estimated or metered); monthly water and wastewater bill level (tariff and actual bill); cost-recovery levels; collection rates. Discussing the rules managing tariffs setting for housing and municipal services (HMS) including water supply and sanitation service the paper tries to reveal whether ability to pay (ATP) is taken into account in tariffs setting practise.

Current policy targets for urban water sector in selected NIS in relation to the customer coverage, quality of services and cost-recovery are also discussed.

**Section 3** presents some relevant macroeconomic figures for selected NIS, including those on income level and distribution, which reveal the scale of poverty problem. It also discusses different definitions of the poverty as well as some general approaches and instruments applied in NIS to reduce the poverty and/or minimise its consequences.

**Section 4** discusses whether and how government bodies try to address poverty and limited ATP problem as well as the affordability constraint in achieving financial sustainability of the water utilities in their tariff and social policies as well as efficiency of the approaches applied.

**Section 5** presents some preliminary recommendations.

## 2. Access to and price of water services in the NIS

### 2.1 Consumer attitude to water services

#### 2.1.1 Ranking of water services among other housing and municipal services

Under the TACIS and WB project “Urban Heating Strategy Development for the Republic of Armenia” 2,490 respondents in four biggest cities in Armenia were asked to rank their priorities for HMS and service improvements. Their answers (Table 1) revealed that water supply and sanitation services as well as heating and electricity supply were ranked as top 3 most important services. While this ranking reflects Armenian situation, it may be representative for the other NIS.

**Table 1. Ranking HMS and service improvements, Armenia, 2001**

Service priority	1 <sup>st</sup> most important (%)	2 <sup>nd</sup> most important (%)	3 <sup>rd</sup> most important (%)	Total* (%)
Heating	38	27	16	81
Water Supply	30	15	10	55
Electricity	16	22	11	49
Housing Maintenance	5	9	10	23
Roads	4	8	11	24
Solid waste collection	3	5	9	17
Other**	4	14	33	38
Total	100	100	100	
# of respondents	2,490	2,490	2,490	

Source: (TACIS&WB, 2002)

Note: \* Total here refers to percent of respondents for which a particular priority was mentioned either as a first, second or third priority. \*\* Other here includes public transport and other non- specified priorities.

#### 2.1.2. Consumer dissatisfaction

Big fraction of consumers connected to the centralised water supply system is not satisfied with water supply service and tap water quality. Most widespread complains include the following.

Low quality of services: limited access to portable water and/or irregularity of supply. The reasons may include:

- lack of water resources and limited access to water (e.g. some regions in Moldova, Kazakhstan and Central Asia, in Southern European part of Russia, e.g. Kalmyk Republic);
- electricity cuts (e.g. Georgia, Armenia);
- highly deteriorated leaking pipes and often emergence interruptions (everywhere in NIS);
- low pressure on top floors of apartment buildings (due to insufficient pumps, highly deteriorated indoor water pipes or electricity cuts, or both).

Low quality of water: high colour index, unpleasant smell and taste. This may happen due to high concentrations of ferrous (colour index) or residual chlorine, or other chemicals and/or biological substances. Also lack of financing for maintenance, repair and rehabilitation are causing a declining service level.

Dissatisfaction has obvious impact on the willingness to pay (WTP) for water supply and sanitation services and often results in lower user charges collection rate than one could expect

for given household incomes distribution. The above study on Water Prices in CEE and CIS Countries and recent feasibility studies by EBRD revealed that though willingness to pay is usually rather low, still the most of respondents are ready to pay some 20-30% higher tariffs in case of “visible improvement” in service level and water quality.

## 2.2 Access to piped water and sewerage and levels of consumption

### 2.2.1 National and regional data

In general, the level of connection in the NIS is rather high compared to other countries and regions with similar level of income. Though coverage of urban population by water supply and sanitation services varies significantly depending on geographic location of the country/region and size of city, town or town settlement, usually 75-100% of population in large cities have access to piped water supply, while in small town settlements the coverage can be as low as 45-55% and much lower in rural areas. For sanitation the coverage is usually 5-30 percentage points less.

In Georgia, which is one of the poorest NIS, piped water supply is available (on average) to 100% of households in large cities, 90% in medium size cities, 55% in towns and town settlements. For sanitation the coverage is some 10-15 percentage points less (Table 2), but is still rather high for a country of such level of income.

**Table 2. Access to water supply and water consumption in Georgia, 2000**

City, category of towns	# of towns in the group	Population (average for towns in the group)	Water consumption		
			lcd	Water supply (as % of population)	Sanitation
Tbilisi	1	1 272 000	684	100%	85%
Kutaisi	1	241 000	223	100%	90%
25,001-200,000 people	18	44 400	300	90%	75%
1,500-25,000 people	56	7 000	120	55%	30%

Source: EFS for Georgia (OECD&DEPA, 2000), lcd – litre/capita/day

Moldova has limited water resources and therefore people in southern part of the country as well as in smaller town settlements have less access to piped water (Table 3).

**Table 3. Access to water supply and water consumption in Moldova, 2000**

Town category	Number of towns	Total population	Average connection rate to central water supply	Average connection rate to central sewers	Average water demand lcd
>50,000 people	2	815,600	100%	100%	541
25,000 - 50,000	7	184,900	79%	57%	186
10,000- 25,000 <sup>2</sup>	28	439,310	47%	33%	138
1,500 - 10,000	524	1,592,542	9%	2%	90

Source: EFS for Moldova (OECD&DEPA, 2000)

In Ukraine average share of housing connected to central water supply is reported to be 75.3% in urban areas and 17.9% in rural areas.

In Kazakhstan in urban areas the coverage is also high, but in small towns treatment is provided for only 22% of wastewater collected (Table 4).

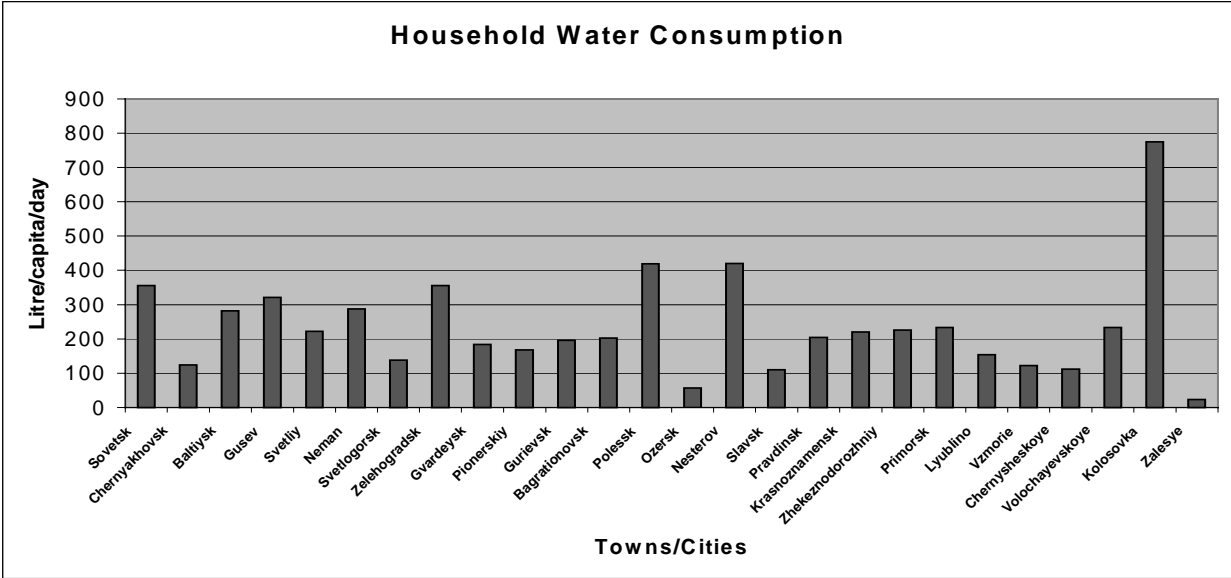
**Table 4. Access to water supply and sanitation services in Kazakhstan, per 1000 people**

