FINANCING WATER SUPPLY AND SANITATION IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

PROCEEDINGS FROM A CONFERENCE OF EECCA MINISTERS OF ECONOMY/FINANCE AND ENVIRONMENT AND THEIR PARTNERS

17-18 NOVEMBER 2005, YEREVAN, ARMENIA

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FOREWORD

Water is essential for life and economic activity. Yet in large parts of the world, many people and enterprises do not have access to safe drinking water or sanitation services.

In the countries of Eastern Europe, Caucasus and Central Asia (EECCA countries), problems of access to water services are rooted in the history of that region. Ambitious investment programmes led to the development of extensive networks of water infrastructure in urban and rural areas. However, these networks were often poorly designed and constructed, and they have not been adequately maintained. As a result, water supply and sanitation infrastructure has seriously deteriorated in most countries in the region and even collapsed in some places, with potentially calamitous consequences for human health, economic activity and the environment.

At a conference in Almaty, Kazakhstan, 16-17 October 2000, EECCA Ministers of Finance/Economy and Environment with Ministers from several OECD countries endorsed a set of Guiding Principles for Reform of the Urban Water Sector in EECCA to help reverse this preoccupying situation. Five years later, on 17th and 18th of November 2005, in Yerevan, Armenia, Ministers met again to review progress in the implementation of the Guiding Principles adopted in Almaty and to discuss further action.

This volume presents the main papers from these consultations. The meetings, and this publication, were prepared under the umbrella of the EAP Task Force, an inter-governmental body with broad stakeholder participation that promotes environmental policy reform in EECCA countries. OECD's Environment Directorate serves as the secretariat to the EAP Task Force.

The papers presented in this volume have been discussed in a preparatory process involving the EAP Task Force Group of Senior Officials for Water Supply and Sanitation Sector Reform, the EU Water Initiative EECCA Working Group and the EAP Task Force Environmental Finance Network. Peter Börkey coordinated the overall preparation of this publication, and drafted several of the papers, under the general direction of Brendan Gillespie. The contributions of Lloyd Martin, Sergei Sivaev, Valery Prokofiev, Olga Ponizova, Alexander Martoussevitch, Gwenn Le Dantec, and Xavier Leflaive are gratefully acknowledged. Helen Shields edited most of the English language texts, while Alexander Martoussevitch and Alexander Gritsinin were responsible for editing the Russian texts. Russian translations were prepared by Natalia Chumachenko, Stanislav Kuld and Alexander Reshetov.

The preparatory process and the Ministerial Conference would not have been possible without the support of the host country, Armenia. Financial support for the preparation of the meeting and this publication was provided by the European Commission, Germany, Norway and the United Kingdom.

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ABBREVIATIONS

CIS	Commonwealth of Independent States of the Former Soviet Union
DFID	Department for International Development of the British Government
DHS	Demographic and Health Survey (USAid)
EAP	Environmental Action Programme
ECA	Europe and Central Asia (Central and Eastern Europe, *i.e*. Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia FYR, Poland, Romania, Slovak Republic, Slovenia, Serbia and Montenegro + EECCA countries + Turkey)
EECCA	Eastern Europe, Caucasus, and Central Asia, *i.e*. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
FAO	Food and Agriculture Organisation
GWP	Global Water Partnership
HBS	Household Budget Survey
IDA	International Development Association
IFI	International Financing Institution
JMP	Joint Monitoring Programme
LSS	Living Standards Measurement Survey
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey (UNICEF)
OECD	Organisation for Economic Co-operation and Development
O&M	Operation and Maintenance
PRS	Poverty Reduction Strategy
RLMS	Russia Longitudinal Monitoring Survey
SLC	Survey of Living Conditions (World Bank)
SPPRED	State Programme on Poverty Reduction and Economic Development
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNICEF	United Nations Children's Fund
WB	World Bank
WEHAB	Water, Energy, Health, Agriculture, and Biodiversity
WHO	World Health Organisation
WSS	Water Supply and Sanitation
WSSCC	Water Supply & Sanitation Collaborative Council
WSSD	World Summit on Sustainable Development
WWC	World Water Council

CO-CHAIR'S SUMMARY

Financing Water Supply and Sanitation in EECCA
Conference of EECCA Ministers of Economy/Finance, Water and Environment and their Partners from the OECD
17-18th of November, 2005, Yerevan, Armenia

Mr. Andranik ANDREASYAN, Chairman, State Committee of Water System,
Ministry of Territorial Administration
Mr. Elliot MORLEY MP, Minister for Environment and Climate Change, UK

Background and objectives

At their meeting in Yerevan, EECCA Ministers of Environment, Finance, and Economy, Ministers and senior representatives from several OECD countries, as well as senior officials from International Financial Institutions, International Organisations, non-governmental organisations, and the private sector, met to discuss the situation in the EECCA water supply and sanitation sector and the measures needed to ensure sustainable financing to meet the millennium development goals on water.

The conference aimed at reviewing the progress and discussing next steps in implementing conclusions adopted at the Ministerial Consultations on Water Management and Investments in EECCA countries, held in Almaty (Kazakhstan) five years ago. In Almaty, Ministers recognised the critical condition of the urban water supply and sanitation sector in EECCA and endorsed "Guiding Principles for the Reform of the Urban Water Supply and Sanitation Sector in the NIS". The Guiding Principles identify the key elements of urban water sector reform, which include:

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

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

The main agenda items were:

- Reviewing progress in reforming the water supply and sanitation sector, including progress in achieving the water-related Millennium Development Goals
- Financing strategies and options for the water supply and sanitation sector
- Reform of the municipal water services sector.

The Conference was organised jointly by the State Committee of Water Systems of the Ministry of Territorial Administration of Armenia and the OECD/EAP Task Force.

Main conclusions

The main conclusions from the discussions at the conference are summarised in the following:

- Many EECCA countries have undertaken measures to improve the situation in the water supply and sanitation sector, most of them in line with the recommendations set out in the Almaty Guiding Principles. The Armenian experience could serve as a useful reference for many EECCA countries in this regard. In particular, central governments have improved the institutional set-up for the water sector, and developed framework legislation to better guide local level actors, mainly in setting tariffs. However, there are only a few examples where the water-related MDGs have been integrated into national development plans or, where appropriate, Poverty Reduction Strategy Papers.

- The portion of urban populations having access to centralised water services in EECCA countries remains at a high level, but the *quality* of that access has deteriorated: disruptions of water supply, pipe breaks, and unaccounted-for-water have steadily increased in recent years. Similarly, key financial indicators have not shown improvement. At the same time, new information presented at the Conference suggests that for countries like Russia data in the meeting reports reflects the situation of a few years ago and that the current situation is improving. The current indicators on the MDGs on water supply and sanitation paint on overly optimistic picture. They should be supplemented by indicators that describe the quality of access to water services to give a more complete picture. This could help to "de-block" potential IFI and donor support.

- While the overall trend is broadly the same across the EECCA region, the state of water services and their adverse impacts is quite diverse. Some positive achievements have been registered in the richer EECCA countries, and in some capital and large cities. However, the situation is much worse in small and medium sized cities, and water services in many rural areas, where 36 per cent of the population lives, have collapsed. This underlines the importance of effective programmes in these areas.

- Slow progress in reform at the municipal level is now one of the most important obstacles to improved provision of urban water supply and sanitation.

- Public participation in reforming the water supply and sanitation sector in EECCA is an important prerequisite for a more effective implementation of reforms and for securing public support. We welcome the constructive participation of NGOs and Regional Environment Centres and look forward to further cooperation. Significant additional efforts will be needed to improve and establish mechanisms that allow the public to participate in the decision-making on water supply and sanitation.

- We welcome conclusions from a private sector Roundtable and are pleased to note that the debate has moved forward since our previous gathering in Almaty, and that it is now focussing on the practical measures that help to ensure the effectiveness of private sector involvement.

- We also welcome the side-events that enabled additional exchange of experience and inputs to the Conference.

- The operational efficiency of water utilities needs to be significantly improved in order to reduce operational costs. Energy costs and unaccounted for water are 2-3 times higher than in OECD countries. However, achieving efficiencies often requires up-front finance for investments and the corporatisation of utilities.

- User charges, combined with improved billing procedures, will continue to be the major source of finance for utilities, particularly for operational and maintenance costs. We saw how increased user charges have helped to decrease the excessive demand for water which is far higher per capita than in OECD countries.

- Public budgets will be essential in most countries, particularly for capital costs and for ensuring that the poor have access to water services when tariffs increase. They should be designed to provide a predictable stream of revenues and incentives for sound financial management at the local level. Subsidies should be more linked to outputs like increased coverage with water services.

- Affordability constraints are leading some governments to confront the politically sensitive choice of either providing a smaller number of urban residents with in-house connections, or a larger number with access to communal stand-pipes.

- Finance strategies for the water sector should be developed within the framework of Integrated Water Resource Management schemes and integrated into binding budgetary procedures such as medium-term expenditure programmes.

- Official Development Assistance (ODA) and finance from International Financial Institutions will play a small role in terms of total flows, but they may nevertheless have an important demonstration and catalytic role. Further attention should be given to borrowing at the sub-sovereign level. Increased ODA would be essential if the water-related MDGs are to be achieved. There is scope for more cooperation among donors and between donors and IFIs.

- The US shared its experience in accessing local capital and financial markets to finance water infrastructure. The Kyoto mechanism might provide additional resources for the development of water supply and sanitation in EECCA. There is a need to develop finance for rural and peri-urban areas, where projects often fall below the used IFI project threshold.

- Local authorities in EECCA will need significant support to develop their capacity in managing water systems, but they will also need to develop the political willingness to undertake reforms. Local authorities need to commit, and require support in order, to:

  - set consistent, stable objectives for the water supply and sanitation sector as part of city or regional master plans and with clear links to Integrated Water Resource Management plans;

  - elaborate realistic finance strategies to achieve these objectives;

  - translate these strategies into rolling, medium-term investment programmes, rather than the annual programmes that many municipalities currently follow;

- promote public participation in the development and implementation of these activities;

- clarify responsibilities of utilities and municipalities, preferably through corporatisation of utilities and the establishment of performance based contracts between these parties;

♦ Looking forward, we encourage further exchange of experience and encourage all stakeholders to continue their efforts to improve access to water services in EECCA countries, including through the development of partnerships and working through the EAP Task Force. We suggest that the issue of water supply and sanitation feature on the agenda of the 2007 "Environment for Europe" Ministerial Conference.

CHAPTER 1 INTRODUCTION OF KEY ISSUES

People's access to water and sanitation in EECCA countries generally has not improved since the Almaty Conference in 2000[1] (OECD, 2001). At that time, water infrastructure was assessed as being in a critical condition. Since then, it has deteriorated further, aggravating health risks and economic impacts. However, there have also been more positive developments:

- Opportunities for financing the sector have improved as economic growth has rebounded and helped improve the financial situation of public budgets, enterprises and households, and
- There are now some examples of successful reforms, and tools[2] to support reform, that could be applied throughout the region.

The key challenge is to find ways to work with the improved economic conditions and to scale-up the successes.

1.1 Assessing Progress

The portion of urban populations having access to centralised water services in EECCA countries remains at a high level, but the *quality* of that access has deteriorated: disruptions of water supply, pipe breaks, and unaccounted-for-water have steadily increased in recent years. Similarly, key financial indicators have not shown improvement. On these trends it is unlikely that that the water-related Millennium Development Goals (MDGs) will be achieved by 2015[3]. However, official estimates of progress in this regard are not reliable and paint an overly-optimistic picture. Improved methodologies and better data are needed to provide a more reliable basis for tracking progress, priority-setting and elaborating MDG-focused development strategies.

The consequences of deteriorating water infrastructure on public health, the environment, and economic development in the region are serious. WHO estimates that in the UN ECE region more than 13,000 children under the age of 14 die every year from poor water conditions, probably most of them in the EECCA region. The social benefits of improved water supply and sanitation would be significant. WHO estimates that the cost-benefit ratio from investing in water infrastructure in a group of European, Caucasus, and Central Asian countries could be as high as 1:13, with one currency unit invested yielding 13 in return.

While the overall trend is broadly the same across the EECCA region, the state of water services and their adverse impacts is quite diverse. Some positive achievements have been registered in the richer EECCA countries, and in some capital and large cities. However, the situation is much worse in small and medium sized cities, and water services in many rural areas have collapsed following the dismantling of the collective farm system. Thirty-six per cent of the population in EECCA live in rural areas, underlining the importance of more effective programmes in these areas. More generally, the situation in the poorest EECCA countries is much worse than in the more affluent states, especially in terms of water quality and resulting health impacts.

A review of the major institutional and legal reforms in EECCA indicates that many countries have undertaken measures to improve the situation in the water supply and sanitation sector, most of them in

1. Amongst other things, Ministers adopted Guiding Principles for the reform of the urban water sector in the EECCA region. The Guiding Principles have provided the framework for a work programme that has been implemented by the EAP Task Force and they provide an important reference for the present Conference.

2. Some of the tools developed by the EAP Task Force in this respect are listed in Annex 1 to this document.

3. The water-related MDGs aim to reduce by half those people without access to safe drinking water and basic sanitation by 2015.

line with the recommendations set out in the Almaty Guiding Principles. In particular, central governments have improved the institutional set-up for the water sector, and developed framework legislation to better guide local level actors, mainly in setting tariffs. However, there are only a few examples where the water-related MDGs have been integrated into national development plans or, where appropriate, Poverty Reduction Strategy Papers[4]. Moreover, much more could be done to inform the public and to engage them in discussions on how to improve the delivery of water services.

Issues for discussion

What measures have been most effective in driving the reform of the urban water sector and improving the delivery of water services? What are the critical factors holding back reform? How can best practice examples be replicated and scaled-up?

What are the main challenges in the rural water sector and how can they best be addressed?

1.2 Financing Water Infrastructure

In many EECCA countries, water utility revenues only cover about 60 per cent of operational costs. As a result, utilities have had to decrease levels of service and cut back on basic maintenance, further accelerating the deterioration of infrastructure. Resources for rehabilitation or new investments are even scarcer. Thus the water sector in many EECCA countries is caught in a vicious circle of financial unsustainability and declining service provision.

It has been estimated that between USD 15-34 per capita per year of additional finance would be needed if present infrastructure were to be properly maintained and renewed. This corresponds with about EUR 7 billion per year that would be needed to achieve the water-related MDGs, roughly double the current level of finance.

There are no simple solutions for meeting the finance challenge. EECCA countries will have to combine all sources of finance to enhance synergies, avoid crowding out other sources, and maximize leverage on total flows. Finance Strategies elaborated by a number of EECCA countries in cooperation with the EAP Task Force have provided insights into some of the main elements of EECCA country approaches:

- The operational efficiency of water utilities needs to be significantly improved in order to reduce operational costs. Energy costs and unaccounted for water are 2-3 times higher than in OECD countries. However, achieving efficiencies often requires up-front finance for investments.

