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THE EU WATER INITIATIVE'S EECCA WORKING GROUP

**EXECUTIVE SUMMARY
IMPLEMENTING A NATIONAL FINANCE STRATEGY
FOR WATER SUPPLY AND SANITATION IN ARMENIA**

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EXECUTIVE SUMMARY

IMPLEMENTING A NATIONAL FINANCE STRATEGY FOR WATER SUPPLY AND SANITATION IN ARMENIA

In 2003-04, the State Committee for Water Economy (SCWE)¹ and the Ministry of Finance and Economy (MoFE), in co-operation with the EAP Task Force, designed a Finance strategy (FS) for urban water supply and sanitation (WSS) in Armenia. The strategy (hereafter FS-2004) has contributed to the establishment of realistic priorities, promoted sound financial planning in WSS, provided an input to the budgetary process and helped reform water tariff policy. Key objectives of the present project were to update the Finance strategy and help SCWE implement it by:

- Linking the strategy to the budgetary decision making process;
- Increasing the reliability of investment needs assessment, using robust methods to assess, manage and forecast demand for water supply and sanitation services;
- Ensuring that tariff policies were sustainable from an economic and social point of view.

Rationale for updating the Finance Strategy

Several factors called for the revision of the initial strategy: new opportunities generated by the rapid economic growth and the concomitant rise of financial resources in the Republic of Armenia (RA); and developments within the water sector, including higher-than-expected operation and maintenance costs, and tariff collection rates that failed to reach expectations.

The institutional context had also changed. In particular, Armenia has engaged in a revision of its budgetary decision making process, and of the relationship between line ministries and the Ministry of Finance and Economy. The pilot implementation of a Medium-Term Expenditure Framework has provided an incentive to improve medium-term planning in government agencies. Revision of the Finance Strategy was an opportunity to contribute to the new public expenditure planning process by providing the SCWE with reliable information and consistent financial simulations on which it could base its dialogue with the MoFE.

The Finance Strategy has been designed and updated using the FEASIBLE tool initially developed by the OECD/EAP Task Force secretariat in co-operation with Denmark.

Feasibility of Development Scenario

WSS infrastructure in Armenia is often oversized, deteriorating and inefficient, while most of wastewater treatment plants are not operational. Based on a dialogue with the main stakeholders, a development scenario was defined for water supply and sanitation in Armenia to 2015.

¹ In various documents in English the committee is also named as State Committee of Water System (SCWS)

Specific development targets for water supply and sanitation were established, consistent with the internationally-agreed Millennium Development Goals on water supply and sanitation and with the Poverty Reduction Strategy Paper (PRSP) approved by the Armenian government in 2003: rehabilitating the water supply system of Yerevan; avoiding the decay of infrastructure in all other cities; gradually recovering water supply to 15-24 hours per day; extending sewerage services to city dwellers and ensuring effective mechanical treatment of wastewater.

The analysis conducted for the project suggests that this Development Scenario would be feasible only if:

- Over the 2006-2016 period, the public budget allocated a total of 170.8 billion dram (or 15.5 billion dram - 31 million euro - per annum, on average) for WSS infrastructure rehabilitation and development;
- Households allocate 2.5% of their average income to WSS services;
- The collection rate for water bills increases from 60% in 2006 to 95% by 2010; this would require, *inter alia*, a wide public-information campaign to enhance consumers' willingness to pay;
- Water losses per kilometer of network are reduced by 50% (and come close to the Russian benchmark, though still well above West European level);
- Infrastructure is rehabilitated and rationalized by adjusting its capacity to present and future demand, with a view to optimizing capital and operational expenditure.

These assumptions are mutually supportive: e.g. a lower collection rate would require either additional claims on the public budget, or a higher share of household income to be allocated to water.

Under these assumptions, from 2010 onwards, budget subsidies will not be needed to cover operational deficits of water utilities. After 2011, user charges will fully cover operational costs and partially cover capital costs for repairs, re-investment (amortization) and renovation (up-grade). However, until 2015, investments in WSS infrastructure are expected to be financed mostly from the public budget and by debt.

Measures to facilitate the implementation of the strategy

A policy package has been designed to facilitate the implementation of the development scenario and the development of sustainable policies and programmes for WSS in Armenia.