Town category	Cities/towns with more than 50,000 inh.	Cities/towns with more than 50,000 inh., per cent of total	Towns with more than 20,000 but less than 50,000 inh.	Towns with more than 20,000 but less than 50,000 inh., per cent of total
Total population	5,820	100%	1,227	100%
Population connected to water supply	4,600	79%	903	74%
of which:				
Connected to sewers	4,192	72%	687	56%
of that:				
Connected to wastewater treatment	4,066	70%	206	17%

Source: EFS for Kazakhstan, (OECD&DEPA, 2000)

In Russia coverage by water supply and sanitation services of urban population is 86% and 84% respectively, while coverage of rural population is 39% and 30% respectively. There is a significant difference in the coverage as well in water consumption measured in litre/capita/day (lcd) between regions and municipalities (even within one region). In the Kaliningrad oblast, for example, the coverage level in the urban area is estimated to be between 95-100 % of the population serviced either by piped water or street standpoints. The household consumption for 26 towns outside Kaliningrad City is illustrated in Figure 1. The average consumption in year 2000 is reported at 236 litre/capita/day.

**Figure 1 Household Water Consumption in the Kaliningrad oblast, 2000**



Source: EFS for Kaliningrad region of Russia, (DEPA&COWI, 2001)

## 2.2.2 Actual water consumption

Though data on total household water consumption in NIS is not available, some estimates could be derived from data on total water use (see Table 5), assuming that households usually consumes 65-70% of piped water delivered to consumers, except cities with highly water intensive industries (ferrous metallurgy, oil refining, pulp and paper, etc.) and regions with intensive irrigation (e.g. Uzbekistan) where the households' share might be as low as 25-30%. While water abstraction in most of NIS has significantly reduced following the decline in output, water losses remained at almost the same level or even increased (e.g. in Armenia and Belarus). Hence share of losses has increased reflecting high deterioration of water distribution systems and poor water management.

**Table 5.** *Water abstraction, consumption and losses in selected NIS countries in 1991 and 2000 (in billion cubic meters)*

	Water abstraction		Water use		Water losses	
	1991	2000	1991	2000	1991	2000
Azerbaijan	16.5	11.1	11.9	6.6	4.1	3.1
Armenia	3.7	1.9	3.3	1.0	0.7	0.76
Belarus	2.9	1.8	2.8	1.7	0.08	0.12
Georgia	3.6	2.5*	3.5	1.1*	0.5	0.5*
Kazakhstan	34.9	19.8	30.7	14.7	5.2	4.9
Kyrgyzstan	11.1	8.0	9.0	5.0	1.8	1.7
Moldova	3.1	1.0*	3.0	0.9	0.07	0.07
Russia	107.5	75.9	95.4	66.9	9.1	8.5
Tajikistan	13.7	13.1**	11.9	12.7**	2.3	1.85**
Turkmenistan	26.8	25.7***	20.1	20.7***	7.7	5.6***
Uzbekistan	69.9	71.5***	54.1	53.2***	14.5	14.9***
Ukraine	27.2	13.3	28.2	13.0	2.5	2.5

*Source: CIS statistical yearbook, 2001, CIS Inter-State Statistical Committee, Moscow, 2002*

Note: \* data for 1999, \*\* data for 1995, \*\*\* data for 1993 - latest available

As the use of block and apartment water meters is very limited, the data on average household consumption is often based on an estimate or arbitrary assumptions (these assumptions differ from city to city). High variation of water consumption figures (e.g. on Figure 1 it varies from 30 to almost 800 lcd in small towns with similar conditions) indicates that the data is probably unreliable and whenever consumption varies manifold across municipalities the average figures say very little.

Moreover, as many water utilities in NIS lack water-meters they sometimes do not know exactly how much water was actually abstracted, treated, used for own needs, pumped into the water distribution system, lost and delivered to households and other consumers (to inlets to buildings or to district heating substations). In many towns in the Kaliningrad oblast for example there are no water meters on wells, water pumping stations, inlets to buildings or to district heating substations, and very few individual water meters.

In such conditions volume of water pumped into the water distribution system is assessed by the capacity of pumps multiplied by the number hours the pumps worked during the reported period. If the pumps worked just to maintain pressure in the pipes, it is still accounted as water consumption. As industries are normally metered their consumption is taken out from the total



figure. Water consumption by budgetary organisations (schools, hospitals, offices, etc.) is not metered often.

Therefore, the most uncertain figures are water losses in the distribution system and household and budgetary organisations water consumption. This uncertainty provides space for arbitrary decisions by water companies when setting “norms” of consumption (see section 2.5 below).

## **2.3 Water tariffs, consumption norms and bills**

### **2.3.1 Common features of NIS tariff setting**

While there are some differences in tariff setting among various NIS, the basic institutional and finance framework is common for most of water companies:

- most water utilities are established as state/municipally owned enterprise and are considered to be local monopolies; their tariffs are subject for examination and approval by national, regional and/or local governments/administrations (anti-monopolistic bodies and/or parliaments, price and tariffs committees);
- water companies are allowed to recover average production cost (including fixed assets depreciation) and earn limited cost-based profit (“cost-plus” formula) in a so-called “economically justified tariff” (EJT). This method has recently been reformed in Ukraine, where upper limits for tariffs are set instead. The formula “cost-plus” is not perfect by definition, as it does not provide proper incentives to increase the efficiency of the water utilities;
- in many NIS household tariff covers only a fraction of EJT. The difference between the household tariff for water supply and sanitation and the EJT is supposed to be compensated to the water companies either by the public budget and/or by other users through cross-subsidisation mechanism. Moreover, in many NIS national (or regional) legislation grants preferential (discounted) household tariff to some large groups of customers (e.g. veterans, invalids, militaries, policemen, etc.);
- funds for new capital investments usually can not be raised by including in the EJT a special “investment financing” item (though in Kazakhstan profit margin is established at the level sufficient to finance approved capital investments, while in Russia the “repair fund” cost item sometimes is used to finance not only maintenance and repair but also new capital investments masked as “rehabilitation”) and, in principle, new capital investments need to be financed from budgets of different levels;
- tariffs are (regularly, e.g. once per year, or *ad hoc*) revised, where changes in taxes, production cost and/or tariff regulation are formal reasons for establishing new tariffs.

### **2.3.2 General public subsidies of water tariffs for households**

In few countries (e.g. Kazakhstan, Uzbekistan) and municipalities (e.g. Surgut City, Russia, since January, 2002) the household tariffs are established at EJT level. But in many NIS household tariff covers only a fraction of EJT. In Surgut City, Russia, for example, in 2001 households tariff comprised only 70% EJT but there was no cross-subsidisation as other consumers paid just 100% EJT, while losses of the water utility were compensated by the City budget.

Cost recovery by household tariffs (before discounts for privileged consumers) varies across countries (see Table 6), regions and municipalities manifold from 10-20% to 80-100%. Many politicians believe that they “protect” interest of wide electorate by establishing low cost recovery and sometimes have to do it addressing the problem of widespread poverty.