- User charges, combined with improved billing procedures, will continue to be the major source of finance, particularly for operational and maintenance costs. However, a clearer distinction is needed between the economic and social dimensions of water so that tariff levels allow utilities to be financially autonomous while support measures are better targeted to ensure that poorer households have access to water services. User charges will also help to decrease the excessive demand for water which is far higher per capita than in OECD countries.

- Public budgets will be essential in most countries, particularly for capital costs. Given the current stage of development in fiscal federal relations in most EECCA countries fiscal transfers from central and regional authorities to the local level have a particularly important role to play. They should be designed to provide a predictable stream of revenues and incentives for sound financial management at the local level.

[4]. Achieving the water-related MDGs in the EECCA region will be the subject of discussion during the Ministerial lunch. During the second preparatory meeting for the Yerevan Conference it appeared that there were important differences between EECCA countries and donors with regard to the MDGs: the water-related MDGs have not been integrated into national development strategies in most EECCA countries, but that achieving the MDGs was a high priority for donors.

- Affordability constraints are leading some governments to confront the politically sensitive choice of either providing a smaller number of urban residents with in-house connections, or a larger number with access to communal stand-pipes.

- Finance strategies for the water sector should be developed within the framework of Integrated Water Resource Management schemes and integrated into binding budgetary procedures such as medium-term expenditure programmes.

- Official Development Assistance (ODA) and finance from International Financial Institutions will play a small role in terms of total flows, but they may nevertheless have an important demonstration and catalytic role. There is potential for greater flows from these sources, particularly if reforms can help convince donors that the resources would be well-used. Increased ODA would be essential if the water-related MDGs are to be achieved.

- The private sector is unlikely to be a significant source of investment capital for the foreseeable future in most EECCA countries; it is more likely to be a source of managerial and technical know-how (see below).

- Local capital and financial markets are unlikely to be a major source of finance in the short-term; though opportunities may be emerging in the larger, richer countries like Russia and Ukraine.

Issues for discussion

What can be done to put the water sector on a more financially sustainable basis by moving toward tariffs that at least cover operational and maintenance costs while addressing legitimate social and political concerns about the affordability of tariffs?

How can central government resources be used most effectively to support the improvement of water services at local level?

1.3 Relations between Municipalities and Utilities

Slow progress in reform at the municipal level is arguably the single biggest obstacle to improved provision of urban water supply and sanitation. There are a number of positive examples where municipalities have adopted plans with clear objectives and identified the means for achieving them (e.g. Surgat and Yaroslavl in Russia and Yerevan in Armenia). Some of these have begun to manage their finances and have become sufficiently creditworthy in order to take on debt to finance the construction or rehabilitation of water infrastructure. However, these cases are very much the exception. A huge effort is needed to roll-out and replicate the positive experiences in municipalities throughout the EECCA region.

Local authorities in EECCA need to commit, and require support in order, to:

- set consistent, stable objectives for the water supply and sanitation sector as part of city or regional master plans and with clear links to Integrated Water Resource Management plans
- elaborate realistic finance strategies to achieve these objectives
- translate these strategies into rolling, medium-term investment programmes, rather than the annual programmes that many municipalities currently follow, and
- promote public participation in the development and implementation of these activities.

A critical element of reform at the local level concerns the relations between local governments and utilities. Previously, utilities were departments within local government, and the authorities were de facto service providers. However, international experience demonstrates that the governmental functions of policy and regulation should be clearly distinguished from the responsibility of utilities to provide water services. Performance contracts between municipalities and utilities can be helpful in clarifying the relative

roles and responsibilities of the two sides, and in creating a structure of incentives that rewards good performance by utilities. However, effective performance contracts are still rare in EECCA countries.

The management, organisation and capacities of utilities need to be enhanced as part of the reform at the local level. At the Almaty conference, there had been hopes that private sector participation in the operation of utilities would help to drive this process. Generally these hopes have not been realised. International operators have become more risk averse, in part because of uncertainties about the legal and political framework. Most are not prepared to invest any of their capital and prefer relatively low-risk forms of engagement such as management contracts as a first step into EECCA markets[5].

The Russian Federation is an exception in this regard. Following positive political signals, domestic private companies had established contracts in 20 cities by September 2004, supplying water to about eleven per cent of the urban population. This is high by international standards. However, most of these contracts are short-term leases and the sustainability of their involvement in the water sector is not clear at this time.

Issues for discussion

What steps should be taken to enable local authorities to provide more effective direction, support and regulation of water utilities?

What are the main opportunities and obstacles to further private sector participation in the water sector?

[5] A Roundtable discussion on Public-Private Partnerships in the water supply and sanitation sector of EECCA countries will be held in conjunction with the Yerevan Ministerial Conference on 17th November, 16.00-18.30. The results of the Roundtable will be reported to the Ministerial meeting.

1.4 Annex

Some of the main tools developed by the EAP Task Force to support reform of the water sector in EECCA countries

- *Financing Strategies:* A computer tool (FEASIBLE) that allows the identification of realistic infrastructure development objectives, taking account of available financial resources. The tool helps clients to develop their understanding of the real financial needs and to adjust their objectives accordingly. It helps to create an objective basis for discussions among ministries and with donors and IFIs about the scale and ambition of possible investment projects.

- *Multi-Year Investment Planning Tool for municipalities (MYIP):* This tool allows municipalities to plan their water sector and other investments on a three-year horizon. It helps establish some basic financial planning capacity in local governments and supports the preparation of coherent municipal investment programmes.

- *Financial planning tool for utilities:* This tool enables utility staff to develop basic skills in sound financial planning and to prepare corporate development plans. It complements the MYIP tool.

- *Toolkit for benchmarking water utility performance:* This is tool is based on a methodology developed by the World Bank. It supports the development of more performance-oriented thinking in utilities and governments and can be integrated both into day-to-day utility management routines in utilities and into contracts between municipalities and utilities.

- *Guidelines for the development of performance based contracts between municipalities and utilities:* They provide a general introduction to the issue of performance based contracting, including their key contractual elements and practical experience in developing such contracts. They should help to prepare municipal and utility staff for a more formal structuring of their relationship as is usually required in the framework of IFI/donor projects.

- *Good Practices for public environmental expenditure management*: A pragmatic checklist to assess the performance of programs and institutions that manage public environmental expenditure, and guidelines to improve their performance.

- *Handbook for appraisal of environmental projects financed from public finance:* This tool is aims to help governments develop methodologies for effective appraisal of water and sanitation projects in order to support the effective allocation of scarce public funds. It should support the development of a list of priority investments in national and regional governments, and improve the realism of project proposals, as well as the political commitment that comes along with them. It supports implementation of Good Practices of public environmental expenditure management.

CHAPTER 2 PROGRESS ON IMPLEMENTING THE ALMATY GUIDING PRINCIPLES FOR THE REFORM OF THE URBAN WATER SUPPLY AND SANITATION SECTOR IN EECCA

2.1 Executive summary

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

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

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

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

The consequences for public health, the environment, and economic development in the region are serious. The WHO estimates that in the member countries of the UN Economic Commission for Europe[6] more than 13 000 children under the age of 14 die every year from poor water conditions, probably most of them in the EECCA region.

However, while the trend towards further deterioration of water services is broadly the same across the EECCA region, the overall state of water services and their adverse impacts is quite diverse. The situation in the poorest EECCA countries is significantly more alarming than in the more affluent states, especially in terms of water quality and resulting health impacts. There is also an important difference

[6] The UN's Economic Commission for Europe has 55 member countries from Europe, Caucasus and Central Asia, as well as Canada and the United States.

between urban and rural areas. Water services in many rural areas have collapsed following the dismantling of the state and collective farm system in the 1990s.

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

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

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

2.2 Background and introduction

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

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

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

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

EU Water Initiative. Both these initiatives seek to foster East-West co-operation on water and have components that focus on urban water supply and sanitation, and integrated water resource management.

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

2.3 Current state of the water supply and sanitation sector in EECCA

A look at some key figures relating to EECCA countries reveals a significant diversity of situations between countries (Table 2.1). This includes populations (from three million in Armenia to 143 in Russia) and what this entails for the complexity of administrative systems, as well as the distribution of the population between urban and rural areas (urban populations range from 28 per cent in Tajikistan to 73 per cent in Russia) and its incidence on coverage rates with centralised water supply and sanitation. These figures also include per capita gross national income that varies with a factor ten (from USD 210 in Tajikistan to 2 610 in Russia) and what this entails for the affordability of water services for the population and for public budgets.

Countries can be divided into two groups:

High-income, high-coverage countries:

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

Low-income, low-coverage countries:

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

Table 2.1: Key EECCA country figures

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

Source: World Bank (2002 and 2003b) and OECD (2003d).

The following sections describe, in more detail, the key trends in the water supply and sanitation sector of EECCA that could be observed over recent years. They present aggregated data, country by country, from the EAP Task Force Water Utility Performance Indicator Database (Box 2.1), which focuses on urban water systems. While this data confirms the diversity of situations identified above, it shows that there are no signs yet that the water supply and sanitation sector might improve in the future. Almost all trends in the water supply and sanitation sector point in the direction of further deterioration of water services. This includes the group of high-income, high-coverage countries, where these negative trends are not notably different from low-income, low-coverage countries, suggesting that in the municipal water sector these two groups of countries have many, if not most, problems in common.

Box 2.1: The EAP Task Force Water Utility Performance Indicator Database

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

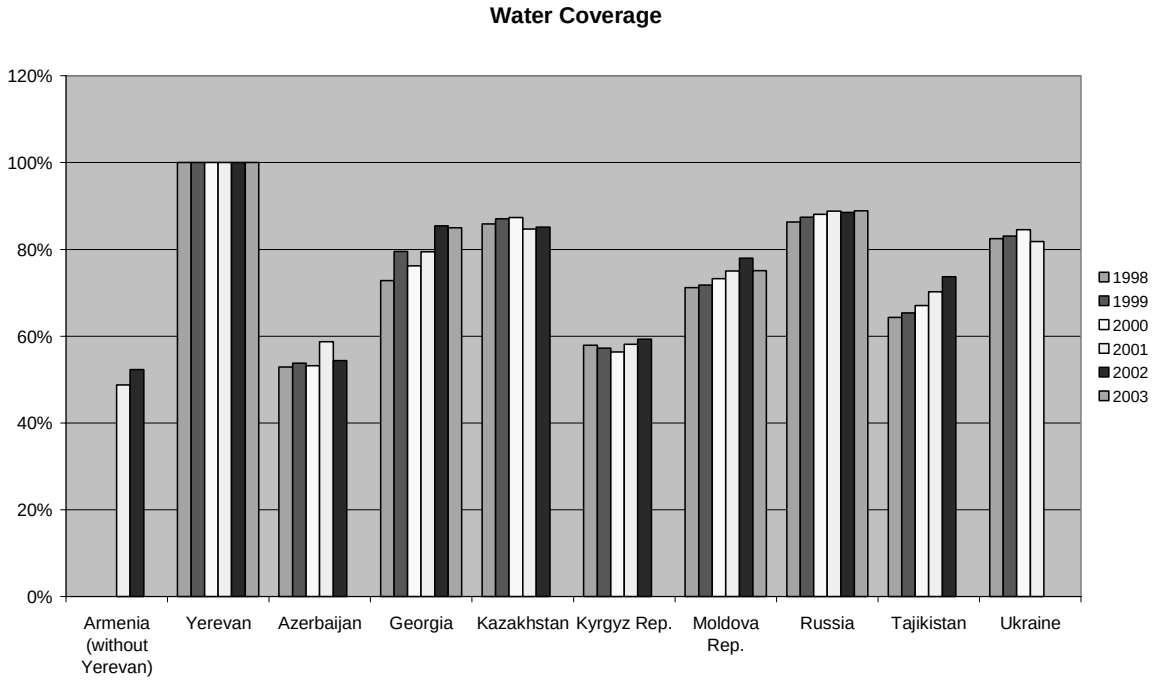
The database contains 32 indicators, including technical (*e.g.* service coverage rates, unaccounted-for water, pipe breaks, and continuity of service), and financial indicators (*e.g*. bill collection period, unit operational cost, and average water tariff).

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

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

Coverage with centralised water supply and sanitation services in urban areas of EECCA is generally at high levels compared to countries that are at similar levels of economic development. Water supply through in-house taps covers between 60 per cent (Kyrgyzstan) and 90 per cent (Russia, Ukraine) of the population (Figure 2.1). Coverage with sanitation services is somewhat lower at between 24 per cent and 73 per cent. Coverage figures have essentially remained stable over recent years. Where an expansion of water supply and sanitation coverage can be observed, expansion was usually not due to a "real" extension of infrastructure, but rather to the process of consolidating infrastructure in utilities, such as through the transfer of water supply and sanitation (WSS) infrastructure from industries to utilities.

Figure 2.1: Coverage of urban population in EECCA with centralised water supply[7]

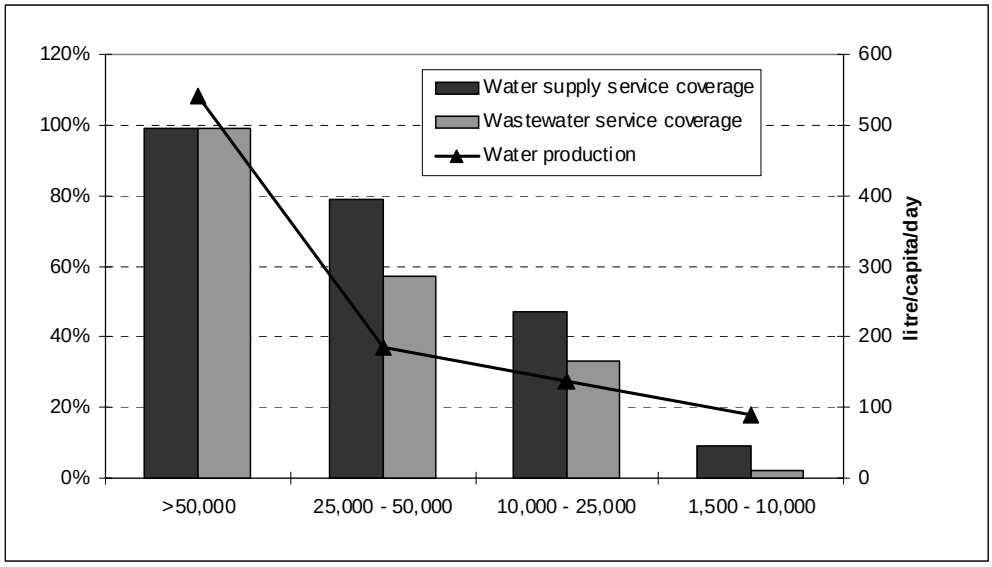


Source: EAP Task Force Water Utility Performance Indicator Database.