Adapt the performance of the SCWE

The successful implementation of the Finance Strategy requires stable support from the central budget. The SCWE would need to secure a sufficient and stable amount of budgetary resources via the Medium Term Expenditure Framework. To do so, the SCWE will have to demonstrate that its proposals meet the criteria defined in the Medium Term Expenditure Framework procedure; in particular that WSS projects contribute to achieving the objectives of the Poverty Reduction Strategy of Armenia.

This requires the SCWE to monitor progress towards water-related MDGs and to demonstrate that projects selected for public funding contribute to closing the gap; it should assess (*ex ante* and *ex*

post) the outcomes of investment projects, using the indicators defined in the PRSP to monitor the proportion of the population having access to safe water and basic sanitation. In addition, the SCWE should demonstrate that investment in water supply and sanitation contributes to poverty reduction, by assessing the social and economic benefits from improved public health accrued from safe water and basic sanitation in the Armenian context. Demonstrating that WSS projects contribute to the PRSP would also help to mobilize donor and IFI support.

To ensure effective implementation of the Finance Strategy, the SCWE should:

- Strengthen its capacity to plan, and to implement plans. The SCWE should develop a comprehensive program for WSS in Armenia which would integrate overall sector development targets and the Finance Strategy with all individual investment projects and pipelines, rather than plan piecemeal improvement of individual facilities and WSS networks in selected cities and regions of the country.
- Implementation of the comprehensive program for WSS and the Finance Strategy should be linked to improved administrative procedures. SCWE should coordinate closely the actions of all stakeholders, including utilities and IFIs to make sure they contribute to the priorities set by the Armenian government for the water sector. In addition, procedures to develop and to select priority investment projects should be improved, enhancing the consistency of decisions and the sequencing of project implementation. This would also strengthen the Committee's control over the projects financed by the international community;
- Create incentives, at all levels, for stakeholders to perform and to contribute to the overall objectives. At the central level, performance-based budgeting can contribute to this. At utility level, performance-based contracting can provide such an incentive; current experience of the SCWE in this domain has been reviewed, and recommendations developed;
- Report on achievements and progress against agreed targets and objectives, to secure additional political and financial support. A system is needed to monitor and evaluate the condition of WSS, the outputs of modernization and development projects, and the achievements of WSS enterprises. This would rely on a strengthened information basis for administrative decisions in WSS.

Such an ambitious package can only be implemented if the State Committee for Water Economy, as the single agency working in the sector, is considerably strengthened: responsibilities of the Committee, its departments and staff should be clarified and/or revised, capacity to initiate project proposals, or to monitor project implementation should be strengthened.

Better assess investment needs

The Finance Strategy suggests that investment needs could be cut, if demand for water was better managed and the share of unaccounted-for-water was under control. In turn, this would save capital costs and optimise the use of financial resources for operation and maintenance.

Appropriate methods and tools for achieving these goals include water mass balances and water audits, the reduction of leakages and uneconomic uses of water, and improving metering and accounting. They have been tailored to the Armenian context and applied in two pilot cities: Echmiadzin and Hrazdan, with the support of the utility servicing these settlements.

Capacities required for wastewater collection and treatment in these two cities were measured, and priority projects for investment were identified and described in the Project concept review memorandum format used by EBRD.

Application of the proposed water demand management tools can reduce the volume of water abstracted from the aquifer. It can also help to cut down the volume of wastewater submitted for treatment to the wastewater treatment plant. With time, improvement of water consumption metering and accounting should ensure availability of reliable data inputs to assess the required capacity of wastewater treatment facilities when planning capital improvements.

These data are also a prerequisite for reliable financial planning (at national and local levels) and for tariff calculations.

Adapt tariff policies and social safety net to ability-to-pay and willingness-to-pay

The Finance Strategy has indicated that the Development Scenario could be implemented if households allocate no less than 2.5% of their average income to WSS services. This requires a sound tariff policy that generates sufficient and stable revenues, and takes account of the ability-to-pay of user groups.

Analysis based on available statistics and additional data collected in two pilot cities has indicated that:

- If water consumption is metered, then the tariff increases anticipated by utilities are affordable by more than 90% of the population in the pilot cities; this essentially results from the sharp decrease in households' global expenditure for WSS services after installing meters, and rapid growth of household disposable income, fuelled by rapid economic growth and poverty reduction measures;
- The current social safety net which provides income support to most poor households is adequate to mitigate the adverse consequences of tariff increases for the poor. Such households would benefit from installation of water meters in their dwellings, as this would help them to manage their water bills. Therefore, it would be expedient to mobilise additional financial resources from the public budget and donors for installation of water meters in all poor households.