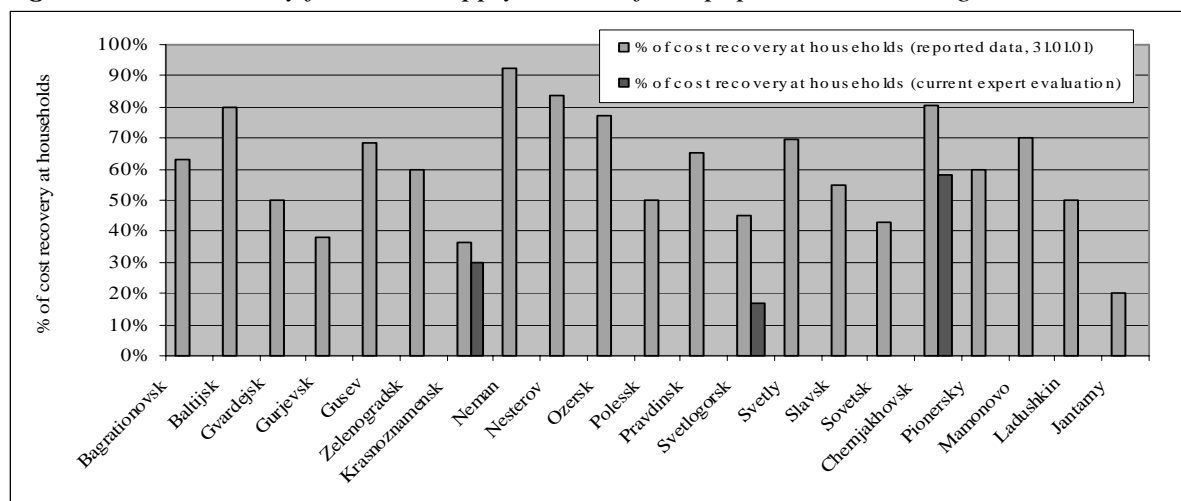
**Table 6.** Cost recovery level (2001) by household water supply and sanitation (WSWW) tariffs in selected NIS and target year to achieve full (higher) cost recovery

Country	Household WSWW tariffs as % of actual cost of the service (average across country)	Target year to achieve full (higher) cost recovery
Armenia	15-20	2005
Georgia	15	2005
Kazakhstan	100	1998
Kyrgyzstan	48	2005 (75% )
Moldova	50	2003
Russia	60	2003
Turkmenistan	0	No target
Uzbekistan	100	2001
Ukraine	n.a.	1998

Source: Sivaev, 2002.

It should be noted that average for country figure may mask huge variation across regions of the country and even municipalities within one region. The case of the Kaliningrad oblast of Russia is presented in Figure 2. According to the Oblast Statistical Committee, in the first half of year 2000, the population covered on average some 60% of the full cost tariff for (cold) water supply and sanitation services, but this average figure masks 20% and 90% extremes.

**Figure 2** Cost recovery for water supply services from population, Kaliningrad oblast, 2001



Source: EFS for Kaliningrad region of Russia, (DEPA&COWI, 2001)

Full cost recovery can be treated rather differently across the NIS and regions: in some cases the EJT does allow to cover full operating and proper maintenance cost, in other cases it does not allow to fully cover just operating and current repair cost. Part of the difference can be explained by the fact that tariff regulation in most of NIS (except Turkmenistan) is full responsibility of regional and local governments and they often develop their own methodologies for EJT calculation and approval (while recommended methodologies developed by national government are not obligatory). Fixed asset depreciation rates also vary across NIS. These differences in

interpretation of what the “full cost” is should be taken into account before deriving any strict conclusion from direct comparison of figures from different countries and even from different municipalities within one country.

**2.3.3 Cross subsidies between households and industry**

Cross-subsidisation is not applicable e.g. in Kazakhstan and Uzbekistan. In some NIS cross-subsidisation of household tariffs is still allowed at expense of private businesses and sometimes budget enterprises and organisation. Whenever cross-subsidisation is applicable, the ratio of water tariff for industries to that for households may vary significantly depending on region and/or municipality. E.g. in Moldova ratio of water tariff for industries to that for household varied from 2.5 to 10, in the Kaliningrad oblast in 2001 the ratio varied from 2.5 to 14, etc.

The declared political target, however, is to gradually phase-out the cross subsidisation of the household tariffs.

**2.3.4 Privileged (discounted) household tariffs**

Following national (or regional) legislation water companies charge a preferential (discounted) household tariff to some large groups of customers (e.g. veterans, invalids, etc.). For the losses in revenues due to the difference between the preferential tariff and the normal household tariff, approved by the municipality, water companies are supposed (in theory) to be compensated by the public budget. But in most of cases public budget compensates only fraction of its debt.

**2.3.5 Consumption norms and monthly bill**

Prices for water and sanitation (per cubic meter) as well as consumption norms (in terms of lcd) vary significantly across the NIS and even across a region of a country. Some examples from Armenia and Kazakhstan are presented in Table 7.

*Table 7. Household tariffs and monthly water bill – selected NIS cities*

Country, City	Household tariff (if consumption is metered)		Monthly bill (based on norms)		Norm*
	NC/m3	USD/m3	NC per head	m3 per head per month	
Kazakhstan, Almaty, Kokshetay	10	0.07	200		20
Armenia, Yerevan	56	0.11	420		7.2

Source: interview of local experts.

Note: \* - calculated as ratio of monthly bill to household tariff. NC stands for national currency.

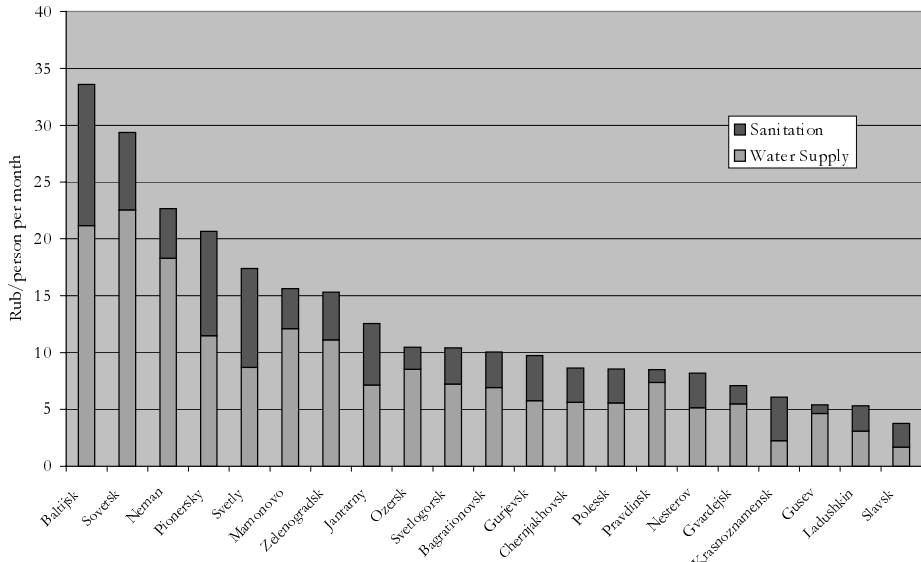
There is a political trade-off: either to establish realistic “norm” (120-220 lcd) close to actual consumption and higher tariff per cubic meter or to establish high norm (250-600 lcd) and lower tariff. Many politicians prefer low tariffs, which “protect” interest of wide electorate, and very high unrealistic “norms”: with very limited metering it is difficult to argue against high “norms” which are often 20-100% higher than actual consumption. Minimal realistic norm tends to be established at a level of a minimal sanitary consumption norm of 160 lcd, which was established in the former Soviet Union, and seems to be oversized.