It should be noted that the figures that are shown here only cover the urban populations that are being served by the water utilities from which data was collected. Generally connection rates in rural areas are much lower than in urban areas (e.g. less than 16% of the population in rural areas of Kyrgyzstan), so the actual country average is probably significantly lower once rural populations are included. Significant variation exists within the countries/regions depending on the size of the settlement. Figure 2.2, for example, demonstrates the distribution of inhabitants connected to centralised water and sewerage systems in Moldova. The bars scaled against the left axis indicate that the coverage of both water supply and wastewater collection is 100 per cent in the largest cities and less than 10 per cent in small towns and villages.

[7] Population with easy access to water services (either with direct service connection or within 200m of a standpost)/total population under utility's nominal responsibility, expressed as a percentage.

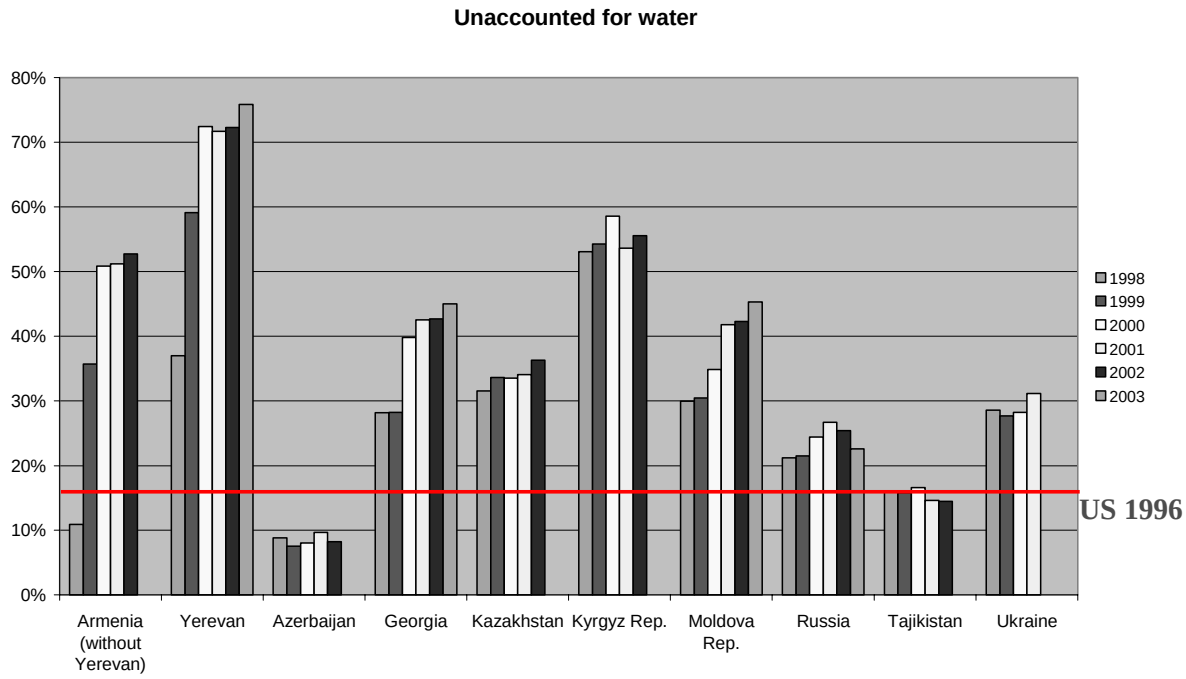
Figure 2.2: Coverage by centralised water and sewerage systems and consumption of water in Moldova



Source: OECD (2003a).

High connection rates in most urban areas, however, mask the fact that the quality of water supply and sanitation services that is being delivered to utility clients has continuously deteriorated over the same period. Hence, while a large majority of urban populations have access to water utility services, the quality of services is usually insufficient, and this increasingly so. Two indicators demonstrate this situation particularly well. Unaccounted-for water, which is the share of water that is produced, but which either is lost through leakage or stolen from the distribution network, has remained at very high levels in all EECCA countries, and steadily increased in some of them. For instance, unaccounted-for water went from about 30 to 45 per cent in Georgia and Moldova, and it remained at 50 to 70 per cent in Armenia and Kyrgyzstan. The international benchmark for unaccounted-for water is about 20 per cent (Figure 2.3).

Figure 2.3: Unaccounted-for water[8]



Source: EAP Task Force Water Utility Performance Indicator Database.

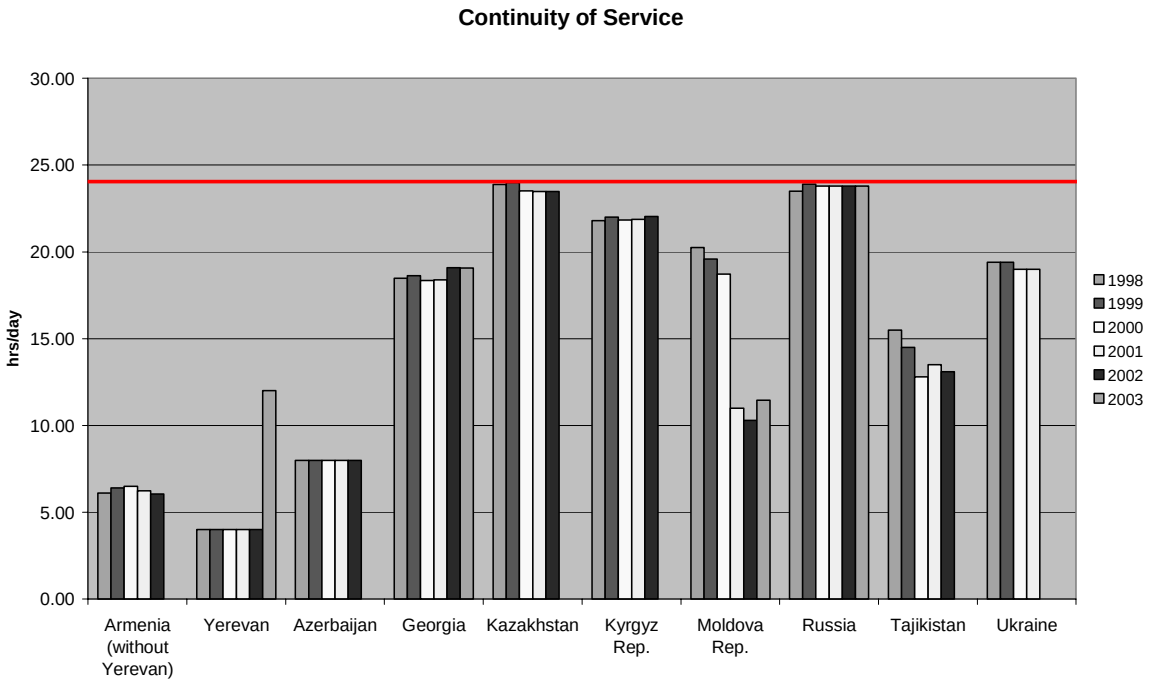
Similarly, the continuity of water supply has been deteriorating. Apart from Russia, users in all countries surveyed now receive water for less than 24 hours per day. In Azerbaijan and Armenia[9] this can be as low as five to seven hours per day, while it generally remains below 20 hours in most other countries (Figure 2.4). This, coupled with persistently high levels of pipe-breaks throughout the region, shows a further deterioration of the water supply and sanitation networks. The daily switching on and off of the network (and in many places this happens several times per day), allows micro-biological and other polluting infiltrations to contaminate the network, diminishes the quality of the water supplied, and increases the wear of the infrastructure. Similarly, leaks in the network allow for cross-contamination between water supply and sanitation pipes.

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

[8] Difference between water supplied and water sold expressed as a percentage of net water supplied; as volume of water "lost" per km of water distribution network per day; and volume of water "lost" per water connection per day.

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

Figure 2.4: Continuity of service (hours per day)[10]



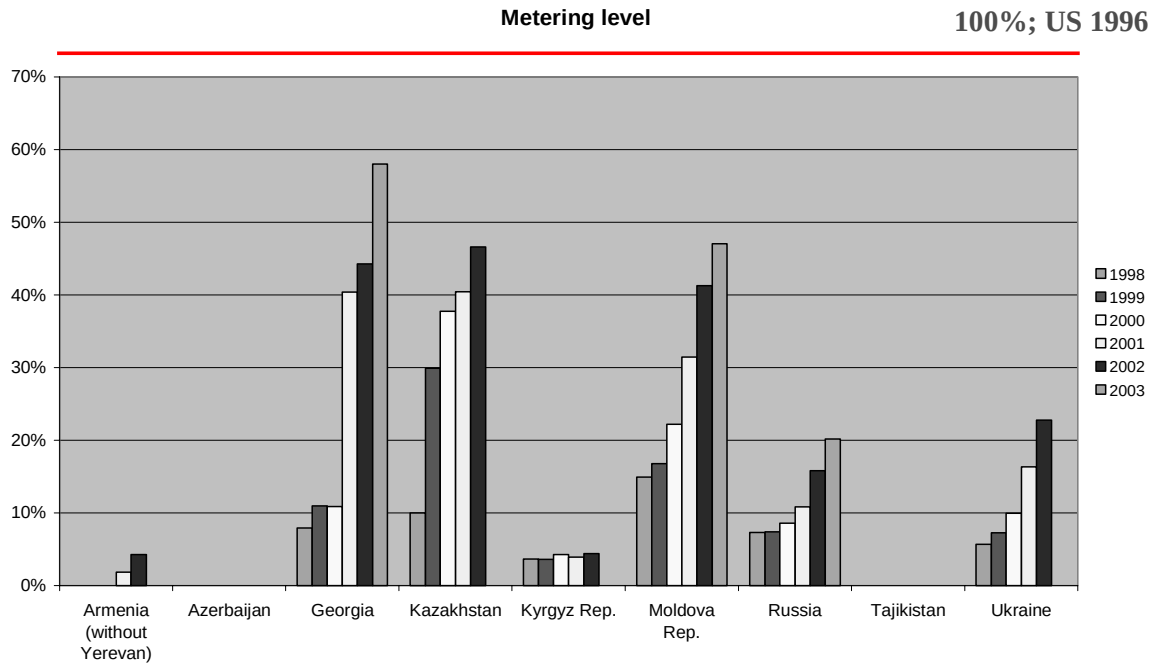
Source: EAP Task Force Water Utility Performance Indicator Database.

More positively, many municipalities have been introducing large-scale metering programmes for households. For instance, Moldova, Kazakhstan, and Georgia now feature close to 50 per cent of metered connections (Figure 2.5).

In Yerevan, Armenia, a metering programme resulted in about 80 per cent of connections being metered by 2004. This has had the effect of driving down consumption as well as production, which in the case of Moldova have decreased by about 60 per cent, with a water consumption level of 150lpcd (litres per capita per day) close to EU levels (Figure 2.6).

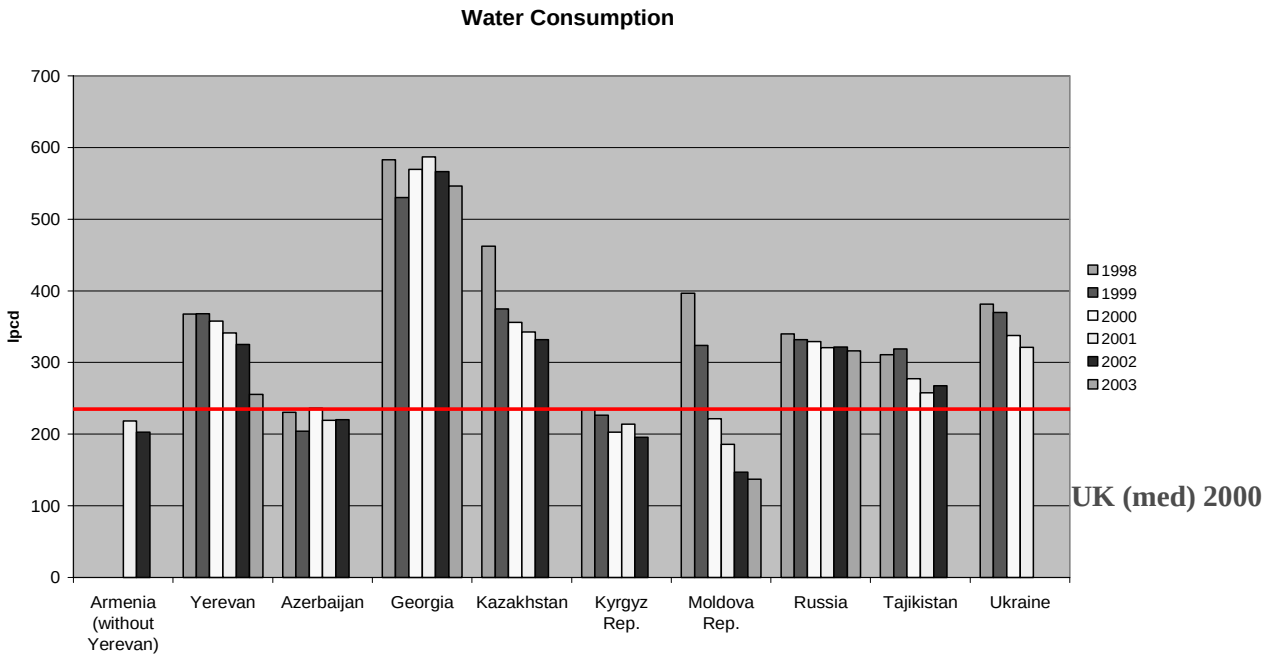
[10] Average hours of service per day for water supply.

Figure 2.5: Share of metered connections (%)[11]



Source: EAP Task Force Water Utility Performance Indicator Database.

Figure 2.6: Total water consumption (litres per capita per day (lpcd))[12]



Source: EAP Task Force Water Utility Performance Indicator Database.