In the medium term, some measures should be taken to adapt the institutional system which implements and monitors the water tariff policy in Armenia. First, tariff revisions should be linked to service improvement; this is a prerequisite to enhance households' willingness-to-pay. Second, the data basis for the calculation of tariffs should be improved; in particular, the quality of water meters and customers data-base should be enhanced, so that they produce reliable information on water consumption. Third, systematic ability-to-pay assessments should be included into the tariff revision procedure; this would allow the social safety net to be adapted to changing circumstances.

Further steps

The project has indicated that a Finance Strategy can support a policy dialogue on urban water supply and sanitation policy among key stakeholders. This approach will be extended to rural areas, which is envisaged in a companion project, implemented in the framework of the EU Water Initiative.

The project has also indicated that the implementation of the Finance strategy heavily relies on planning capacity at local and national levels:

- The project has illustrated how water audits and water mass balances can contribute to producing reliable data on water demand and on capacity of infrastructure required to meet the demand, thus providing a remedy to the chronic oversizing of WSS infrastructure in the country;
- The project has confirmed that reliable data on revenue streams is a prerequisite for a sound and sustainable tariff policy. An additional module of this project, which is reported separately, has contributed to strengthening the financial planning capacity at the utility level, using the Financial Planning Tool for Water Utilities (FPTWU), developed by the EAP Task Force and tailored to the Armenian context;
- Securing sufficient and stable revenue streams from consumers, the central budget and the donor community is a pre-requisite for effective financial planning and implementation. In the medium term, this capacity will be a requisite to attract private investors.

The lessons learnt from this project, on policy and method, are relevant to most EECCA countries which also have oversized and deteriorating infrastructure, unsustainable tariff policies, and poor planning capacity.

EXECUTIVE SUMMARY (TASK 1) INTEGRATING THE FINANCE STRATEGY INTO THE BUDGETARY PROCESS

Background: water supply and sanitation in Armenia

In the first ten years following Armenia's independence, the quality of water supply and sewerage (WSS) services declined sharply. This was caused by massive cuts in financing for WSS which resulted from the general economic decline and the reduction of real household income and public revenues. As a result, by 2004:

- 50% of water supply networks and 45% of sewerage networks needed immediate replacement (in Yerevan, 87% and 46% needed replacement, respectively);
- The share of leaks and unaccounted-for water exceeded 75% of the total volume of water pumped into the networks. For each 1 kilometer of network, 91 cubic meters of water leaked per day (in Russia, that figure is 48 cubic meters/day; in the United States, it is less than 13);
- In 5 of Armenia's 11 regions, wastewater was discharged directly into the environment without any treatment whatsoever. In 3 other regions, less than half of wastewater received treatment; wastewater treatment plants in Armenia did not ensure effective treatment and purification of wastewater, if any.

The low ability-to-pay of consumers combined with the low quality of services had resulted in a low collection rate of payments.

The Government of Armenia is committed to reverse this cycle and the Poverty Reduction Strategy Paper, developed and approved in 2003, sets as a priority the rehabilitation of water supply systems and gradual restoration of round-the-clock residential water supply. However, the PRSP does not specify sources of finance for such improvements. Regarding sanitation the PRSP does not set any specific tasks and targets.

An important opportunity to address these problems was created by a significant increase of finance for water supply and sanitation, fueled by the rapid economic growth and the active policy to attract international loans, including loans directed at rehabilitation and modernization of WSS systems.

A Finance Strategy was developed to substantiate a national policy dialogue on water supply and sanitation in Armenia, and to support the establishment of realistic objectives for the development of the sector, and the design of a coherent policy package to support their attainment.

Key outcomes of the Finance Strategy for WSS in Armenia

Following the methodology for Finance strategies, two scenarios were prepared for water supply and sanitation in Armenia to 2015. The scenarios were based on a dialogue with the main

stakeholders. They set targets which contribute to the Millennium Development Goals on water supply and sanitation, and they were consistent with the 2003 Poverty Reduction Strategy Paper (although the PRSP sets no particular target on sanitation).

The baseline scenario

The Baseline Scenario aims at rehabilitating water supply in Yerevan and maintaining the infrastructure condition and service volume and quality of the base year in all other cities (stopping deterioration).