In Surgut City, for example, the “norm” (for people living in apartments with all facilities) is established at that more realistic 160 lcd. Water meters are installed at inlets to almost all apartment buildings but they have not been used for billing so far and very few people know about the water-meters. A survey in 2000 revealed that actual portable water consumption by households was 10-15% lower than the established “norm”.

The result of the exercise with establishing “norms” and tariffs (for given rate of cost recovery by household tariffs) is just a monthly bill for water supply and sanitation services. The amount billed (per head per month) also varies significantly across a country and regions (see Figure 3 for the Kaliningrad oblast).

Nevertheless, water and wastewater bill (per person per month) is obviously more relevant and useful for affordability analyses than “norms” or tariffs per cubic meter.

**Figure 3** Water supply and sanitation bill in the Kaliningrad oblast, 2001, (RUR per person per month)



Source: EFS for Kaliningrad region of Russia, (DEPA&COWI, 2001)

**2.4 Policy objectives in urban water sector in the NIS**

Provision of safe drinking water for population is clearly set as a policy objective in many NIS, which is reflected in either national special law and/or in (target) national and regional programmes and Action plans. The objective is a high priority in many NIS especially those with limited water resources (e.g. many regions in Central Asia).

**2.4.1 Cost recovery objectives**

Full cost recovery objective is also the most common and relatively clearly set in many NIS, which continue practising subsidisation and cross-subsidisation of household water supply and sanitation tariffs. In most of NIS (except Turkmenistan) full cost recovery is declared as a political goal, in many countries (except Kyrgyzstan) schedules for gradual phase-out of the cross-subsidisation have been adopted (e.g. Russia). Some NIS has made a significant progress towards full cost recovery (e.g. reportedly, Kazakhstan has already achieved this objective).

However, the main question in the cost recovery analysis is its interpretation, i.e. which cost items are included in full cost estimations. In Kazakhstan water companies can submit full cost recovering tariff proposal for approval. But in practice in some municipalities operating and maintenance cost are fully covered, while water companies in other municipalities can not cover even full operating cost. The following reasons may influence the actual rate of cost recovery:

#### 1. Cost accounting rules and practice

- In most NIS, existing accounting rules and practice together with tariff setting rules and practice do not allow to cover full O&M costs, infrastructure investment costs, environmental and other externalities. Low (5-10%) profitability margin is approved in the “cost plus” formula, while depreciation and “repair fund” items do not allow to finance proper maintenance - this results in further deterioration of existing infrastructure.
- In smaller towns there is often one company providing all HMS including water supply and sanitation, but often there is no separate accounting of cost and revenues related to different services. This makes cost control very difficult and may result in improper tariffs.
- Sometimes not all actual cost are included (by mistake or voluntarily: e.g. one municipality in the Pskov oblast of Russia when calculating water tariff voluntarily did not include actual cost of coagulant and paid water abstraction fee to the full costs, considering that otherwise the tariff would be too high and households would not be able to pay for water).

2. User charges collection rates are low (vary from 55% to almost 100% across NIS).

3. Imperfect subsidisation mechanism: in cases when household tariffs are subject for subsidisation (and discounts on subsidised tariffs for privileged consumers) and consumers first pay fraction of EJT to water companies and then the company invoices to the government/administration the subsidy and discounts provided to consumers. Often that the public budget does not fully compensate the subsidy and discounts, that is the recurrent subsidy does not compensate the financing deficit of recurrent expenditures.

4. Not least is that the regulatory bodies responsible for tariffs formal approval explicitly or implicitly care about ATP when considering tariffs suggested by water companies (see above cases of Kazakhstan and the Pskov oblast). Thus political considerations often take precedence over economic reasoning. Similar situation is sometimes observed in other sectors, e.g. in heating tariffs setting in Armenia (TACIS&WB, 2002).

As a result many water companies will suffer from a financing gap and cash deficit (at least with respect to maintenance financing), even if all water users are billed according to actual consumption times EJT, and pay their bills 100% in time. This demonstrates that there is an urgent need of a tariff policy, accounting and management accounting reform at water companies in NIS, including metering, cost accounting, separate accounting for different services.

#### **2.4.2 Water conservation targets**

Many officials, housing and municipal economy and water company managers in the NIS are aware of the urgency of water demand management aimed at reduction of water losses and water consumption. Based on experience from Poland and some Baltic countries a household consumption of 130 lcd can be proposed as a realistic water demand management target to be achieved within a 5-10 years horizon, provided appropriate incentives and metering are in place.

National and regional target programmes usually declare water conservation targets and (still seldom) pay some attention to improved water demand management (metering, public awareness campaigns, etc.). But one can often find in such a target programme (e.g. in Novgorod region of Russia) the water saving targets controversially set together with the target to increase water consumption (in lcd) by households.

### **2.4.3 Service quality, cost saving and other targets**

Due to decentralisation of the urban water sector and transfer of the responsibility to regional/local governments, which took place in many NIS, very limited data is available about service quality and coverage targets.

Nevertheless, when elaborating the background analyses for several national and regional environmental financing strategies (EFS) for urban water supply and sanitation sector for Georgia, Kazakhstan, Moldova as well as for Kaliningrad, Novgorod and Pskov oblasts of Russia the following targets established in national and regional target programmes, action plans, etc. were identified and analysed taking into account the medium-term economic perspective and size of the consolidated public budget of the country/region, as well as households income level and distribution.

Selected national and sub-national examples of targets are presented below:

- Providing households with sufficient amount of water where current supply is limited, e.g. current water production is below 80 lcd;
- Improving portable water quality by switching from surface water to ground water, or by introducing ferrous removal installations for ground water, or by replacing highly deteriorated leaking pipes and preventing secondary pollution of portable water in the pipes;
- Extending coverage where existing infrastructure is sufficient or there is reserve capacity and the connection of new users can be achieved at low cost, covered by the newly connected consumers;
- Rehabilitation of existing wastewater treatment plants to the initial design level, extend existing or build new small/medium size wastewater treatment plants where environment and human health protection is a high priority issue;
- Maintaining existing service level not allowing it to further deteriorate;
- Strategically dis-investing and ensuring lower service level, if maintaining current level is not affordable (suggested in EFS for Georgia and Moldova);
- Cost saving, through leakage identification and prevention, replacing of highly deteriorated pipes and replacing oversized and/or inefficient pumps by more efficient better sized pumps with longer life-time and lower “life-time costs”.

## **3. Poverty and social assistance to the poor in the NIS**

### **3.1 GDP trends and households income**

The major decline in real GDP, which was registered in the NIS in 1990-1996, resulted in high unemployment, decline in household incomes (see tables 8 and 9) and widespread poverty.

**Table 8. Real GDP and household incomes in selected CIS countries in 2000 (% of 1991)**

	Armenia	Belarus	Georgia	Kazakhstan	Moldova	Russia	Ukraine
GDP	76,9	89,7	47,5	77,9	42,0	69,1	47,3
HRDMI*	35	92	n.a.	n.a.	n.a.	48	30

Source: CIS statistical yearbook, 2001, CIS Inter-State Statistical Committee, Moscow, 2002

Note: \* HRDMI stands for Household Real Disposable Money Incomes

**Table 9. Average real monthly wages and salaries in selected CIS countries (as % of 1991)**

	1996	2000
Armenia	21	54
Belarus	57	92
Georgia	n.a.	n.a.
Kazakhstan	27	36
Moldova	29	29
Russia	51	43
Ukraine	35	34

Source: CIS statistical yearbook, 2001

In Belarus, Uzbekistan and Turkmenistan the economic decline was not such severe as in other NIS on average. While economic recovery has started in Armenia, Belarus, Kazakhstan, Russia and Ukraine, widespread poverty is still a serious problem (see Table 13 below) and is expected to persist in most NIS in the medium term perspective.