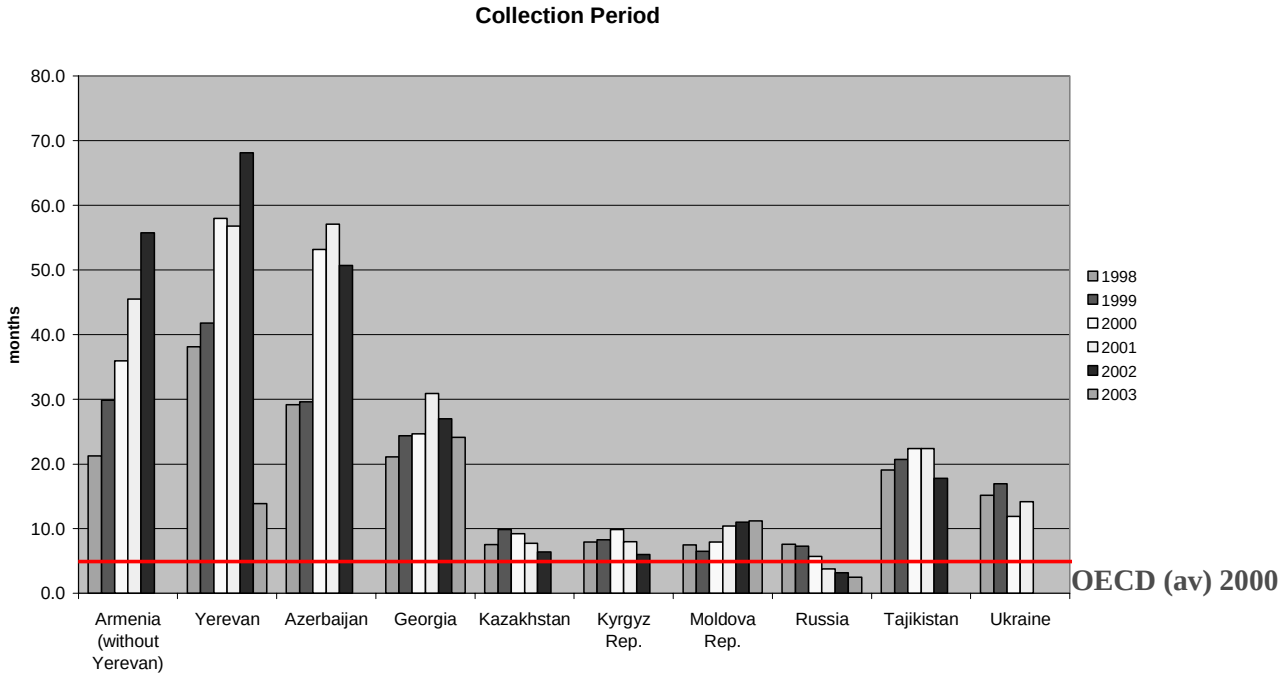
[11] Total number of connections with operating meter/ total number of connections, expressed as a percentage.

[12] Total annual water sold expressed by population served per day; by connection per month and by household per month.

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

The widespread dissemination of household water meters is one of the reasons that bill collection rates have improved significantly over the past years. Most countries in the region are now approaching the international benchmark of an average of three months between the billing and collection of payment (Figure 2.7). Armenia, which until 2002 showed very high and increasing collection periods, has recently introduced an incentive programme that includes partial forgiveness of arrears. This has considerably improved collection rates, which are now approaching 100 per cent. More generally, collection rates have improved following the recovery after the financial crisis of 1998, and due to government policies to end widespread non-payment from its various institutions and administrations.

Figure 2.7: Collection period between billing and collection of payment (months)[13]



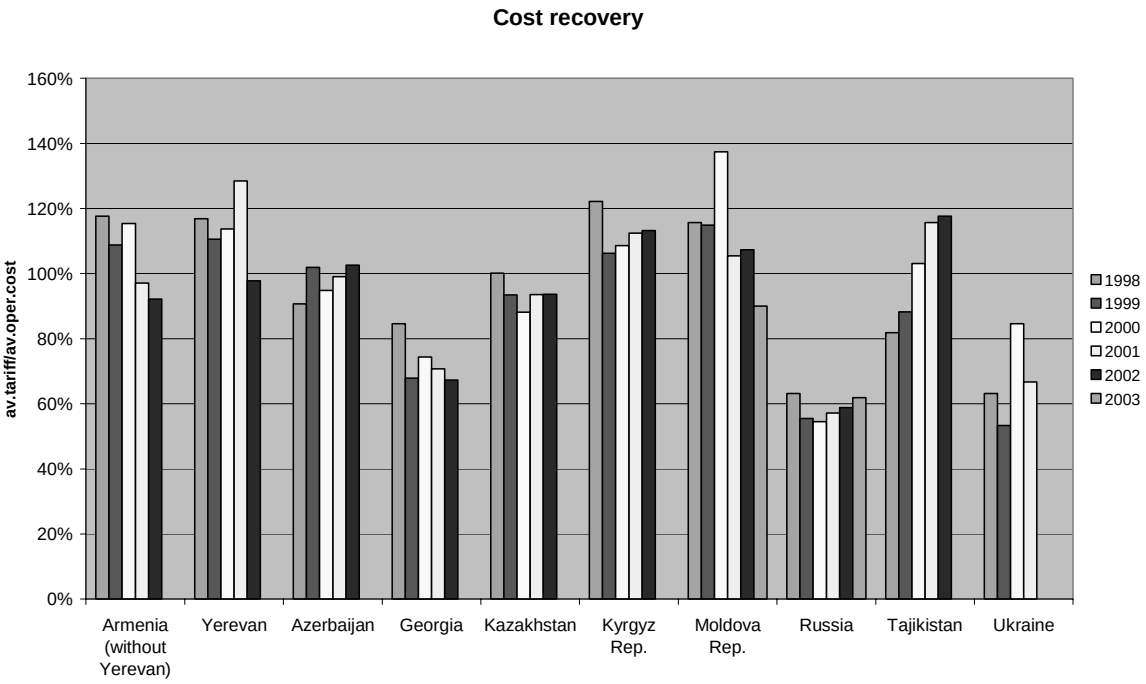
Source: EAP Task Force Water Utility Performance Indicator Database.

Other financial indicators, however, illustrate the serious financial situation of utilities in most countries. While tariffs have generally increased in recent years (*e.g.* in Russia and Moldova they have almost doubled), the production costs have also increased at a comparable pace. In many countries the ratio between the average tariff charged to households and the unit operational cost remains well below one. In Russia and Ukraine this figure can be as low as 60 per cent, without any signs of improvement over recent years (Figure 2.8). In other countries, even when this ratio is close to or above the 100 per cent mark, it does not mean that utilities are covering costs, since maintenance and capital costs are not included. If these were to be added, all countries would show cost recovery rates considerably lower than 100 per cent.

As a result of this financial weakness of water utilities, investment has remained at very low levels, with as little as two to four USD of investment per capita in recent years. This is well below the level of investment needed for the maintenance and renewal of infrastructure, estimated at 24USD per capita per annum in Kazakhstan and 16USDper capita per annum in Georgia, and provides an additional indication of the continuing deterioration of the infrastructure.

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

Figure 2.8: Ratio between average tariff and unit operational cost



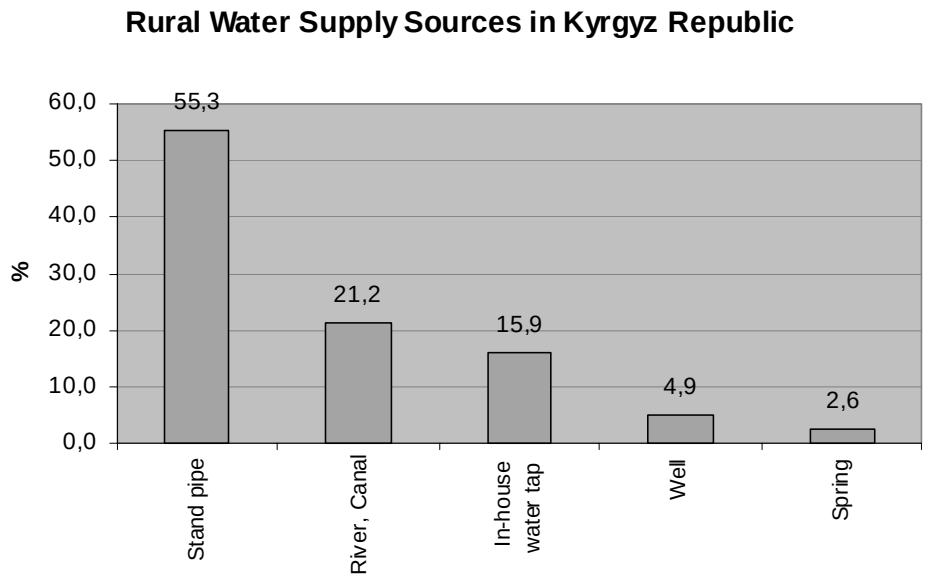
Source: EAP Task Force Water Utility Performance Indicator Database.

2.3.3 The situation in the rural water sector

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

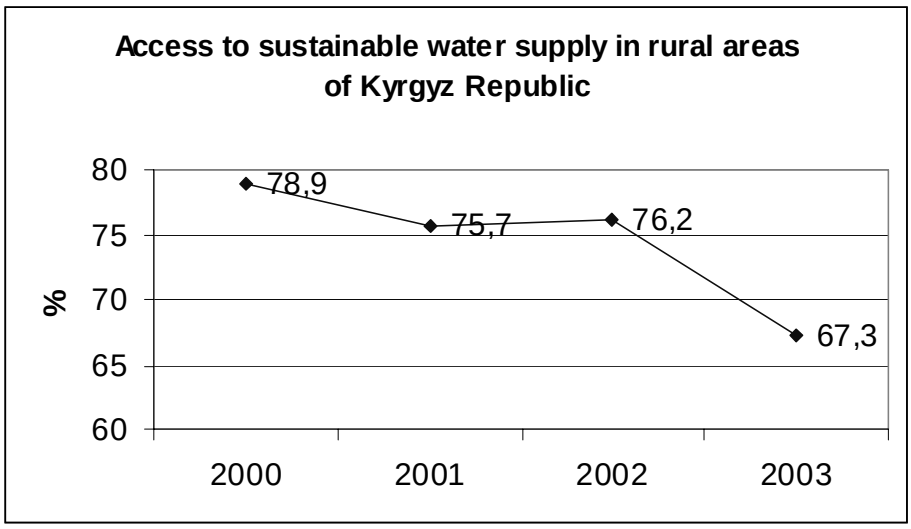
In Kyrgyzstan, for instance, only 67 per cent of the rural population has access to a sustainable water supply (available throughout the year and of sufficient quality for drinking), and this has been continuously decreasing in recent years (Figure 2.10). Only 16 per cent of the population in rural areas has access to water through in-house water taps, while stand pipes or water collected from canals and rivers remain the main sources of drinking water supply. The most widely used sanitation technology are conventional pit latrines (Figure 2.9).

Figure 2.9: Rural water supply sources in the Kyrgyz Republic



Source: National Statistical Office of Kyrgyzstan.

Figure 2.10: Access of rural population to sustainable, clean drinking water in the Kyrgyz Republic



Source: National Statistical Office of Kyrgyzstan.

In the Ukraine, more than 70 per cent of the rural population (settlements with a population of less than 20 000) are not connected to centralised water systems, and as much as 91 per cent lack access to corresponding sewerage services. As a consequence these populations have to use water from wells, reservoirs, and open springs, which often do not meet sanitary standards. More than 800 000 people use water from vendors, which usually is of poor quality. In recent years, problems with nitrates, oil, and pesticide and bacteriological contamination of these water sources became particularly acute. As most people use this water without any treatment an increasing number of outbreaks of infectious diseases have been observed. (Mama-86, 2004).

A problem that is increasingly being faced in rehabilitating and extending rural drinking water infrastructure is that many people in rural areas are now living at subsistence levels and are unable to

generate sufficient cash to pay for water services. Unless subsidies from public budgets are available for these people, water supply and sanitation technologies that are put in place in rural areas have to be simple enough so that they can be maintained and operated by local users themselves.

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

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

The deterioration of the quality of water services in EECCA countries is undeniable. The increasing levels of leakage and discontinuity of service of course indicate a parallel decrease in the quality of water that is being delivered. Whether this has generated an increasing number of health incidents is difficult to establish, however, given the complexity of the issue, with a number of other factors influencing key health indicators (water is often not the only aspect affecting people's health). Data from the WHO Europe "Health for all" database indicates that some of the key indicators for water-borne diseases have been slightly declining in the region over the past years (namely figures for infant mortality and under-five mortality from diarrhoeal diseases)[14], while others have been steadily increasing (namely the incidence rate of viral hepatitis A).

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

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

While some of the problems shown via key water-related health indicators may be declining, the overall levels of these indicators still remain very high compared to OECD figures, often by a factor of 50 or more. The WHO estimates that in the ECE region[15] more than 13 000 children under the age of 14 die every year due to poor water conditions, most of them in the EECCA region, and that the economic and human benefits of improving water supply and sanitation would be very substantial. The WHO estimates that the cost benefit ratio of investing in improvements in WSS infrastructure in a group of ECE countries could be as high as 13, with one USD invested yielding as much as 13USD in benefits.

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

[15] The UN's Economic Commission for Europe has 55 member countries from Europe, Caucasus, and Central Asia, as well as Canada and the United States.

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

The level of household connection to sewerage infrastructure is relatively low compared to many OECD countries. Even when households are connected to sanitation infrastructure, the treatment of wastewater is often not assured. While little consolidated information exists about the level of equipment at primary and secondary treatment facilities (tertiary is still an exception in the region), it is clear that existing infrastructure often does not operate effectively and sometimes does not operate at all (Box 2.2). This is mainly linked to the advanced state of deterioration of this infrastructure, as well as lack of cash for operational purposes.

Box 2.2: Status of the wastewater capacity and actual flows in some towns in Moldova

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

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

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

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

Ungheni - The capacity of the pumping station and WWTP is 15 000 cu.m/day, and the actual water flow is 4 000-5000 cu.m/day. Biological treatment is not in operation. Untreated wastewater is discharged into the Prut.

Source: OECD EAP TF/Association Moldova Apa Canal (2002).

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

The lack of adequate wastewater treatment is putting EECCA surface waters under serious environmental stress. According to the European Environment Agency (EEA), some of the major rivers in the Russian Federation and their tributaries are now highly polluted. The main water reservoirs are also highly polluted, especially the Volga cascade. In the Ukraine, all river basins are classified as polluted or very polluted. Similar situations exist in most areas in EECCA that feature a high density of population and economic activity. The EEA also reports that most EECCA countries have problems with the quality of their drinking water supplies. The percentage of samples of drinking water exceeding microbiological standards is between five and 30 per cent, this excess being higher in non-centralised drinking water sources, primarily in rural areas.

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

2.4 Legal and institutional reforms undertaken since the Almaty Conference

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

Table 2.2 provides an overview of reforms in some key areas. The rest of this section provides more detail on some reform highlights, including decentralisation, tariff setting, subsidies, collection rates, performance indicators, private sector participation, and public participation.