The costs associated with this scenario are 30.3 billion dram (€60.6 million) per year, or 423.8 billion dram (€847.6 million) for the period 2002-2015. The available finance resources (revenues from user charges, loans and public spending) amount to 278.1 billion dram (€538.2 million) over the period 2002-15. The cumulative financing gap by 2015 exceeds 154.7 billion dram (€309.4 million). The figures cover 19 cities under review, representing 53% of total population in Armenia.

According to calculations, the annual financing gap can be closed by 2009 and the cumulative gap by 2016, if a package of policy measures for optimizing WSS revenues and expenditures is implemented:

1. Over 2004-2007 gradually increase payments for WSS services (tariffs and collection rates) by residential consumers, so that their expenses for WSS services reach 2.0% of average per capita income, and stabilizes at that level in 2007-2015;
2. Increase the collection rate for water bills from 60% in 2006 to 90% by 2008²;
3. Allocate 1.5% of total budgetary resources to water supply and sanitation, for the period 2002-15;
4. Save 32.7 billion dram (68 million euro) on electricity over the period by reducing specific power consumption per m³ of water sold. This can be achieved by cutting leakages and optimizing pressures in the systems. For instance, if the water naturally pouring from the mountains to Yerevan was properly channeled, there would be no need to abstract and pump water from Ararat valley.

These conditions are mutually supportive: e.g. a lower collection rate would require either additional claims on the public budget, or a higher share of household income to be allocated to water.

The development scenario

The Development Scenario is the baseline *plus* coverage of city dwellers by sewerage service and effective mechanical wastewater treatment of wastewater in all cities and towns included in the Finance Strategy.

The costs associated with this scenario are 38.76 billion dram (€77.5 million) per year, or 542.7 billion dram (€1085.4 million) for the period 2002-15; 70% of that amount is for sanitation; investments for construction and rehabilitation of WSS facilities represent more than 20% of the total. The cumulative financing gap by 2015 will exceed 273 billion dram (€546 million).

² Nor Akunk water company operating in Armavir marz (region) has already achieved 86% collection rate.

According to simulations, an additional policy package could close the annual financing gap by 2010 and the cumulative gap by 2016:

- Households allocate 2.5% of their average income to WSS services; thus tariffs will remain affordable for most households, while the collection rate for water bills reaches 95% by 2010; this probably requires, *inter alia*, a public-information campaign to enhance consumers' willingness to pay;
- The public budget allocates to WSS infrastructure rehabilitation and development 1.5-2% of total resources over the 2006-2008 period, and 1% of total resources over 2009-2015;
- Energy consumption of WSS utilities is cut by 40%; leaks and unaccounted-for water are drastically cut down (by 50-60%);
- Infrastructure is rehabilitated and rationalized by adjusting its capacity to present and future demand, with a view to optimizing capital and operational expenditure.

As for the Baseline scenario, these assumptions are mutually supportive: for instance, if the collection rate stabilises at the current level (60% in 2006), then households who pay for water would have to allocate 4.4% of their income to foot water bills, or a higher share of the public budget should be allocated for water.

Under these assumptions, from 2010 on, operation and maintenance of water utilities will not need to be subsidized anymore. However, WSS infrastructure renovation and development works will have to be financed from the public budget and debt.

Key recommendations for implementation of the Finance Strategy

The SCWE would need to secure a sufficient and stable amount of budgetary resources via the Medium Term Expenditure Framework.

To do so, it has to improve its capacity to meet the criteria defined in this procedure. In particular, it has to demonstrate that public resources invested in water supply and sanitation will contribute to the Poverty Reduction Strategy of Armenia. Similarly, SCWE's submissions to IFIs should convincingly demonstrate the contribution of particular projects to the PRSP.

Now, in Armenia, the PRSP does not identify target indicators for wastewater collection and treatment. So, the SCWE would benefit from reference to the Millennium Declaration signed by Armenia in 2000 and the international obligations taken by Armenia regarding sanitation. It is expected that revised PRSP would establish that sanitation contributes to poverty reduction, by improving public health and creating favourable conditions for developing small businesses, including farming, tourism and recreation business, in particular in rural and/or recreational areas.