There are significant regional and local disparities in income distribution. In large countries like Kazakhstan, Russia and Ukraine household incomes vary significantly across country or even across a region of the country (see Table 10). Income in urban areas is higher than in rural areas, some regions and industries experience deep depression while other recovers quite fast.

**Table 10. Nominal money income in selected regions of Ukraine, 2000, in national currency**

Region, City	Money income per capita
Kiev, City	6121
Sevastopol, City	2062
Dnepropetrovskaya oblast	2455
The Crimea	1333
Zakarpatskaya oblast	877
Ukraine, average	1756

Source: State Statistics Committee of Ukraine, 2001

### 3.2 Definitions of poverty

Several definitions of poverty are used in NIS. The main approaches are presented below.

#### 3.2.1 The World Bank definition

***Households with average daily income of less than \$1 per capita and spending 70% (and more) of their income on food are considered poor.***

In some NIS population is spending more than 60% of household consumer expenditures on food (see Table 11). Pensions in most of NIS are below \$30 (see Table 13 below) and families consisting of single or two pensioners are in poverty according to the World Bank definition.

**Table 11.** *Composition of average household consumer expenditures in selected NIS, 1999-2000*  
( % of total expenditures on consumer goods and services)

	Foodstuff and beverage**		Services	
	1999	2000	1999	2000
Azerbaijan	72.2	(data for 1997*)	9.2	(data for 1997*)
Armenia	64.3	61.9	18.8	22.5
Belarus	59.4	59.6	7.7	9.8
Georgia	54.2	49.5	21.0	21.5
Kazakhstan	48.3	46.4	25.1	24.1
Kyrgyzstan	55.8	54.3	14.3	15.5
Moldova	46.8	46.9	15.8	(data for 1996*)
Russia	53.7	49.4	13.0	13.8
Tajikistan	77.0	74.3	5.9	5.7
Turkmenistan	60.6	(data for 1997*)	7.9	(data for 1997*)
Uzbekistan	69.3	(data for 1995*)	9.2	(data for 1995*)
Ukraine	60.2	64.2	18.4	16.2

Source: CIS statistical yearbook, 2001

Note: \* latest statistics available, \*\* except alcohol

### 3.2.2 National definitions

***Population/households with an average monthly per capita income less than the minimal living standard (MLS) are considered “poor”***

Some NIS use their own definitions, e.g. based on so-called “minimal living standard” (MLS) (“minimal consumer budget”). Minimal living standard is an income equal to the average price of so-called “consumer basket”. The baskets might be different for men and women, for children, young and adults, as well as for people at retire age.

In Armenia, in addition to the “consumer basket”, the “food basket” is calculated. Households or individuals are considered “very poor” if their average monthly income is lower than the average price of the basket. In 1999 the price of the “food basket” was equal to 7194 dram, while average pension comprised 4402 dram and minimal salary was 5000 dram. As a result of extremely low incomes 55% of population in Armenia was considered “poor” or “very poor” in 1999.

In Moldova the MLS was set at 233 Moldovan Lei and 79.3% of population has income below the MLS, while the poverty level was established at 30% of MLS (20.7% of population).

In large countries like Russia with significant differences in climate, traditions and prices across the country, the minimal living standard is often established at a regionally level using a methodology approved at national level. The minimal living standards for the whole Russia are calculated by the State Committee for Statistics (Goscomstat). In the fourth quarter of 2001, 34.8 million people (24.5% of population) in Russia had monthly income below the MLS.

In each subject of the Russian Federation the minimal living standards are calculated by regional Committee for State Statistics (e.g. see Table 12 for Khanty-Mansi case).



**Table 12.** Minimum living standard in the Khanty-Mansi Autonomous Okrug, fourth quarter, 2000

Category	Minimal living standard, RUR per month
Average for all population	2160
Male	2538
Female	2403
At retire age	1783
Children under 5 years	1798
Children from 5 to 15 years	2268

Source: Khanty-Mansi Autonomous Okrug Committee for State Statistics, 2001

In addition the following definition of “very poor people/household ” (absolute poverty level) is used in Russia:

***Population/households with average monthly per capita income less than 50% of the minimal living standard are considered “very poor” (in absolute poverty).***

### 3.2.3 Adjusting poverty definition to availability of public budget

Poverty definitions are established to determine eligibility for public subsidies and grants. While public budgets are weak, NIS governments tend to adjust their national definitions of poverty (and/or criteria of support for poor people) to the size of the public funds they can afford to spend on subsidies and grants.

Such adjustment can be achieved through manipulations with the content and life-time of consumer goods included in the “consumer basket” (e.g. in Russia, the consumer basket calculated is based on the assumption that women’s tights can last 4-month). In some cases, prices for selected goods are fixed at minimal level corresponding to low quality goods. Such statistical manipulations allow maintaining the minimal living standard at a lower level. Nevertheless, the poverty rate remains high.

On the other hands official statistics does not fully reflect the following data important for the household incomes and poverty assessment:

- “shadow economy” incomes which constitute significant part of national economy in most NIS (to avoid taxes many companies pay major part of salaries unofficially declaring only a smaller part) and might comprise rather big share of household incomes (e.g. official statistics report that in the Kaliningrad oblast total annual household expenditures in 1997-1998 were 15-20% more than total annual household incomes *and even 10% more than the Gross Regional Product (GRP – an indicator similar to GDP)*);
- grants families receive from their relatives living and/or working abroad (this is especially important for Armenia, Azerbaijan, Georgia, Moldova, Ukraine);
- reallocation of incomes within families’ own “social networks” in which relatives provide support to their more poor relatives (relevant to all NIS and obviously without such networks social problems in NIS would be much more severe than they have been so far).

Nevertheless, statistics of average salaries, pensions and minimal living standards presents the general picture and reveal main groups of poor and vulnerable citizens reasonably well (see Table 13).

**Table 13.** Average nominal salaries, pensions and minimal living standard in selected NIS, 2000 (in national currency and USD)

	Salary		Pension		MCB	
	NC	USD	NC	USD	NC	USD
Armenia	22,706	42.1	4,473	8.3	n.a. (28,000*)	n.a. (51.9*)
Azerbaijan	221,606	49.5	71,984	15.8	97,800	21.9
Belarus	58,916	73.5	36,423	45.5	30,100	37.6
Georgia	n.a.	n.a.	16	8.1	100.8	50.9
Kazakhstan	13,674	96.2	4,021	28.3	4,007	28.2
Kyrgyzstan	1,227	25.7	462	9.6	1,205	25.3
Moldova	407.9	33	85	6.8	233.1	18.8
Russia	2,223.4	79	823	29.3	1210	43
Ukraine	230.1	42.3	84	15.4	270	49.7

Source: CIS statistical yearbook, 2001, \* expert estimate

Note: MCB means minimal consumer budget (minimal living standard), NC stands for national currency

This data reveals the significant gap between average salary and average pensions in many NIS. Note that in Georgia, Moldova, Russia and Ukraine average pensions are much (30-80%) lower than the minimal living standard. And pensions paid to invalids and other vulnerable people are usually even lower than pensions paid to retired people.