2.4.1 Decentralisation

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

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

Table 2.2: Overview of reforms in key areas of the water supply and sanitation sector – selected EECCA countries

	Armenia	Kazakhstan	Kyrgyzstan	Moldova	Russia	Ukraine
Strategic planning and policy priority	Included in 2003 PRSP	Set up a national sector programme	Included in 2002 PRSP	Included in 2004 PRSP	Set-up a national programme for housing and communal services (HCS) sector reform, incl. WSS. Also, several regions developed HCS and WSS sector strategies	Developed a national strategy for WSS
Regulatory oversight of utility performance	Central gov. responsible for large utilities Local gov. for rural	Municipal	Municipal	Municipal	Municipal (predominant) or Region	Municipal
Asset ownership	Central gov. large utilities Local gov. rural	Municipal (predominant) or private	Municipal (90%) State (10%)	Municipal	Municipal (predominant) or Region	Municipal (most), few regional or state
Tariff setting	Central gov. Public Services Regulatory Commission	Municipal, pending approval by Regional offices of National Monopoly + Competition Regulation Agency + governor; Cost plus basis	Municipal, pending approval by Regional offices of National Monopoly + Competition Regulation Agency; Cost plus basis	Municipal	Municipal (predominant), Regions (when region ownership or PSP[1])	Municipal
Role of central gov.	Has full responsibility for utility sector, incl. capital expenditures	Little guidance and oversight besides tariffs + capital expenditures	Little guidance and oversight besides tariffs	Recommends tariff methodology, but no implementation at municipal level	Sets framework for tariff setting (currently under implementation)	Sets framework for tariff setting and monitors performance at regional level
Subsidies	Income support for the poor	About USD 750 million over 8 years from a national sector programme; Income support for poor	No subsidies for utilities; Income support for the poor	None to utilities; Income support for the poor	Municipalities now have to compensate utilities for difference between tariff and cost; Compensation for cost of privileges; Income support for poor	Central budget subsidies of 80m USD;Compensation for cost of privileges; Income support for poor
Legal status of utilities	Joint Stock Companies 100% state owned (with few exceptions)	Joint Stock Companies, municipal or private owned	Business entities under municipal ownership	Municipal companies (predominant) or Joint Stock Companies	Municipal or State Unitary Enterprises, some joint stock companies	Municipal or Regional Unitary Enterprise
State of PSP	Management contracts with private operators in 2 biggest utilities (66% of population), to be replaced with lease contracts soon; Provision for delegated management in Water Code	Many medium-sized cities have domestic private sector owners; Concession law in place	No legal framework for PSP; One management contract with international Private Sector in Osh	Concession law in place, but lack of guidance for implementation; No cases of PSP	Concession law in place (2005); 8% of urban population served by PSP utilities, mostly lease contracts	Concession law, but very little PSP (domestic operators)
Contracts between utility/municipality	Performance contracts in most big utilities		No serious contractual relationship between utilities/municipalities		Only a few cases of performance-based contracts	Only a few performance-based contracts
Strategic planning	WSS financing strategy	WSS financing strategy		WSS financing strategy	WSS financing strategies in several *oblasts*	WSS financing strategy
Public participation	Public participation in tariff revision possible		No provisions for public participation	Law setting right of access to information and consultation of population	Currently under developed, but new law allows access of public to information from 2006 on	Public hearings in some municipalities; Law on WSS information

Note: 1. PSP = Private Sector Participation.

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

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

2.4.2 Tariff-setting

Inadequate and poorly developed tariff rules and tariff-setting procedures have been one of the main causes for the poor financial situation of the sector. While the situation remains unsatisfactory in a number of countries with the absence of regular tariff reviews, and an inadequate definition of the cost items to be considered for tariff calculation, there are a number of positive developments too. Ukraine and Russia for example, have made significant efforts to improve their tariff-setting frameworks, with the objective of better reflecting the economic realities, as well as seeking to insulate tariff-setting from excessive political interference. In the Ukraine, the 2004 law on Communal and Housing Services requires the regulator to compensate utilities for below-cost tariffs (Box 2.3), which if enforced, should be a strong incentive for local authorities to effectively implement cost recovery tariffs. While these reforms point in the right direction most are still very recent and time will be needed for effective implementation at the local level and for results to materialise.

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

Box 2.3: Ukrainian Law on Housing and Communal Services (passed in June 2004)

- Introduced a requirement that the Cabinet of Ministers of Ukraine should determine a procedure for setting tariffs for water supply and sanitation services. Before the adoption of the Law, the State Committee for Housing and Communal Economy Affairs developed guidelines and adopted them by its decrees;

- Granted an exclusive right to local government authorities to set tariffs at the local level for utilities in any ownership form;

- Introduced the principle of full recovery of economically justified costs. The law explicitly bans approval of tariffs for housing and communal services below the level of economically justified costs for their production;

- Where a regulator decides to set a tariff below the economically justified costs level, the regulator is obliged to provide to the regulated utility a subsidy from the local budget to cover the gap between the approved tariff and economically justified costs for provision of services.

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

2.4.3 Subsidies

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

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

2.4.5 Improving collection rates

Collecting payments from water users has been a significant problem in the past. This is an area where many EECCA countries have achieved important improvements recently. For instance, in Russia and the Ukraine collection rates improved from just over 50 per cent in 2000 to close to 90 per cent in 2004. Even more impressive is the achievement in Armenia where, thanks to a programme for the forgiveness of arrears (Box 2.4), collection rates went from between 10-20 per cent in 2001 to close to 100 per cent in 2004.

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

Box 2.4: Implementation of the Household Arrears Restructuring Programme in Armenia

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

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

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

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

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

2.4.6 Performance-based contracts between utilities and municipalities

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

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

However, there is now a small number of examples in EECCA where the relationship between municipalities and utilities has been restructured successfully, providing utilities with more autonomy in their operations, and municipalities with the tools to assess their work (Box 2.5). The key challenge for policy is therefore to effectively disseminate and scale up the positive experience that exists in cities such as Surgut.

Box 2.5: Surgut's Municipal Services Development Project

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

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

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

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

Main objectives of the service contract for the municipality:

- Replacement of administrative relations by contractual relationship;

- Equal allocation of rights and duties among the parties - the municipality and the Utilities - when providing municipal services, such as water supply, wastewater disposal, and heat supply to the population;

- Change-over to capital costs financing incurred by rehabilitation and extension of a municipal infrastructure by the Utilities as an alternative to the budgetary financing;

- Introduction of commercial management at the Utilities; transference of the Utilities to direct contractual relationship with the population and other consumers of services; to ensure the Utilities' survival in a competitive environment;

- Increase of capitalization and market value of the Utilities before their privatisation.

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

- Defining and charting distribution perimeters and geographic zones;

- Primary inventory of fixed assets for the purpose of their classification and determination of the following: function, geographical location, renewal character, acquisition date, acquisition price, technical condition, depreciation, net balance value, replacement cost, etc.;

- Analysis of fixed assets' physical state, deterioration rate, and further operating possibility. Reveal new priority works to be overhauled/reconstructed or replaced in order to update the utilities' investment programme;

- Development of a medium-term programme for new construction and extension of municipal infrastructure works;

- To define basic principles and tariff regulation procedure for the services provided by the Utilities with consideration of current laws;

- Creation of a financial management service for each Utility, introduction of a budgeting system to the utilities; analytical reporting regarding types of activity, functions, and geographical zone groups;

- Introduction of a management information system;

- Pursuant to the contracts, the municipality delegates to the Utilities exclusive right to operate services under the concession for the period of 30 years. The municipality shall not take any administrative or other decisions that may limit or prevent the Utilities from performance of their exclusive right to operate these services. Moreover, the municipality shall compensate the Utilities' losses incurred due to the municipality's actions or failure to act regarding

the services. The contracts define terms and procedures for tariff establishment, and penal sanctions for failure to accept tariffs in time.
Principal efficiency indices applied in the service contracts:
- Operating efficiency of the transferred services as volume of water sold to volume of water produced, excluding leakage;
- Total leakage, which includes transportation and delivery leakage, and commercial losses;
- Share of metered connections;
- Collection ratio;
- Average service coverage;
- Service coverage by geographical zones;
- Average investment for new connections.
Annually the municipality prepares and publishes, in the local press, a memorandum on the Utilities' operating efficiency based on the efficiency indices.

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

2.4.7 Private sector participation

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

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

2.4.8 Public participation

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

While many EECCA countries seem not to have achieved big progress in this area, a few countries have undertaken measures. There are now a number of EECCA government agencies that have set up public relations offices, created web pages, and organise seminars and conferences. Some governments also started publishing national reports on water, *e.g*. the Ukrainian Law on Drinking Water stipulates that the relevant

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

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

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

2.5 Conclusions

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

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

1. Many changes have only been put in place fairly recently, and there is an important time-lag between the moment where legislation or institutional change is enacted and the moment where it is fully implemented and starts to produce results. This is compounded by the fact that the most recent performance figures that are available are usually two years old and therefore do not reflect the present performance of the sector.

2. Some reforms may lead to the temporary deterioration of performance before the situation starts to improve. For instance, the introduction of household water meters, due to the reduction in consumption that it induces, usually results in decreased revenue for utilities, as well as increasing unit costs (as fixed costs need to be covered through fewer units of water sold). Only once regulators have been convinced that water tariffs need to be increased significantly to reflect increased unit costs, will the financial situation of utilities substantially improve.

3. Due to the inter-dependencies between different types of reforms (*i.e.* at different levels of government) some reform efforts may have been neutralized due to inaction at another level. This is most obviously the case with the lack of reforms that seems to exist at the local level. While central governments in some EECCA countries have undertaken measures to improve the

coherence of the institutional system, vesting most regulatory powers in local administrations, a lack of commitment and/or capacity in municipalities to use their new powers to the benefit of the population has largely neutralized these improvements. To date, very few water utilities have been established as autonomous, commercially-run entities. Instead, many municipalities still regard water utilities as instruments to further their short-term political objectives. The reasons are an important lack of resources and capacity to deal with these issues at the local level. Central governments, some of which have started to realize this, should put more effort into helping overcome this situation.

CHAPTER 3 MEETING THE MILLENNIUM DEVELOPMENT GOAL DRINKING WATER AND SANITATION TARGET IN THE EECCA REGION: A GOAL WITHIN REACH ?

3.1 Executive Summary

"Today, one person in six will drink unclear water. One person in three will not have access to proper sanitation. And around 10 000 people will die today as a result of this preventable situation. That is unacceptable...That's why commitments were made in the Millennium Declaration in 2000 and at Johannesburg in 2002. The commitments were to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation..."[16]

The Millennium Development Goal's target for water and sanitation (MDG Target 10) aims to reduce by half the number of people without sustainable access to safe drinking water and basic sanitation by 2015, using 1990 as the baseline year. This report assesses the effort that is required in the remaining period of time, as well as the amount of financing needed to fund the necessary investments, in the EECCA[17] region.

There are no simple answers to these questions:

The proportion of the EECCA population that currently have sustainable access to safe and affordable water and adequate sanitation remains to be determined. The official MDG Target 10 progress monitoring system - JMP[18] - provides a reassuring picture of the water supply and sanitation sector in the EECCA region, but is unfortunately misleading:

- The indicators officially used to monitor MDG Target 10 progress are technology-based and do not capture issues such as quality, reliability, and sustainability. These issues are particularly relevant in the EECCA region where connection rates have traditionally been high, but quality has been low and deteriorating. In the JMP monitoring system, a household connection to a centralised water supply system providing contaminated water would be characterised as "sustainable access to safe drinking water";

- There is no baseline against which progress can be measured since population data are missing in most countries for the year 1990, the baseline year for the monitoring of Target 10;

- Limited data collection, mainly based on household surveys, raise serious questions about the reliability of the JMP's coverage estimates on which progress monitoring relies;

16 Statement of the United Nations Secretary General Kofi Annan to the United Nations Advisory Board on Water and Sanitation in July 2004.

17 Eastern Europe, Caucasus, and Central Asia, , i.e. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

18 Joint Monitoring Programme conducted by the WHO and UNICEF, the goals of which are to report on the status of water supply and sanitation, and to support countries in their efforts to monitor this sector, which will enable better planning and management.

- Evidence from other sources (for example, see "Progress report on implementing the Almaty Guiding Principles" prepared for this meeting) suggests that the water supply and sanitation sector in the EECCA region is actually in crisis.

One important policy conclusion from this analysis is that donors and international financing institutions (IFIs) **should be very cautious in using** JMP-based monitoring progress reports when setting priorities and designing assistance programmes and projects, and they should draw on other analyses for these purposes.

In view of these uncertainties, attempts to calculate the costs and amount of financing needed to reach MDG Target 10 in the EECCA region are also very uncertain.

Two studies have addressed these issues: a 2003 World Bank study (World Bank 2003a) and a 2004 COWI draft report (COWI, 2004).

- The two cost estimates are of a similar order of magnitude for the EECCA region as a whole:
  - The World Bank estimates the cost of achieving Target 10 in all CIS countries between 2000 and 2015 at USD 1.1 billion annually[19], of which 55 per cent for water supply. This is equivalent to roughly €15.3 billion for the period 2002-2015;
  - COWI estimates the "MDG cost" at €14.6 billion for the period 2002-2015, two thirds of which relate to water supply, and close to 90 per cent to rehabilitation (as opposed to service extension) costs;
- However, the detailed estimates for specific countries (Kazakhstan, Moldova, and the Ukraine[20]) show significant discrepancies, which can be attributed to a different understanding of the types of costs to be included under "MDG costs" and to different calculation methods;
- With all the uncertainties related to these studies, their similarity may be a coincidence rather than a convergence of comparable estimates.

COWI's estimate of an annual EECCA "Total costs" - an "all-in cost" that includes not only "MDG cost" but also operation and maintenance and re-investments costs - amounts to €6.9 billion **per year** over the period 2000-2020. The magnitude of this estimate underlines one of the main challenges for the EECCA region: maintaining and improving existing infrastructure rather than extending it. In addition the study suggests that even raising the finance to operate and maintain the infrastructure in its present poor state – a much less ambitious challenge than achieving the water-related MDGs - would pose major problems for a number of EECCA countries. So despite uncertainties about the estimates, there can be little doubt that **the scale of investments needed to meet Target 10 by 2015 will require a massive and unprecedented mobilisation of financial resources from donors and IFIs in a context of scarce domestic financial resources.**

The WHO briefing note "Assessing the costs and benefits of water supply and sanitation improvement in EECCA" complements the above-mentioned studies. It provides an assessment of the benefits that can be expected from the reaching of the water supply and sanitation MDG target. According to the WHO, the

19 Presumably based on the value of the USD in 1995.

20 The World Bank did precise calculations of the cost of reaching Target 10 for only three countries.

cost-benefit ratio of meeting the MDG on water supply and sanitation in the UN Economic Commission for Europe region[21] is 13, *i.e.* for every one USD invested there is a potential economic return of 13 USD.

Resolving the methodological issues related to measuring progress in achieving the MDG water and sanitation target would remove an important obstacle to the development of MDG-focused development strategies in EECCA countries. A possible sequence of measures that could be taken in this regard include:

- New indicators could be defined to account for the functionality, reliability, and quality of the water supply and sanitation sector;
- The establishment of sound and sustainable national statistical capacities and systems in each country would enable the collection of more data of better quality. Donors could provide useful assistance in this respect;
- A common definition and methodology for measuring "MDG costs" should be developed; failing this, confusion will persist and comparison between various studies will remain difficult;
- Unless more realistic coverage estimates can be made for 1990, a different baseline year should be used for EECCA countries from which to calculate the required level of Target 10 by 2015;
- On that basis, MDG-focused development strategies would enable countries to translate the value set for Target 10 in 2015 into an investment programme at the sub-national level with intermediary targets. This would also help to better define the role that national and local governments could play in EECCA countries and the support that donors and IFIs could most usefully provide.