To ensure effective implementation of the Finance Strategy, the SCWE should:

- Strengthen its capacity to plan, and to implement plans. The SCWE should develop a comprehensive program for WSS in Armenia which would integrate overall sector development targets and related Finance Strategy with all individual investment projects and pipelines, rather than plan piecemeal improvement of individual facilities and WSS networks in selected cities and regions of the country;

- Improve administrative procedures. SCWE should coordinate closely the actions of all stakeholders, including utilities and IFIs to make sure they contribute to the priorities set by the Armenian government for the water sector. In addition, procedures to develop and to select priority investment projects should be improved, enhancing the consistency of decisions and the sequencing of project implementation. This would also strengthen the Committee's control over the projects financed by the international community;
- Create incentives, at all levels, for stakeholders to perform and to contribute to the overall objectives. At the central level, performance-based budgeting can contribute to this. At utility level, performance-based contracting can provide such an incentive; current experience of the SCWE in this domain has been reviewed, and recommendations developed;
- Report on achievements and progress against agreed targets and objectives, to secure additional political and financial support. A system is needed to monitor and evaluate the condition of WSS, the outputs of modernization and development projects, and the achievements of WSS enterprises. This would rely on a strengthened information basis for administrative decisions in WSS.

Such an ambitious package can only be implemented if the State Committee for Water Economy, as the single agency working in the sector, is considerably strengthened: responsibilities should be clarified and/or revised, capacity to initiate project proposals, or to monitor project implementation should be strengthened. This may require additional staff. SCWE staff would benefit from the transfer of additional know-how and expertise, typically in project management and monitoring.

The report provides recommendations to move further on these issues.

EXECUTIVE SUMMARY (TASK 2)
ASSISTING SCWE AND WATER UTILITIES
TO MAKE THE BEST USE OF AVAILABLE RESOURCES

Rationale for the project

This Task 2 contributes to filling up the gap between the Finance Strategy (see Task 1) and project preparation. It illustrates how concrete and practical methods and tools to manage water demand, including water mass balance and water audit, can help to better assess investment needs, thus saving capital costs and optimising the use of resources for maintenance and operation. It concentrates on wastewater collection and treatment.

The method and tools have been applied in two pilot cities, Echmiadzin and Hrazdan, with the support of the utility servicing these settlements. They have been used in the two cities to assess the capacities required for wastewater collection and treatment, and to identify priority projects for investment. To attract donors' and financiers' attention, the project concepts have been developed according to the Project Concept Review Memorandum format (EBRD's template).

The pilot projects have indicated that these methods and tools can help (a) identify options for immediate operational savings (reducing unaccounted-for-water and saving energy), and (b) substantially reduce demand for capacity of the WSS infrastructure and thus reduce investment needs for construction and/or rehabilitation. Conditions were identified which are required for the successful implementation of such methods and tools in Armenia.

Drawing up water mass balances in two pilot cities

The works performed in the two pilot cities confirmed that one of the main problems of the water supply and wastewater collection sector of the Republic of Armenia is very large physical and commercial water losses: the volume of water pumped in the centralized water supply system is three to four times larger than the volume of water sold.

The deterioration of the infrastructure accounts for leakages. Several causes contribute to the considerable amount of commercial losses:

- when meters *are* installed, measurements are not reliable (because meters are of poor quality, are not maintained properly, and are used longer than they should);
- when meters *are not* installed, water consumption is higher than the established norms. This is so because households stock water to prevent shortages, or let it flow;
- collection rates of water bills are low, because the willingness-to-pay is low (in part due to the poor quality of the service) and because enforcement is lax;

This situation makes the assessment of capacity needs for wastewater collection and treatment difficult. This is particularly harmful when new facilities have to be constructed, to replace worn out ones.

The main question regards the capacity of facilities which have to be built or rehabilitated. To define the appropriate size is a precondition to make the best use of the available finance and to set up a sustainable technical and financial framework to operate and maintain these equipments.

The project has demonstrated how water mass balances could be drawn based on special measurement techniques and equipment, to forecast water consumption and to assess the capacity needed to collect and treat wastewater. Data have been collected in the field, and have informed water mass balances, to assess the capacity of each facility. Calculations indicate that the required capacity would be 10,000 m³/day in Echmiadzin, and 20,000 m³/day for the regional “Kakhsi” WWTP.

After a quick assessment of the technical status of existing facilities, capital repair/rehabilitation and construction of new facilities have been planned and presented in the Project Concept Review Memorandum format, to restore a minimal sanitation service, including collection of wastewater and mechanical treatment (see Table 1).