Unemployed form the second largest group at risk of poverty. Though welfare paid to unemployed might be relatively high (above the MLS), only relatively small fraction of all unemployed apply for official registration. The unemployment rate calculated according to ILO methodology in the NIS is much higher than the rate calculated according to national unemployment statistics. Therefore, most unemployed are not officially registered and are not subject for welfare support.

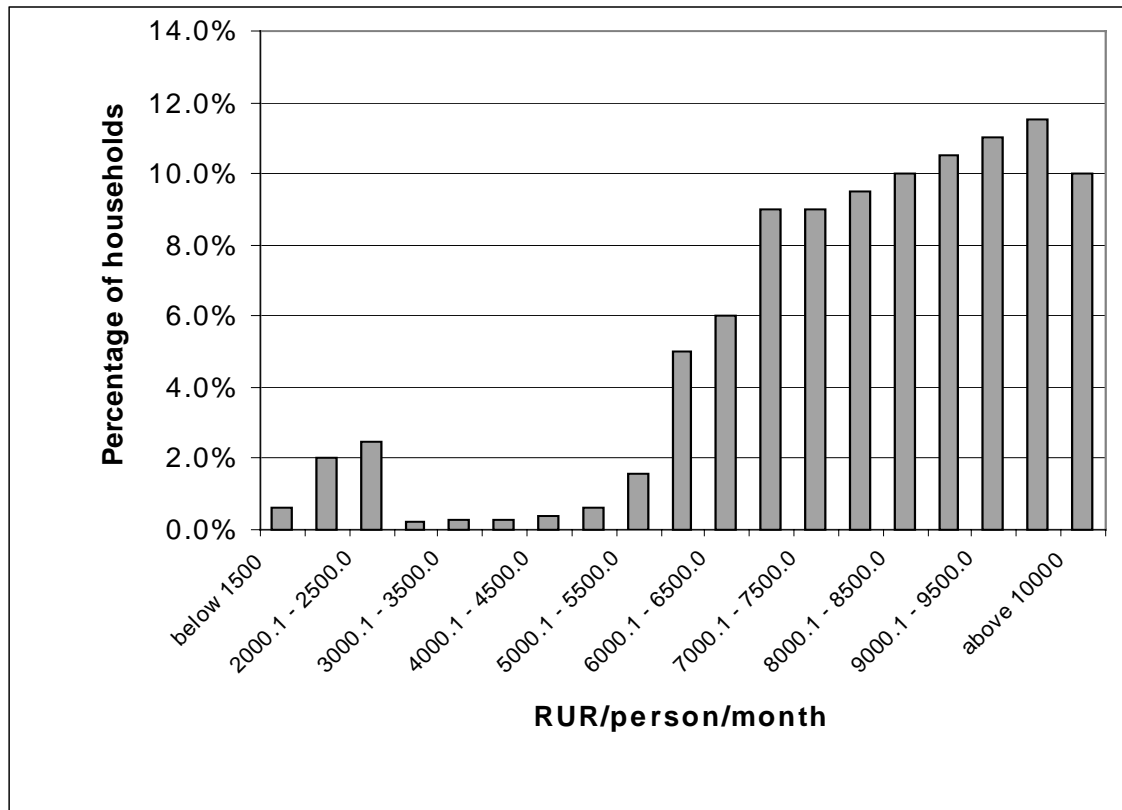
The gap between average salary and average pensions may result in very special shape of income distribution as described below.

### 3.2.4 Income distribution: case of Surgut

Average income level is relatively high in Surgut City, when compared with other parts of Russia. The recent incomes date for Surgut City is presented in Figure 4.

The graph demonstrates two “hunchbacks” of income levels. The smaller (left) one corresponds to some 6.0% of people with income below or close to minimal living standard, including most of retired and unemployed people. The graph clearly presents the gap between average salaries and low pensions paid to retired people, invalids, etc. It helps to identify that in Surgut City people with low ability to pay for HMS are in the first decile. It is also clear from the figure that looking at mean values will hide potential problems with the ability to pay for HMS among consumers in the low end of income distribution.

**Figure 4** Distribution of household gross income, Surgut City, Sept. 2001 (nominal values)



Source: Surgut City Administration, 2001

Similar “two hunchback” shape of household income distribution was identified in other regions of Russia (e.g. Novgorod region) and at national level in Belarus and Russia in 2000. It clearly indicated that social policy was lagging far behind economic recovery. (In Russia this fact was recently recognised and now the government is aware to provide faster growth of pensions and social support to the poor).

### 3.3 Social assistance to the poor and financial stability of water utilities

#### 3.3.1 Institutional arrangements

Representative power - national, regional and local Parliaments or Councils and their bodies (Committees) - are traditionally responsible for protection of interest of electorate and taxpayers. Receiving a lot of signals from the poor which complain that HMS are not affordable for them, members of parliaments often tend suggest general approaches to protect all consumers, e.g. subsidies for everybody. At the same time statistics suggest that the service is affordable for population at large and only low income people should indeed be supported. Politicians, especially at local levels, tend to overestimate demand for support for the poor people, proposing populist solutions and not paying sufficient attention to the needs of HMS producers.

National level parliaments and governments often approve “consumer basket” and methodology for calculating the “minimal living standards”, while regional and local governments might adjust the basket and the methodology to specific regional conditions. National governments are usually responsible for the development and financing of special support programmes for poor, while the implementation of the programmes is often delegated to local authorities, sometimes

without appropriate financial base. In these cases, local authorities tend to shift social mandates to the HMS companies obliging them to provide services at lower prices.

At the same time, executive power - national, regional and local - usually provide co-financing for capital investments and cover operating losses of the utilities. Usually, this responsibility is delegated to the local authorities, following decentralisation of water services in the NIS. Thus, balancing the needs of water companies and ensuring their financial viability is often confronted with the demand for increased social support.

### **3.3.2 Selection of appropriate support mechanism**

There are a number of social support schemes currently used in the NIS. Main approaches include the following<sup>4</sup>:

#### **Poverty specific**

General income support to the poor from the public budget, not related to water (e.g. family support packages in Armenia, support programme for households/persons with income below the minimal living standard in Kazakhstan)

#### **Water specific**

##### for all households:

- General water related subsidies for the population at large
- General cross subsidies between households and industry

##### for selected groups of households:

- Target subsidies for poor people with respect to HMS
- Privileged (discounted) household tariffs

While the overall goal of the governments should be to ensure proper water services of acceptable quality in sufficient amount, and wastewater treatment according to environmental requirements, there is a number of trade-offs in selecting the appropriate mechanism, including the following:

- ensuring economic/financial stability of companies, while minimising total public expenditure on subsidies for water utilities (economic goal)
- ensuring that the population, including the poor, have access to safe drinking water and sanitation, at the least cost for the public budgets (social goal)
- ensuring that both the consumers (including the poor) and the water utilities use water resources efficiently and that wastewater is properly treated (environmental goal).

## **4. Macro and micro affordability**

Tariff reforms aiming to ensure financial stability of water utilities and cost-recovery might lead to significant water price increase for the consumers. National and local governments in the NIS need to be sure that cost-based prices will be affordable to the population at large.

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<sup>4</sup> A detailed discussion of social protection mechanisms is presented in the paper by A.Kucherenko “Current experience of social protection of water consumers in the NIS”.

The section discusses whether and how government bodies attempt to address poverty problem and the affordability constraints to achieving financial sustainability of the water utilities in their tariff and social policies as well as efficiency of the approaches applied.