3.2 Introduction

Nearly five years have elapsed since the Millennium Declaration[22], and fifteen years out of the twenty-five year period within which the water supply and sanitation[23] target (Target 10) is to be met[24]. The time has now come for an assessment of the progress made to date, since "if the goals are to be reached, these developments need to happen very soon", as stated by the UN Secretary General to the UN General Assembly in September last year.

In this context of urgency for immediate action, the EAP Task Force was asked to: (i) analyse progress made towards the achievement of the Drinking Water and Sanitation MDG target (the so-called MDG "Target 10") in the EECCA region, and (ii) review existing studies made on the cost of achieving Target 10, with a view to informing ministers at the Conference of EECCA Ministers of Finance, Water, and Environment, to be held in November 2005, and initiating a discussion on this issue.

This background paper first demonstrates that the few official MDG progress reports issued so far fail to convey a true picture both of the EECCA water supply and sanitation sector, and of progress made

[21] The UN's Economic Commission for Europe has 55 member countries from Europe, Caucasus, and Central Asia, as well as Canada and the United States.

[22] Declaration adopted at the United Nations Millennium Summit in September 2000 from which emerged the MDGs and related targets – www.un.org/millenniumgoals/ - see Annex.

[23] The term **water supply and sanitation** refers to **domestic water supply and sanitation** and does not encompass **water resource management.**

[24] The period considered for the reaching of Target 10 is 1990-2015.

towards the achievement of MDG Target 10[25], (COWI, 2004 and World Bank, 2003) and identifies the methodology used to monitor progress as one of the major reasons for such a misleading reporting.

Second, the latest region-focused studies on the cost of achieving Target 10 (COWI 2004 and World Bank 2003a) are thoroughly analysed, revealing significant disparities in terms of methods used and results, raising the issue of the comparability of such cost estimates and of the feasibility of calculating - with a reasonable degree of accuracy - the level of investments, costs, and amount of financing necessary for the region to achieve Target 10.

Both of these studies point to the very significant cost involved if Target 10 in the EECCA region is to be reached, and which can only be financed through a major mobilisation of donors and international financial institutions (IFIs).

Finally, a few tangible measures are proposed that could contribute to a better monitoring of the pace and magnitude of progress towards the reaching of this ambitious Target 10, that could pave the way for more meaningful estimates of the costs and amount of financing needed to achieve it, and could possibly contribute to a sustainable mobilisation of funds from donors and IFIs.

3.3 Why the monitoring of progress towards the MDGs fails to provide a true picture of the water supply and sanitation sector in the EECCA region

3.3.1 The Millennium Declaration and the World Summit on Sustainable Development

Monitoring progress on the millennium development target for water supply and sanitation first of all requires a clear and common understanding of the terminology used. Different wordings were used in various instances before an official definition of the water supply and sanitation MDG target (Target 10) was adopted in the Millennium Declaration:

- In the Millennium Report, (UN Secretary-General, 2000), UN Secretary-General specifically urged the World Summit on Sustainable Development (WSSD) *"to adopt the target of reducing by half, between now and 2015, the proportion of people who lack sustainable access to adequate sources of affordable and safe water";*

- The water supply-related objective set in the Millennium Declaration adopted by the UN General Assembly in September 2000 was "…, *by the same date* (2015), *to halve the proportion of people who are unable to reach or to afford safe drinking water*"[26];

- In 2002, in the context of appalling statistics[27] published by the WEHAB Working Group in charge of water and sanitation issues[28], the Johannesburg World Summit on Sustainable Development reaffirmed the commitment to achieving the MDGs. The WSSD plan of

[25] In the latest UN MDG progress report, Target 10 is already assumed to have been met in urban areas of the former CIS countries as of September 2004.

[26] Resolution 55/2, "United Nations Millennium Declaration", adopted by the UN General Assembly on 18/09/2000.

[27] WEHAB Working Group 2002, "A framework for action on water and sanitation": "about 1.2 billion people still have no access to safe drinking water, and 2.4 billion do not have adequate sanitation services. Some two million children die every year from water-related diseases. In the poorest countries, one in five children dies before the age of five mainly from water-related infectious diseases arising from insufficient water availability, in both quantity and quality. Thus provision of safe drinking water and sanitation services to more than one billion people over the next decade remains one of the most critical challenges humanity is facing today ".

[28] The WEHAB initiative was proposed by UN Secretary-General Kofi Annan as a contribution to the preparations for the WSSD, providing focus on the five key thematic areas of water, energy, health, agriculture, and biodiversity.

implementation subsequently adopted by the UN stipulated that "*In this respect, we agree to halve, by the year 2015, the proportion of people who are unable to reach or afford safe drinking water, as outlined in the Millennium Declaration, and the proportion of people without access to basic sanitation…*".

The existence of similar but different wordings around the same concept contribute to creating confusion when it comes to the water supply and sanitation MDG target. Therefore, it is important to bear in mind the official Millennium Declaration definition of Target 10, on which the monitoring of progress in the water supply and sanitation sector is based.

3.3.2 MDG 7 and Target 10 Indicators 30 & 31

The various statements mentioned above eventually led - within the Millennium Declaration Goal 7, "Ensure environmental sustainability" - to the official definition of Target 10, which specifically covers water supply and sanitation:

"Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation".

Out of the 48 MDG indicators, two indicators were designed to monitor progress towards Target 10 and are used by the Joint Monitoring Programme (JMP), the official mechanism within the United Nations in charge of monitoring international goals on access to drinking water and sanitation:

- Indicator 30: Proportion of population with sustainable access to improved water source - urban and rural.

Table 3.1: Definition of improved water supply for indicator 30

Improved[1]	Not Improved
Household connection[2]	Vendor-provided water
Public standpipe	Bottled water[3]
Borehole	Tanker-truck provided water
Protected dug well	Unprotected well
Protected spring	Unprotected spring
Rainwater collection	

(1) Access to safe drinking water is the percentage of the population using "improved" water sources.

"Reasonable access" to water supply services is broadly defined as the availability of at least 20 litres per person per day from an "improved" source within one kilometre of the user's dwelling. An "improved" source is one that is likely to provide "safe" water (JPM's website);

(2) "Household connections" consist of "piped supplies into the household, plot, or yard";

(3) Based on concerns about the quantity of supplied water, not concerns over the quality.

- Indicator 31: Proportion of population with access to improved sanitation - urban and rural.

Table 3.2: Definition of improved sanitation for indicator 31

Improved[1]	Not Improved
Public sewer Connection to septic system Pour-flush latrine Simple pit latrine Ventilated improved latrine	Service or bucket latrine [2] Public latrines Latrines with an open pit

(1) Access to adequate sanitation facilities is the percentage of the population using "improved" sanitation. Excreta disposal systems are considered adequate if they are private and if they separate human excreta from human contact [12];

(2) here excreta are manually removed;

(3) A "Household connection" in the sanitation context is understood as "connection to a public sewer".

Target 10 should be viewed as a step on the path to full global service coverage by 2025, the goal of Global Water Partnership (GWP) [29] in its "Framework for Action". Contrary to Target 10, focused on household water and sanitation, the 2025 targets include irrigation, industrial effluent, wastewater treatment, water resource, and environmental management.

3.3.3 The WHO/UNICEF Joint Monitoring Programme

Since 1990, the WHO and UNICEF have been collaborating in the Joint Monitoring Programme. In particular, they were mandated by the UN Secretary General to provide - through the JMP - coverage estimates on water supply and sanitation that can be fed into the reporting system of the MDGs.

The JMP's main purpose is to: (i) build national capacity for the water and sanitation sector, (ii) monitor, and (iii) inform policy makers globally on the status of the sector. In addition, the JMP must ensure that the different organisations that report on water supply and sanitation development adopt a common set of definitions and criteria to describe access to water supply and sanitation services. JMP assessments were made in 1991, 1993, 1996, and 2000. In 2004, for the first time, a "Mid-term assessment of progress" was produced, which measured progress towards the MDG drinking water and sanitation target (JPM, 2004).

Since 1997, the method for calculating trends in access to safe drinking water and sanitation has been changed, due to the limitations of provider-based data reported by national governments and service providers[30]. Household surveys provide an important step forward in obtaining a more accurate picture of access and use of facilities, collecting data from consumers on the facilities that they actually use, including those they have installed themselves, such as private wells or pit latrines, etc.

Household surveys commonly used by the JMP in its coverage estimates include demographic and health surveys (DHS) conducted by Macro International and funded by USAID, UNICEF's multiple indicator cluster surveys (MICS), national census reports and living standards measurement surveys. Both DHS and MICS are national cluster sample surveys, covering thousands of households in each country. The samples are stratified to ensure that they are representative of urban and rural areas of each country. Provider-based data are used only when no survey data are available.

[29] GWP is a working partnership among all those involved in water management: government agencies, public institutions, private companies, professional organizations, multilateral development agencies, and others committed to the Dublin-Rio principles.

[30] Varying definitions of "access" according to the country, difficulty in assessing access to improved services other than household connections, no consideration given to whether or not facilities are functioning or used, no reporting on self-built facilities or systems installed by small local communities.

The JMP assembles, reviews, and assesses these survey and census data. A set of rules was drawn up to make the interpretation of collected data, and their graphical conversion into data points, a systematic and objective exercise. In the JMP's "Mid-term assessment of progress" report, survey and census data are plotted on a time scale from 1980 to the present. A linear trend line based on the least-squares method[31] is then drawn through these data points to estimate coverage both for 1990 and 2002. These estimates form the basis for the assessment of progress towards Target 10.

3.3.4 Problems of interpretation and methodological issues

The interpretation of Target 10 and of its related indicators, as well as the methodology currently used to monitor progress raises a number of issues that have to be kept in mind when analysing MDG progress reports:

a) Terminology

No official definition of "sustainable access", "safe drinking water", and "basic sanitation" is provided by the JMP. Through indicators 30 and 31, the JMP reports on access to "improved" water supply sources and "improved" sanitation facilities, the assumption being that those technologies identified as "improved" are most likely to provide access to safe water and adequate sanitation. However, there is no evidence that the so-called "improved" technologies do provide safe water or adequate sanitation. Moreover, the concept of safety and reliability of water sources and of adequacy of sanitation facilities from a user's point of view, key to any analysis of the status of the water supply and sanitation sector, have until now been overlooked in the monitoring process. In some locations, for instance, an unprotected household well may provide a better supply of water, both in terms of quantity and quality of water, than a household connection that may be subject to intermittence and poor water quality. The concept of sustainability (both in terms of service and environment), present in the Target 10 definition, is not addressed by indicators 30 and 31. Finally, affordability is only implied, but not clearly stated.

b) Baseline date

The definition of Target 10 does not explicitly provide for a baseline date against which progress should be monitored. Although the MDGs were formulated in 2000, and in spite of the initial statement of UN Secretary General ("*Halve, by 2015,…*" – [see above section]), the baseline for the MDG target on water and sanitation, and for most MDG targets in general, has been set as 1990 (JPM,2004).

According to the French Water Academy, who used 2000 as baseline year in its March 2004 report,(Water Academy, 2004), selecting 1990 as the baseline year is not, as could be thought, neutral and less demanding: in fact it results in a decrease of the target for access to water at global level from 91 per cent to 89.5 per cent in 2015 and of the target for access to sanitation from 81 per cent to 77.5 per cent.

c) Household surveys

Although providing the best and most reliable data sources available to understand the status of the water supply and sanitation sector, particularly when compared to information supplied by governments or service providers, household surveys also have certain drawbacks:

- They are not conducted recurrently in many countries;

[31] The method of least squares assumes that the best-fit curve of a given type is the curve that has the minimal sum of the deviations squared ("least square error") from a given set of data.

- The lack of standard indicators and methodologies makes it difficult to compare information obtained from different surveys. The JMP has already started working on the harmonisation of survey instruments (MICS, DHS, etc.) in order to increase comparability of household surveys;

- They do not include questions as to the reliability of the water supply, the quality or affordability of the water, the distance between the household and the water or sanitation facility, the availability of separate sanitary facilities for women and men, or how hygienic a sanitary facility actually is.

d) Lack of data leading to unreliable projections

The quality of the results obtained when using a linear regression line to find the best fit to available data depends, *inter alia*, on the number of such points. When it comes to the EECCA region, unfortunately few such points exist[32]. In the JMP's mid-term assessment report - the first attempt to establish progress made towards Target 10 from 1990 to 2002 - none of the 1990 or 2002 estimates produced for the EECCA region, be it for water supply or sanitation, correspond to data obtained from surveys conducted in those years:; instead they result from the linear regression method using data collected in other years. But for seven out of the 12 EECCA countries, only one year of actual data is used by the JMP for the period 1990-2002. This of course heavily undermines an assessment of progress, limited as it is to an analysis of such short-term coverage estimates. In addition, the progression being linear, as opposed to curve, all EECCA country coverage estimates show - if not progress - at least an absence of deterioration between 1990 and 2002. This contradicts the widespread and well-known phenomenon of severe deterioration - and at times even collapse - of the water supply and sanitation infrastructure in most of the EECCA countries since 1990, corroborated, when available, by the poverty reduction strategies prepared by the EECCA countries themselves (PRSs)[33].

Finally, the overall monitoring process lacks national and even - in the case of large countries - sub-national level targets, as well as intermediary targets between 2005 and 2015.

e) Urban versus rural

Whereas indicators 30 and 31 both distinguish between urban and rural populations, it is unclear whether Target 10 should be reached globally or separately for each category of population. In its latest report, the UN Task Force for Water and Sanitation indicates four components of Target 10, (UN Task Force on Water and Sanitation, 2005), which seems to imply that Target 10 is actually made of four separate sub-targets. This interpretation is supported by the mention of the same four sub-targets in the latest UN MDG progress report (UN, 2004). This point needs to be clearly stated as it has major strategic and financial implications.

f) Poverty reduction

The spirit of the Millennium Declaration, *i.e.* poverty reduction, should be kept in mind while focusing on the water and sanitation MDG target. This means that Target 10 should not merely consist of an extension of coverage, but that it should also concentrate on the very poorest, often located in rural

[32] See Annex.

[33] PRSs are a prerequisite for low income countries to receive concessive assistance from the World Bank through the International Development Association (IDA) and the IMF through the Poverty Reduction and Growth Facility (PRGF). Within the World Bank, IDA is specifically in charge of providing help in the form of long-term interest-free loans (credits) and grants to the earth's poorest countries to reduce poverty and deal with MDG challenges. Seven EECCA countries are IDA borrowers: Armenia, Azerbaijan, Georgia, the Kyrgyz Republic, Moldova, Tajikistan, and Uzbekistan.

areas. Unfortunately, indicators used to monitor Target 10 progress are not designed to specifically track progress in the struggle against poverty.