Table 1. Priority investment for sanitation, in the two pilot cities

Echmiadzin	Hrazdan (district system)
Rehabilitation and maintenance of sewers and street networks	Rehabilitation and maintenance of sewers and street networks
Rehabilitation of existing WWTP to ensure effective mechanical treatment of wastewater, or construction of a new mechanical WWTP	Construction of a new mechanical wastewater treatment plant at the Kakhsi village to replace the existing non-operational WWTP
Replacement of the faultiest (most leaking) sections of sewer network – 5% of total length	Replacement of the faultiest (most leaking) sections of the main sewer – 10% of its total length

Total costs of each project (notwithstanding the costs of technical support, preparation of tender documents, etc.) amount to \$4.7 million in Echmiadzin for the rehabilitation of the existing WWTP (or \$6.2 million for the construction of a new mechanical wastewater treatment plant), and \$10.4 million in Hrazdan.

Towards demand management

Implementation of the projects will increase the ArmVodokanal’s operational expenses and hence will affect tariffs. Demand management tools can help to mitigate the adverse effects of these consequences on customers’ ability and willingness to pay. This involves:

- Pressure optimisation in the water supply system by means of hydraulics optimisation; this contributes to a better status of the infrastructure, reduces breakdowns, improves water quality and deters households from stocking water in their bathtubs;
- Preventive repair of sanitary fixtures in apartment houses; this cuts leakages;
- Billing according to actual water consumption measured on the basis of *reliable* metering (e.g. block metering) and improvement of the water consumption accounting;
- Public awareness campaign, on the costs associated with misuses of water.

Implementation of these water demand management measures is expected to reduce physical and commercial losses and thus the volume of water abstracted from the aquifer. It is also expected to cut down the volume of wastewater disposed to the wastewater treatment plant, which then has to be treated.

With time, improvement of water consumption metering and accounting can facilitate the availability of reliable data for objective design of the required capacity of the wastewater treatment facilities. These data are a requisite to more reliable financial planning.

Lessons learnt in the course of this project are valuable for all Armenia and most EECCA countries, which are confronted to similar issues pertaining to oversized and deteriorating infrastructure, high proportion of the unaccounted for water and unaffordable investment needs.

EXECUTIVE SUMMARY (TASK 3)

IMPROVING THE TARIFF POLICY IN THE URBAN WATER SECTOR OF ARMENIA

Scope of the project

This Task 3 addresses three intertwined issues which are topical for the implementation of a Finance Strategy for water supply and sanitation in Armenia: i) the affordability of the tariffs envisioned in the scenarios; ii) the reform of the tariff revision procedure, to take account of ability-to-pay and willingness-to-pay assessment, so that revised tariffs will be affordable in the future; iii) the improvement of the existing social safety net to ensure that it will mitigate the consequences of tariff increase for the poor.

A detailed field study was undertaken in two pilot cities, Echmiadzin and Hrazdan, to supplement existing statistics and provide detailed and reliable information on affordability and the needs for social assistance. The results supported a dialogue among key stakeholders in Armenia on affordable tariffs, and on the appropriate modes of social assistance to the poor.

Affordability of urban water services for households

Affordability of water supply and sanitation services in the two pilot cities was assessed using two approaches:

1. households were grouped in accordance with the share of water service charges in their consumer expenses; and
2. the water charges were analysed by household quintile income groups. The affordability threshold was set at 4% of the household consumer expenses.

This method was used to assess the affordability of the 2005 tariffs and of new tariffs considered for 2007-08.

In 2005, 12% and 20% of households in Echmiadzin and in Hrazdan, respectively, had difficulties paying for WSS services. Families with the lowest incomes (20% of the total number of surveyed households) allocated 3.5% and 6.7% of their consumer expenses to water in Echmiadzin and in Hrazdan, respectively.

Affordability was higher in Echmiadzin than in Hrazdan, despite lower household income in the former city, partly because 91.8% of households were metered (versus 55.4% in Hrazdan). Metering helps to reduce consumption and control expenses on water. It was also found (see Task 2) that due to their poor quality, meters do not measure the entire volume of water consumed.

The new tariff scenario envisages that tariffs will increase by 30% in 2007 (as proposed by ArmVodokanal in July 2006), and by 15% in 2008, to cover operation and maintenance costs. Calculations were based on the following hypotheses: real incomes of the population will increase by 6% annually; 100% of consumers will be metered; billed water consumption in 2007 and 2008 will

increase up to 80-90 litres/person/day in Echmiadzin and 60-80 litres/person/day in Hrazdan, compared to 62 and 34 litres/person/day in 2005, respectively.