#### 4.1 Affordability of HMS and water bills for population at large

In NIS the government usually assesses the affordability of all HMS for population at large by establishing an affordability limit as share (%) of household gross or disposable income. For example, the policy target in Russia envisages a gradual increase of HMS share in household expenditures from 20% to 23%. No special limit for expenditure on water service alone is established. Households spending more than that share for their HMS bill are subject for public subsidies. Establishing of such a limit is very much a political decision based on consideration of how much of their income (on average) households spent on food and beverage (except alcohol), and on other vital services like urban transport and communication, as well as assessing if claims for public support from the households spending more than that limit share for their HMS bill will be affordable for the public budget.

Table 14 demonstrates that according to that or similar criterion with 15-20% limit HMS are affordable for NIS population at large: according to data available for 2000, household expenditure on HMS (on average) did not exceed 12% of expenditure on consumer goods and services, and only in four NIS it exceeded 6%.

**Table 14.** Household expenditures on HMS in selected NIS, 2000  
(% of total expenditures on consumer goods and services)

	2000	comment
Azerbaijan	1.4	data for 1997
Armenia	5.5	data for 1999
Belarus	3.0	
Georgia	8.2	
Kazakhstan	11.9 (11.1*)	
Kyrgyzstan	3.5	
Moldova	6.9	data for 1996
Russia	4.7 (3.6*)	
Tajikistan	1.8	
Turkmenistan	2.5	data for 1997
Uzbekistan	1.4	data for 1995
Ukraine	6.5	

Source: CIS statistical yearbook, 2001

Note: \* communal services only

While in official NIS policies water is usually not singled out from other HMS, sometimes it is necessary to assess affordability of specific service, e.g. water supply and sanitation. Usually, such analysis is needed when investments are considered for a separate utility, e.g. a water utility. Therefore, it is important to identify the share of different HMS expenditure items in the household/personal budget. The “rule of thumb” often applied in research studies, and some IFI projects, is that expenditures on water and wastewater may not exceed 4% of household total disposable income. Though some experts (see e.g. Smets, 2002) refer to own socio-economic surveys which prove that the limit might be fixed at 3% level and should be established with regard to local conditions.

In Kazakhstan and Moldova in 1999 households spent on water supply and sanitation service on average 3.8% and 3.5% of their income, respectively (EFS, OECD&DEPA, 2000). These figures are close to the affordability limit of 4% and therefore they indicate that there was little room for further tariff increase. Similar analysis in Georgia and Russia pointed out that the average household expenditures for water were much lower than the “rule of thumb” level and thus overall tariff increase was possible.

## 4.2 Affordability for low-income groups

When all HMS or specific service are affordable for population at large, a more detailed analysis is needed to study affordability for the population at the low end of income distribution. Households with average income below or equal to the MLS may spend 60% or more of their income for food, while expenditure on HMS can be regarded as fixed cost. Thus if a household spends on HMS more than 25- 30% of total its income, then it may need to cut expenses on food.

This is true in many cases, for example households consisting of single or two retired people in Kazakhstan fall into this category. Assuming that a couple of two retired people (each receiving an average pension of 4050 tenge) lives in Almaty or Kokshetay in a small 50 m<sup>2</sup> apartment with all facilities the household would pay at least 4500-5000 tenge per month for rent and communal services, that is at least 55% of gross income, while instead the couple should spend at least 60% of its income on food to consume at minimal physiological level. Without public support a single person at retire age would not afford even a 1-room 35-40 m<sup>2</sup> apartment. It should be noted that in these cases no expenses are foreseen for other consumer goods and services (transport, communication, etc.).

For countries like Moldova where recently some 79% of population were reported to have income less than the MLS even 3% limit for expenditure on water service might be high. Author’s personal opinion is that if 25-30% (or more) of population of a country/region (or municipality) have monthly per capita income below the MLS then the limit should be fixed as a share of “residual income” equal to total income less price of minimal food basket. Such a limit should be established at a level of a region or even a locality taking into account significant regional disparity in household incomes.

A detailed analysis of household incomes and expenditure structure (e.g. by deciles, see Table 15) with special attention to low end of income distribution is often challenging given the quality of NIS data. The approach is demonstrated below using the city of Surgut (Russian Federation) as an example.

**Table 15.** Household expenditures structure by deciles, Russia, Q4 2000, in % of total expenditure on goods and services

Decile	1	2	3	4	5	6	7	8	9	10
Food	65,3	64,0	62,6	60,3	57,1	56,1	50,6	49,5	48,5	39,4
Services	13,8	12,8	12,3	12,0	13,7	11,0	11,1	10,6	10,8	10,6
of which:										
HMS	8,5	7,1	6,5	6,0	5,2	4,8	4,1	3,7	3,5	2,7

Source: Household incomes and expenditure survey, Goscomstat, 2001

The data reveals that at current 10-60% discounted prices HMS are on average affordable for most of population in Russia - even in the 1<sup>st</sup> decile households on average spent less than 9% of their budget on HSM while the federal standard allowed for 20%.

But the country average figures are not detailed enough for local governments responsible for tariff setting. Income distribution as well as consumption “norms”, tariffs, cost recovery levels (which can be from 40% to 100%) and share of privileged consumers are site specific, therefore the affordability analyses should also be site specific.

When analysing specific data for the city of Surgut, it appears that on average HMS are quite affordable for the population (see Table 16). For the average household the expenditure share for water and wastewater is 1.2% of gross income (this corresponds to 1.35% of disposable income).

**Table 16.** Average monthly payments for housing and municipal utilities in percent of gross income per person, City of Surgut, first half 2001

Expenditure item	Percent of gross income
water and wastewater	1.2
heating	0.9
hot water	0.5
electricity	0.5
rent	1.6
municipal solid waste	0.2
HMS, total	5.0

Source: (EBRD, 2002)

It is important to note that in 2001 in Surgut City household water and wastewater tariff comprised only 70% of the so called Economically Justified Tariff (EJT) which allowed to cover full recurrent cost of the utility and earn 5% profit (the profitability mark-up was established by the Price commission at the City Administration). Thus on average there seems to be sufficient room for increasing the tariff towards the rule of 4%.

However, presented numbers reflect an average household, while income distribution has such a shape in the city of Surgut that many low income households may be already paying more than 4% of their disposable income for water services. Assuming that all households live in apartments with all facilities, expenditures for utilities were assessed as share of the gross income for 8,5% of population with per capita income less than RUR 5,500 per person per month (see Table 17).

The calculation shows that in the first half of 2001 the share of water and wastewater expenditures was higher than 4% for some 5.3% of population (individuals with gross income below RUR 3,000 per month). Individuals with gross income below RUR 4,000 (some 6% of population) would have paid more than 4%, when the full cost-recovery of services is introduced. However, there is some room for increase in water and wastewater tariff for individuals with income above RUR 4,000 per month (94% of population). Deciles 2-10 can incur increase in tariff by 150% without reaching the ceiling of 4% of the disposable income.