3.3.5 Assessment of progress towards Target 10 in the EECCA region based on the UN monitoring system

Considering the above, monitoring the progress made towards Target 10 in the EECCA region cannot but result in a distorted view of the actual status of the WSS sector. Both the global MDG progress report published by the UN in the second half of 2004 and the JMP's "Mid-term assessment of progress" issued in 2004 and based on 2002 estimates, unfortunately provide the best illustration for this:

a) The UN MDG global progress report (up to September 2004)

The latest UN MDG progress report, providing information worldwide at a regional level, was issued based on statistics available in September 2004. The information related to the CIS (Europe and Asia)[34] is described below:

Table 3.3: UN MDG progress report on Water Supply and Sanitation in CIS

Water supply	Status
Halve the proportion without improved drinking water in urban areas:	MDG met
Halve the proportion without improved drinking water in rural areas:	high access but limited change (progress but at a rate that is so far insufficient to meet the target)

Sanitation	Status
Halve the proportion without sanitation in urban areas:	high access but limited change (progress but at a rate that is so far insufficient to meet the target)
Halve the proportion without sanitation in rural areas:	no significant change (no change or negative change relative to the target since 1990, or current levels unsatisfactory compared to global standards)

Source: UN (2004).

The gap in coverage described in this report appears significantly understated and contradicts the findings of reputable water supply and sanitation experts working in the region[35]. According to this report, Target 10 is deemed already met in urban areas as far as water supply is concerned, and the only potentially negative change having occurred in the sector since 1990 is limited to sanitation in rural areas. This information is reproduced as such in the 2005 report issued by the UN Millennium Project "Investing in development – A practical plan to achieve the Millennium Development Goals".

[34] CIS in Europe = Belarus, Republic of Moldova, Russian Federation, Ukraine; CIS in Asia = Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan.

[35] See section 2.1.

b) Coverage estimates produced by the JMP at the national level

If the quality of estimates produced by the JMP in its 2004 "Mid-term assessment of progress" has obviously improved compared to the estimates issued in its "Global water supply and sanitation assessment 2000" report, thanks, *inter alia*, to a finer interpretation given to "improved" technologies[36], the outcome of the report is still misleading:

Table 3.4: Coverage of population in EECCA with improved water supply and sanitation

Water supply % of population with access to improved drinking water sources	**1990**			**2002**		
	Urban	Rural	Total	Urban	Rural	Total
Armenia	99	-	-	99	80	92
Azerbaijan	80	49	66	95	59	77
Belarus	100	100	100	100	100	100
Georgia[37]	-	-	-	90	61	76
Kazakhstan	96	72	86	96	72	86
Kyrgyz Republic	98	-	-	98	66	76
Republic of Moldova	97	-	-	97	88	92
Russian Federation	97	86	94	99	88	96
Tajikistan	-	-	-	93	47	58
Turkmenistan	-	-	-	93	54	71
Ukraine	100	-	-	100	94	98
Uzbekistan	97	84	89	97	84	89
Sanitation % of population with access to improved sanitation	**1990**			**2002**		
	Urban	Rural	Total	Urban	Rural	Total
Armenia	96	-	-	96	61	84
Azerbaijan	-	-	-	73	36	55
Belarus	-	-	-	-	-	-
Georgia	96	-	-	96	69	83
Kazakhstan	87	52	72	87	52	72
Kyrgyz Republic	-	-	-	75	51	60
Republic of Moldova	-	-	-	86	52	68
Russian Federation	93	70	87	93	70	87
Tajikistan	-	-	-	71	47	53
Turkmenistan	-	-	-	77	50	62
Ukraine	100	97	99	100	97	99
Uzbekistan	73	48	58	73	48	57

Source: JMP (2004).

[36] For example, according to the JMP, 100 per cent of the population of the Kyrgyz Republic (urban and rural) had access to adequate sanitation in 2000; the proportion fell to 76 per cent in 2002 (98 per cent urban; 66 per cent rural).

[37] According to Mr Kandelaki, Head of the Gruzvodokanal, and based on recent work done related to the financing strategy for the water supply and sanitation sector in Georgia, the percentages should read:
- Percentage of population with access to water supply in 1990: urban 82 per cent, rural 29 per cent, total 58.7 per cent;
- Percentage of population with access to water supply in 2002: urban 82 per cent, rural 15.3 per cent, total 54.3 per cent;
- Percentage of population with access to sanitation in 1990: urban 60 per cent, rural 0 per cent, total 60 per cent;
- Percentage of population with access to sanitation in 2002: urban 58 per cent, rural 0 per cent, total 58 per cent.

These figures do reflect a well-known feature of the EECCA countries' water supply and sanitation sector, *i.e.* well developed infrastructure inherited from the Soviet Union times. They remain, however, puzzling for anyone having some experience of the region:

- In no EECCA country did the WSS sector deteriorate between 1990 and 2002 (in other words the proportion of population having access to improved drinking water sources or sanitation did not decrease in any of the EECCA countries). In most of the region, the situation remained stable, with improvements registered in the water supply sector in Azerbaijan and the Russian Federation[38] (UNDP, 2003);

- These estimates might represent the proportion of the population benefiting from "improved" technologies, but it is doubtful whether the same proportion actually enjoys safe drinking water and basic/adequate sanitation at any time and all year round, especially in rural areas;

- These estimates are not consistent with coverage estimates provided, if and when available, in poverty reduction strategy papers.

The absence of 1990 coverage estimates - out of a total of twelve countries in the EECCA region estimates are missing for: (i) three countries in urban areas and seven in rural areas in the case of water supply, and (ii) six countries in urban areas and eight countries in rural areas in the case of sanitation – also contributes to making a prospective trend difficult to establish[39]. In other words, how can Target 10 be quantified if the proportion of people without improved drinking water and sanitation is unknown in the baseline year?

Finally, as already mentioned earlier, when looking at the user-based surveys from which data were collected and then used by the JMP to produce estimates[40], it appears that:

- In the period from 1990 to 2002, seven out of 12 countries have been subjected to only one survey, the data of which have been used by the JMP;

- No surveys were conducted precisely for the years 1990 and 2002; the coverage estimates for those two years are all derived from the linear trend line method.

***c) Progress reported by the World Bank in its "Global monitoring report 2005"*(World Bank 2005a)**

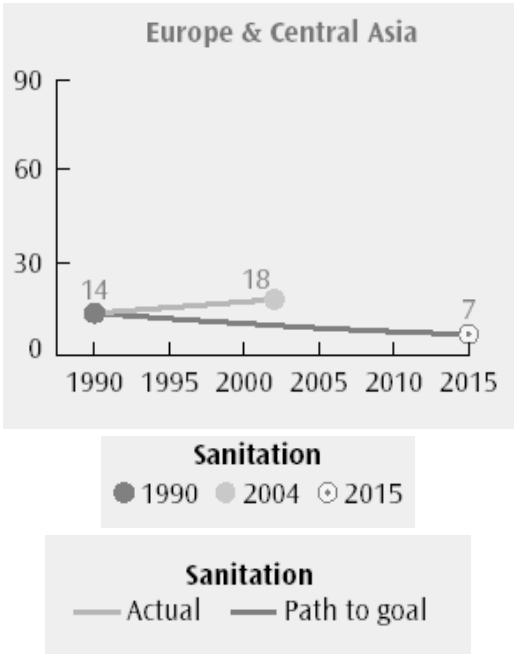
In its recently issued "Global monitoring report 2005", the World Bank (WB) comments on progress made towards Target 10 on a regional basis. While the "Europe and Central Asia" region, which includes the EECCA region, is deemed off track when it comes to sanitation, no mention is made of the situation of water supply in the region. The chart below, based on JMP data, shows the percentage of population in the "Europe and Central Asia" region without access to improved sanitation in 1990, 2004, and the 2015 MDG projected target level:

[38] This does seem consistent with the fact that people in the EECCA region ended the 1990s less healthy and with lower average incomes than people in Latin America and the Caribbean; seven countries out of 12 (Armenia, Azerbaijan, Georgia, Kyrgyz Republic, Republic of Tajikistan, and Uzbekistan) ended the 1990s with income close to those of the least developed countries (source: UNDP (2003), Human Development Report).

[39] However, the countries for which the JMP 1990 coverage estimates (resulting from the linear trend line method) are provided represent 72 per cent and 83 per cent of the total EECCA population respectively for water supply and sanitation, the Russian Federation alone representing more than half of the population of the EECCA region.

[40] See Annex.

Figure 3.1: Percentage of population in Europe and Central Asia without access to improved sanitation and the 2015 MDG target



Source: World Bank/JMP.

Interestingly, for all regions, charts similar to this one exist for both water supply and sanitation, except for the "Europe and Central Asia" region for which **only sanitation estimates are available**, thereby pointing at the unavailability of equivalent water supply estimates. No further explanation for the missing chart is provided in the report.

As for sanitation, "Europe and Central Asia" appears - not surprisingly - off track in terms of reaching Target 10 by 2015. No details are available however to substantiate the percentages shown or the method used to determine the level of Target 10 in 2015.

In the three above-mentioned publications covering the monitoring of progress achieved by the water supply and sanitation sector in the EECCA region, JMP coverage estimates lie at the heart of the reporting exercise. However, while user-based data used by the JMP appear as probably the best and most reliable data sources currently available to monitor progress towards the reaching of Target 10, a proper assessment of progress made towards Target 10 in the EECCA region cannot be derived from the JMP's monitoring system as it stands at present. Technology-focused indicators ignoring quality, reliability, and sustainability issues, combined with poor data collection, invalidate the JMP's MDG progress monitoring of the water supply and sanitation in the EECCA region. This brings about two major implications:

- Donors and IFIs should not base their fund allocation strategies in the EECCA WSS sector on official MDG progress reports;

- The feasibility of assessing: (i) the amount of funds necessary to reach Target 10, let alone (ii) the amount of external financing that should be raised for that purpose, already a daunting challenge in itself, becomes a real issue.

3.4 Estimating the costs and amount of financing needed to reach Target 10 in the EECCA region: comparison of the methods used and of their outcome

In the 2003 "Financing water for all" report of the World Panel on Financing Water Infrastructure[41], known as the "Camdessus report", the amount of funds needed to achieve Target 10 - using the most basic standards of service and technology - was estimated at an extra annual investment cost of about USD 10 billion[42]. Should full water and sewerage connections and primary wastewater treatment be provided to the urban population, the total amount required per year was estimated at USD 17 billion for water and USD 32 billion for sanitation and sewerage.

Estimates such as these from reputable experts and international organisation have ranged over the past few years between $6.5 billion per year (UN MDG Task Force on Water and Sanitation, 2004) to USD 75 billion per year (World Water Vision, 2000), (WELL 2004). The breadth of this range is, *inter alia*, due to the difference in the assumptions used, such as the choice of the technology applied, the level of service to be provided and their unit costs, the baseline year, the population growth estimates, as well as the initial purpose of the calculation (for instance, maintenance and rehabilitation costs of existing infrastructure are sometimes taken into account). The choice of the technology is particularly crucial as solutions need to be adapted to the level of economic development in urban as well as rural settings.

Such differences in key assumptions make comparison between various estimates extremely difficult and underline the need to precisely understand the assumptions used to produce estimates.

Few studies were carried out, however, to assess the amount of funds needed to reach Target 10 in the EECCA region. This chapter concentrates on the most recent and comprehensive ones, *i.e.*:

- A study, still in a draft form although at a very advanced stage, undertaken in May 2004 by the consultancy firm COWI at the request of the Danish Ministry of Environment, and entitled "Financial needs of achieving the Millennium Development Goals for water and sanitation in the EECCA region". This study is based on information from various sources (official statistics, relevant international databases, reports and studies from major international organisations, combined with COWI's own data base and environmental financing strategies); and

- The World Bank "Meeting the environment Millennium Development Goal in Europe and Central Asia" report, dated June 2003, which covers ECA countries and includes a detailed "MDG costing exercise" for Kazakhstan, Moldova, and the Ukraine.

Both studies reviewed focus on costs only and do not provide any assessment of the associated socio-economic benefits. According to the WHO, the cost-benefit ratio of meeting the MDG on water supply and sanitation in the UN Economic Commission for Europe region[43] is 13, *i.e.* for every one USD invested there is a potential economic return of 13 USD.

Before analysing various attempts made to calculate the cost of reaching Target 10 in the region and the associated amount of financing needed, it is useful to better understand the magnitude of the crisis prevailing in the WSS sector in the EECCA region.

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[41] This panel of financial experts was formed as a joint initiative of GWP, WWC and the 3rd World Water Forum in Kyoto to address the ways and means of attracting new financial resources to the water and sanitation field.

[42] Unofficial estimates by the WSSCC, one of the first international networks of concerned professionals and activists created in 1990 and committed to improving the quality of life of billions of people who lack access to safe water, sanitation, and hygiene.

[43] The UN's Economic Commission for Europe has 55 member countries from Europe, Caucasus, and Central Asia, as well as Canada and the United States.

3.4.1 Brief overview of the current status of the water supply and sanitation sector in the EECCA region[44]

The water supply and sanitation sector in the EECCA region is in the midst of an extremely severe crisis. Central Asia and Caucasus countries in particular must begin to combat the collapse of existing infrastructure. This situation does not stem from limited water resources, even though the high annual internal renewable water resources[45] per inhabitant (IRWR) in the EECCA countries [46] hides large disparities within the region, and sometimes even within the same country[47]. The roots of the crisis rather originate from the following:

- An overall continuous deterioration of the WSS infrastructure since the collapse of the Soviet Union in the 1990s, due to a lack of resources for proper operation and maintenance[48], particularly severe in the rural areas, which used to have some form of centralised WSS system and where entire networks have collapsed;

- Soaring charges compared to household incomes, due to:

  - Over-designed systems inherited from the ex-Soviet Union frequently breaking down or leaking (see above);

  - Tariffs that remain disconnected from the economic costs of supplying water and sanitation;

  - The absence of incentive mechanisms to encourage cost reduction and service optimisation;

  - High electricity charges (one of the main cost items for WSS utilities);

- The continuation of excessive water consumption due to the limited development of metering practises.

As a result, WSS services are inadequate, and drinking water safety often a serious issue:

- Irregular and unreliable water supply[49] is frequent, often due to insufficient water pressure (and/or interruption of power supply). Discontinuity in water supply brings about: (i) a further deterioration of the infrastructure, and (ii) an increased risk of drinking water contamination and water-related health problems[50];

[44] For more information on the status of the water supply and sanitation sector in the EECCA region, see the background paper entitled "Progress on implementing the Almaty Guiding Principles".

[45] Average annual flow of rivers and recharge of groundwater generated from endogenous precipitation (in km^3/year).

[46] 16 000 m3; more than twice the world's average.

[47] The region actually encompasses a wide variety of situations in terms of water resources: the average IRWR in the Russian Federation amounts to 29 000 m3 per year per inhabitant, compared to an average IRWR in Caucasus of 4 517 m3, and even less in Central Asia.

[48] According to COWI, 20 to 50 per cent of WSS infrastructure assets are physically exhausted.

[49] In many cities, water is supplied based on a schedule.

[50] Waterborne diseases are often linked to secondary contamination of water in urban distribution systems: infiltration of sewage water into empty water supply systems is often the reason for contamination of drinking water when both water supply and sewage networks leak in the same place.