Based on these assumptions, 8% of households in Echmiadzin and 14% in Hrazdan will need social support in 2007 to foot the water bill. In 2008, this share will be 14.5% and 5.3% respectively. In Hrazdan, the installation of meters could compensate for the rise in actual consumption; this is not the case in Echmiadzin, hence the expected need for further income support in this city.

This indicates that metering, in conjunction with a robust increase in households' disposable income, contributes to the "user pays" principle, according to which revenues from user charges cover the costs of the service. This also indicates that affordability is an issue in Armenian cities and that the existing social safety net (including the Poverty Family Benefit Program) has to be further improved and better targeted to the right user groups.

In Armenia, the Water Code requires that the consumers' ability-to-pay be monitored. However, no institution carries out such assessments. In particular, the tariff revision procedure does not include affordability assessments. Institutions involved in the policy dialogue facilitated by the project have agreed that affordability assessments were appropriate and have discussed who should undertake them in the future on regular and/or on *ad hoc* basis. Stakeholders have generally agreed that such an *ad hoc* assessment should be undertaken if and when water utilities request for substantial tariff increases, or major investments are envisaged. Rules should be set establishing who is responsible for the ability-to-pay assessment (water utilities and sponsors of investment projects, and/or the State Committee of Water System and National Statistical Agency) and how such studies would be funded.

Social Protection of Consumers for WSS Services in Armenia

The analyses above indicate that the first step to protect poor water users is to install water meters, as this enables consumers to control their expenditures. Now, additional social protection is needed.

In Armenia, three different ways can be considered to channel social support to urban water users: assistance for service payment within the framework of the Poverty Family Benefit Program; social tariffs; or a special program of assistance for service payment.

Analyses suggest that, on the one hand, increasing block tariff for water supply and sanitation is not efficient, as that assistance is not targeted to the poor. On the other hand, a special program for water supply and sanitation would be too costly to run, for a relatively small benefit.

The conclusion was that the existing Family Benefit Program is an adequate mechanism to provide protection for vulnerable social categories in the course of reform implementation. It has a flexible system of family needs' assessment; and it is supported by reliable and comprehensive databases. And there is some room for further improvement of the program towards better targeting to the poor.

However, in the long run, once the immediate goals of poverty reduction in Armenia are achieved, the country will need to develop a comprehensive program for communal services allowance, dealing with all utilities (including electricity, gas, central heating, water supply and sanitation) and housing maintenance.

Recommendations on Tariff and Social Protection Policies

The tariff regulation system in Armenia has a number of strengths:

- Existence of a single, public regulator – the Public Services Regulatory Commission;
- Adoption in 2004-2005 of the legislative framework necessary for the regulation of water tariffs (in particular, tariff calculation methods and tariff revision procedure);
- Uniform tariffs for all consumer groups served by the same water company (no cross-subsidisation of households by other consumer groups);
- Flexibility of pricing methodology, with a possibility for the utility to propose new pricing methods and new tariff structures;
- Absence of water consumption norms for households. Since July 1, 2005, the volumes of water and sewerage used for tariff calculation are based mainly on actual consumption measured by water meters.

On the other hand analyses have revealed that the uniform tariff effectively results in some “hidden”, non-transparent and not always fair cross-subsidisation between households living in different geographic areas.

The following reforms could further improve the tariff policy, taking account of consumers’ ability and willingness to pay for water services:

1. Reform the procedure to revise tariffs, to include ability and willingness-to-pay assessments;
2. Establish in the tariff calculation methodology that asset depreciation and return on investment will be gradually included in the tariffs;
3. Set tariffs which drive water companies to improve their efficiency; the current “*cost plus*” pricing method fails to do so;
4. Improve mechanisms to ensure fair compensation to water companies of economically justified costs associated with providing water/wastewater services to different consumer groups; the present mechanism of state subsidies to water companies does not meet this requirement, as the subsidies benefit all consumer groups, and are not properly targeted;
5. Equip all low-income consumers with individual water meters - it would be expedient to mobilise additional financial resources from the public budget and donors for installation of water meters in all poor households;
6. Improve water metering and customer data-base to support financial planning by water companies; deficient metering of water consumption hampers the accuracy of water sales forecast and of billing of metered consumers.