**Table 17. Monthly payments for housing and municipal utilities in percent of gross income per person<sup>5</sup>, City of Surgut, first half 2001**

Gross income, RUR per month	Share of population	Water & waste-water	Heat & hot water	Electricity	Rent	MSW	Total
below 1500	0,6%	8,0%	9,6%	3,4%	11,0%	1,3%	33,3%
1500.1 - 2000.0	2,0%	5,0%	6,1%	2,2%	7,0%	0,8%	21,0%
2000.1 - 2500.0	2,5%	4,7%	5,6%	2,0%	6,4%	0,8%	19,5%
2500.1 - 3000.0	0,2%	3,8%	4,5%	1,6%	5,2%	0,6%	15,7%
3000.1 - 3500.0	0,3%	2,9%	3,5%	1,2%	4,0%	0,5%	12,1%
3500.1 - 4000.0	0,3%	2,5%	3,0%	1,1%	3,5%	0,4%	10,6%
4000.1 - 4500.0	0,4%	2,2%	2,7%	0,9%	3,0%	0,4%	9,2%
4500.1 - 5000.0	0,6%	2,0%	2,3%	0,8%	2,7%	0,3%	8,2%
5000.1 - 5500.0	1,6%	1,8%	2,1%	0,8%	2,4%	0,3%	7,3%

Source: Calculations by the author, based on data provided by Surgut City Administration

Note: MSW stands for Municipal Solid Waste

While current water bill appeared affordable for the 1<sup>st</sup> decile as a whole, it was actually unaffordable for more than 5% of low-income population. Also, HMS as a whole were not affordable for the same 5% of population when assessed according to federal standard of 20% affordability level.

Affordability of water prices assessed for Kaliningrad in 1999-2000 revealed that water bill was not affordable for some 5% of population (the same figure as in Surgut), while average monthly income per person in the Kaliningrad comprised only 25% of that in Surgut City. Thus, the share of population for whom the current water bill is not affordable does not necessarily depend so much on average household income in the city as soon as the mean value is above the minimal living standard.

HMS affordability problem appears *inter alia* due to the huge gap between low-level incomes (e.g. pensions) and average salaries and wages, i.e. huge disparity in income distribution and stratification of the population. Therefore, affordability analysis and social protection measures should be site specific and should pay special attention to the low end of income distribution.

#### 4.3 Measures to increase acceptability of prices increases

Providing income support to the population at the lower end of income distribution (e.g. pensioners, invalids, etc.) is the primary measure to increase affordability for HMS, including water services (social protection measures are discussed in the paper by A. Kucherenko). Apart from this direct economic solution, there are many additional approaches to increase public acceptability of price increases.

Often there are complaints that water bill is too heavy for the households' budgets, while very few people know how much they pay for water. At the same time recent studies (EBRD, 2002; TACIS&WB, 2002) revealed that population would agree to pay at least 30% more for improved water supply and sanitation service. But they would prefer gradual increase in tariffs to follow visible gradually improved service level.

<sup>5</sup> To calculate this as share of disposable income one needs to discount the gross income distribution given in Figure 0.1 by flat 13% personal income tax rate effective since 1 January, 2001, taking into account that pensions are free from the tax (this means that only small fraction of incomes below RUR 2,000 per month should be discounted).



Thus educational and public awareness raising campaigns about real costs of water together with improved services come to be a very effective way to increase affordability and acceptability of price increase.

To address hidden incomes problem and use higher willingness to pay of some consumers, the Moscow Government is currently testing a “self-selection” approach to HMS bills. Under this pilot test, every household receives two bills: one with standard 10% subsidised prices for communal services; another with full prices. As for many people the difference is negligible, they voluntarily pay the full price bill.

## **5. Conclusions and recommendations**

1. Public authority should aim at finding a better balance of interests of public budget, industries and households. The poor financial health of water utilities, heavy burden of operating subsidies to water companies levied on public budget and burden of cross-subsidies levied on industries urge the need for tariff reforms aiming to ensure financial stability of water utilities and cost-recovery, as well as to improve cost competitiveness of domestic industries.
2. The above requires significant water price increase for the households and (to less extent) for other consumers. But widespread poverty in NIS urges for detailed micro affordability analysis. HMS affordability problem has become much more severe due to the huge gap between low-level incomes (e.g. pensions) and average salaries and wages. The most effective solution is to provide income support (e.g. higher salaries and pensions) and timely billing.
3. It is very difficult to justify necessity for tariff increases without an improvement of quality of services. This is particularly relevant in the NIS where service level has been significantly deteriorating since 1990.
4. Assessment of the affordability of water supply and sanitation services for population at large is not sufficient for policy decisions - the affordability analysis should be site specific and should pay special attention to the low end of income distribution.
5. Affordability analysis should be carried out for HMS as a whole, but analysis for specific service is also possible and useful. For water supply and sanitation services the “rule of thumb” could be applied: expenditures on water and wastewater may not exceed 3-4% of household total disposable income.
6. But in countries/regions where 25-30% (or more) of population have monthly per capita income below the MLS establishing the limit for expenditure on HMS as well as on water service as a share of “residual income” (equal to total income less price of minimal food basket) might be a better option than establishing it as a share of gross or disposable income. Such a limit might be region or site specific taking into account huge regional disparity in household incomes.
7. Water companies can improve their financial situation by developing their relations with consumers, and addressing the problem of low willingness to pay. Consumers would agree to pay more for improved water supply and sanitation service, but they would prefer gradual increase in tariffs to follow visible gradual improvements in the service level.

8. To address hidden incomes problem and use higher WTP of some consumers the “self-selection” approach (pilot tested in Moscow) could also be applied.

## Annex 1. Macroeconomic and household incomes statistics for selected NIS

**Table 1.** Resident population in selected NIS (*as of the beginning of the year, mln persons*)

	1991	1996	2000	2001
Armenia	3.6	3.8	3.8	3.8
Belarus	10.2	10.2	10.0	10.0
Georgia	5.4	5.4	5.1	4.9
Kazakhstan	16.4	15.7	14.9	14.8
Moldova	4.4	4.3	3.6	3.6
Russia	148.2	147.6	145.6	144.8
Ukraine	51.7	51.1	49.5	49.0

**Table 2.** GDP in selected NIS (*at constant prices as percentage of 1991*)

	1996	2000
Armenia	63.3	76.9
Belarus	67.9	89.7
Georgia	39.8	47.5
Kazakhstan	69.3	77.9
Moldova	45	42
Russia	63.1	69.1
Ukraine	47.1	47.3
CIS average	61.1	67.2

**Table 3.** Real average monthly wages and salaries in selected NIS (*percentage of 1991*)

	1996	2000
Armenia	21	54
Belarus	57	92
Georgia	-	-
Kazakhstan	27	36
Moldova	29	29
Russia	51	43
Ukraine	35	34

**Table 4.** Exchange rates in 2000: units of national currency (NC) per 1 US dollar

	End of year	Yearly average
Armenian dram	552.18	539.52
Belorussian rouble	1180	800
Georgian lari	1.97	1.98
Kazakh tenge	144.50	142.13
Moldovanian lei	12.38	12.43
Russian rouble	28.16	28.12
Ukrainian grivna	5.434	5.44

The source of all the tables and data in the Annex is “*CIS statistical yearbook, 2001*”, CIS Inter-State Statistical Committee, Moscow, 2002

## **Annex 2. Literature**

1. National and regional environmental financing strategies for urban water supply and sanitation sector for Georgia, Kazakhstan, Moldova (OECD&DEPA, 2001)
2. Regional environmental financing strategies for Kaliningrad, Novgorod and Pskov regions of Russia (OECD&DEPA, 2001)
3. Acceptability of water prices in CEE/CIS countries (EBRD,COWI/Dancee, 2000)
4. CIS statistical year book (2001)
5. Ukrainian statistical year books (2001)
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7. The price of water, Trends in OECD countries, OECD, 2002
8. Household water prices in the OECD countries, OECD, 2002
9. Subsidies in Chilean Public Utilities, World Bank,
10. Right to water, Henri Smets, OECD, 2002
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