- Water quality does not meet basic chemical and microbiological standards in most of the region, constituting a real health threat in the form, not only of contaminated drinking water, but also of a vector of diseases such as trachoma, cholera, typhoid, and hepatitis.

The situation of the WSS sector in the EECCA region is now such that polluted drinking water has become one of the most important environmental and public health problems currently facing most of the EECCA countries. In this appalling context, reaching MDG Target 10 by 2015 - provided a target level is set for each country - appears to be even more of a challenge for the whole region.

3.4.2 The World Bank "per capita" approach to estimating the amount of funds needed to reach Target 10

In its June 2003 report, the WB underlines the difficulty of estimating the amount of funds needed to reach Target 10 in the ECA region, related, *inter alia*, to the issues of base year, data reliability and data gaps, and the inadequacy of Indicators 30 and 31 when it comes to this region. In particular, the WB is well aware of the fact that, "*there are serious water quality problems for many consumers of water that, by the MDG definition, would be regarded as an 'improved source'*", and therefore concludes that there is a need for a different water target, "*focusing on quality as well as delivery*", which should be monitored and the value of which should be established. A similar observation is made on sanitation.

In this context, the cost of reaching Target 10 - taking into account the need to improve quality - is estimated for only three countries: Kazakhstan, Moldova, and the Ukraine.

a) Cost of water supply programmes in Kazakhstan, Moldova, and the Ukraine

In urban areas, the MDG WS target is interpreted as the percentage of population having access to piped water. Starting from the level of access to piped water in percentage of the population in 2000[51], an MDG target is derived for each of the three countries, translated into a number of inhabitants. Food and Agriculture Organisation (FAO) population forecasts are used.

An estimation of the per capita cost of different options for rehabilitating and increasing the access to water in urban areas, such as the per capita cost of digging wells, is then made for each country. A combination of these options is assumed based, *inter alia*, on the proportion of the infrastructure that needs rehabilitating. Among costs estimated are, for instance, treatment costs of ground and surface water (the highest per capita costs, ranging between USD 42 and USD 573 per person), surface water storage costs, and costs of rehabilitating the treatment system. Different per capita costs are sometimes used to account for the size of the cities in terms of population.

In rural areas, an alternative solution to exclusive water provision by way of piped water, which would be very costly, is to combine it with other methods such as safe wells. An MDG target is similarly derived for rural areas, with initial 2000 coverage estimates provided by the WB[52].

The total water supply programme cost is then defined as the sum of:

1. **Cost of improving water quality** (*i.e*. cost of rehabilitating the existing system); plus

2. **Cost of improving population access to safe water** (*i.e*. infrastructure cost of building additional piped water systems in urban areas and cost of a combination of piped water and well in rural areas); plus

[51] See water supply table below.

[52] See sanitation table below.

3. **Cost of operation and maintenance** (*i.e*. cost of sustaining water access), estimated at 15 per cent of the sum of the above two costs of: (i) improving water quality, and (ii) improving population access to safe water.

As a result, the following amounts of funds are assumed to be necessary for the reaching of Target 10 in the water supply sector of Kazakhstan, Moldova, and the Ukraine:

Table 3.5: Estimated cost of achieving MDG target 10 on water supply in Kazakhstan, Moldova and Ukraine (in million 1995 US$)

Country	Access to improved water (%)				Costs for period 2000-2015				Annual cost	
	Situation in 2000		MDG 2015		TOTAL	A Rehab.	B Extension	C O&M	As % of 2002 GDP	Total annual cost
	Urban	Rural	Urban	Rural						
Kazakhstan	96.9 *96*	82 *72*	97.8	87.4	**650**	268	297	85	0.2	**43**
Moldova	79.6 *97*	88 *88*	85.7	91.6	**106**	54	38	14	0.2	**7**
Ukraine	95.6 *100*	94 *94*	96.9	95.8	**1 001**	871	-	131	0.1	**67**

Source: World Bank (2003a).

Percentage figures shown in small italics are JMP 2002 coverage estimates

b) Cost of sanitation programmes in Kazakhstan, Moldova, and the Ukraine

A similar method is used to estimate the cost of sanitation programmes. In urban areas, priority is given to access to sewage systems with centralised pipelines, while other and cheaper technologies are favoured in rural areas (combination of public sewer, septic system, and pit latrines, for instance). The resulting estimates are the following:

Table 3.6: Estimated cost of achieving MDG target 10 on sanitation in Kazakhstan, Moldova and Ukraine (in million 1995 US$)

Country	Access to sewage system (%)				Costs for period 2000-2015				Annual cost	
	Situation in 2000		MDG 2015		TOTAL	A Rehab.	B Extension	C O&M	As % of 2002 GDP	Total annual cost
	Urban	Rural	Urban	Rural						
Kazakhstan	73.1 *87*	98 *52*	81.2	98.6	**553**	112	369	72	0.1	**37**
Moldova	67.6 *86*	98 *52*	77.3	98.6	**106**	31	62	14	0.2	**7**
Ukraine	79.8 *100*	98 *97*	85.9	98.6	**508**	402	-	66	0.1	**34**

Source: World Bank (2003a).

Percentage figures shown in small italics are JMP 2002 coverage estimates

While the origin of certain assumptions and the details of some calculations are not provided in the WB report, making any further analysis impossible, the following observations can be made:

- The MDG principles used by the JMP are not fully complied with:
  - The base year is 2000, due to lack of available data in 1990;

- In urban areas, the water supply indicator is interpreted as the percentage of population having access to piped water;

- 2000 coverage estimates are in some cases higher than official JMP 2002 estimates, and surprisingly high when it comes to sanitation in rural areas (98 per cent in all three countries);

- The costs of establishing new sewerage treatment systems[53] are taken into account.

- The standards of rehabilitation of the WSS systems are not defined;

- The costs of meeting Target 10 include the costs of establishing new sewerage treatment systems;

- They do not seem to include operations and maintenance costs related to the part of the existing infrastructure that is not deemed in need of rehabilitation. Such costs could also be construed as part of the global cost of reaching Target 10, as if they are not incurred, access to "improved" water supply and sanitation will be lost by part of the population.

For comparison purposes, it should be noted that costs are expressed in absolute terms in 1995 USD and then as a percentage of the 2002 GDP.

c) Cost of reaching Target 10 in the CIS countries over the period 2000-2015

Finally, **the cost of achieving Target 10 in all CIS countries between 2000 and 2015 is estimated at USD 1.1 billion annually[54],** of which 55 per cent is for water supply, based on the following assumptions:

- The average cost of rehabilitating the existing WSS infrastructure is estimated to be USD 60 per capita;

- The cost of building a new water supply system is USD 200 per capita;

- The cost of building a new sewage system in urban areas is USD 250 per capita;

- The cost of providing pit latrines in rural areas is USD 25 per capita;

- Thirty-five per cent of existing WSS systems need rehabilitating;

- In urban areas, the MDG target is assumed to imply access to a piped water system and a public sewage system; in rural areas, it is assumed to imply access to improved WSS as per the UN MDG definitions.

No further explanation is provided as to how this aggregated estimate is obtained. It is unclear whether it includes the cost of establishing new sewerage treatment systems or operations and maintenance costs.

[53] The per capita unit cost table related to sewerage systems includes the cost of "establishing new treatment system".

[54] Presumably based on the value of the USD in 1995.

3.4.3 The COWI approach to estimating the amount of funds needed to reach Target 10: an inventory combined with the use of the FEASIBLE55 financial modelling tool

In its draft report, COWI not only aims at estimating the cost of achieving Target 10 in the EECCA region using the FEASIBLE tool, but also at analysing how this cost can be financed.

COWI first points out the issues raised by the costing of the achievement of Target 10:

- The absence of precise information as to the level of services that should be targeted;
- The lack of definition for "safe water" (COWI assumes that "safe water" is water that, if drunk, does not immediately threaten human health);
- The fact that the MDG definition should be interpreted on a country-by-country basis (for instance, to achieve the same health impact in different countries, various levels of service might have to be achieved);
- The need to take rehabilitation costs into account in the calculation, keeping in mind the underlying health objectives of Target 10 and the difficulty of assessing the extent of the necessary rehabilitation to provide minimum levels of quality and service;
- The lack of consistency and adequacy of existing data and indicators to properly reflect the real situation with respect to WSS (the "*wide discrepancy between the reality…and existing official information*" is underlined).

a) Input data

COWI uses the following input data:

- Population broken down into urban and rural categories (based, *inter alia*, on official country statistics), and into five different sizes of settlements, from above one million inhabitants to less than five thousand inhabitants, unit costs varying with the average size of towns;
- Water supply and sanitation coverage estimates distinguishing between "improved" and "not improved", "urban centralised", "urban other" and "rural", mostly coming from the household surveys' estimates published by the JMP[56].

[55] FEASIBLE is a computerised decision support tool, the development of which was funded by Denmark and carried out by COWI with the assistance of the OECD, and the purpose of which is to help address financial issues related to the achievement of environmental goals.

[56] See, however, Annex IV where some discrepancies are shown, especially as far as sanitation is concerned.

Table 3.7: Water supply and sanitation coverage estimates used in COWI report

	Water supply	**Sanitation**
Urban areas	20% to 50% of network infrastructure and equipment of centralised water systems should be substantially rehabilitated. 30% has been estimated for the majority of countries, though 20% for the Russian Federation and Belarus; For the share of population not having access to safe water supply, a connection to the existing system is considered as the "improved" technology in the MDG sense.	10% to 50% of centralised sewerage collection and treatment systems should be rehabilitated. 10% is assumed for calculation purposes; A connection to the existing centralised system is considered as the adequate technology for the share of population not having access to sanitation.
Rural areas	20% to 50% of existing water supply systems and 20% to 40% of other sources such as wells and springs need rehabilitation; Stand posts with a minor system of supplied water for relatively large urban settlements and hand pumps for smaller villages are assumed to provide safe water to the population without access.	10% to 40% of existing rural water technologies need rehabilitation. 40% is assumed for the purpose of calculations; Simple ventilated pit latrines are assumed to provide adequate sanitation.

Source: COWI (2004).

b) Main assumptions and rehabilitation needs of the WSS systems [57]

c) Cost functions and unit costs

Table 3.8: Cost function and input costs (Euro per capita) used in COWI report

Category	Rural village	Small town	Town	Large city
Population	**1 000**	**10 000**	**100 000**	**1 000 000**
Water				
Hand pump/protected well	45	45	45	45
New connection treatment	80	45	20	10
New connection distribution	100	100	100	120
Renovation treatment	25	15	7	4
Renovation distribution	30	30	30	40
Sanitation				
Pit latrine ("improved")	40	40	40	40
New connection – wastewater treatment (mechanical)	60	40	20	20
New connection sewer	180	160	150	100

Source: COWI (2004).

Unit costs are determined using several cost functions, such as the length of the distribution network as a function of the total population and its density, or the pipe density as a function of the total population. Due to their complexity and the fact that they are not fully elaborated upon in COWI's draft report, only the outcome of these calculations is shown below. These costs are then "calibrated" to price and cost levels in the various EECCA countries.

d) "MDG costs" estimate of reaching of Target 10 over the period 2002-2015

The total cost of reaching Target 10 (the so-called "MDG costs") is defined over the period 2002-2015 (14 years) as the sum of:

- **Cost of service extension**; plus
- **Cost of rehabilitating the existing system** to such a level that it can provide safe and adequate WSS services.

[57] The percentages mentioned in this paragraph are based on a substantial amount of data collected from surveys and public sources, and from COWI's own projects carried out in the region over the last ten years.I It should be noted that different values appear throughout COWI's draft report for the same data (20-50 per cent instead of 10-50 per cent, 20-50 per cent instead of 30-50 per cent, 10-50 per cent instead of 20-50 per cent).

The "MDG costs" are assessed using - for each country - the best estimate for all key input data:

Table 3.9: Estimated cost of achieving target 10 (in million €)

Country	Water supply				Sanitation				WSS			
	Rehab.	Serv. ext.	**Total**	Per capita	Rehab.	Serv. Ext.	**Total**	Per capita	Rehab.	Serv. ext.	**Total**	Per capita
Armenia	140	0	**140**	44	50	10	**60**	16	190	10	**200**	59
Azerbaijan	260	30	**290**	35	140	200	**340**	43	400	230	**630**	78
Belarus	430	0	**430**	43	190	0	**190**	19	620	0	**620**	62
Georgia	170	10	**180**	42	40	10	**50**	11	210	20	**230**	53
Kazakhstan	520	20	**540**	37	140	20	**160**	12	660	40	**700**	49
Kyrgyz Rep.	170	40	**210**	42	30	140	**170**	34	200	180	**380**	76
Moldova	100	10	**110**	26	40	10	**50**	12	140	20	**160**	37
Russian Fed.	3 850	0	**3 850**	27	2 370	0	**2 370**	16	6 220	0	**6 220**	43
Tajikistan	200	70	**270**	41	20	170	**190**	29	220	240	**460**	71
Turkmenistan	260	10	**270**	51	40	40	**80**	17	300	50	**350**	68
Ukraine	2 050	120	**2 170**	45	660	110	**770**	16	2 710	230	**2 940**	61
Uzbekistan	910	240	**1 150**	46	190	370	**560**	22	1 100	610	**1 710**	69
TOTAL	**9 060**	**550**	**9 610**	**34**	**3 910**	**1 080**	**4 990**	**18**	**12 970**	**1 630**	**14 600**	**52**

Source: COWI (2004).

The "MDG cost" estimate of €14.6 billion for the period 2002-2015 is the central estimate out of a wide range of values from €7 billion to €21 billion. Approximately two thirds of this estimate relate to water supply, and close to 90 per cent of it to rehabilitation costs (as opposed to service extension costs). The importance of extension service costs in the sanitation sector in Central Asia should be noted.

The average per capita cost estimate amounts to €52, varying from €37 in Moldova to €78 in Azerbaijan.

e) "Total costs" estimate of reaching Target 10

COWI goes beyond the mere calculation of "MDG costs" and attempts to calculate an all-in cost (the so-called "Total costs") which also includes O&M and re-investment costs. "Total costs" are the sum of:

- "**MDG costs**" over the period 2002-2015 (14 years); plus
- **O&M costs of the existing system**; over the period 2000-2020 (21 years) ; plus
- **O&M costs of new extensions and additional facilities** to be built over the period 2000-2020; plus
- **Re-investment costs** over the period 2000-2020, *i.e.* investment costs needed to maintain the same level of quality/service of the existing infrastructure (COWI does not include such costs under the "MDG costs", where the level of quality/service is assumed to be improved above the current level).

This second cost estimate corresponds to an aggregate of costs over two different periods, *i.e*. 14 years on the one hand and 21 years on the other. It is this estimate that COWI uses to explore the feasibility of financing the cost of reaching Target 10.

The annual "Total costs" estimates per country are obtained by dividing the "Total costs" estimate by 20:

Table 3.10: Estimated annual total cost of achieving MDG target 10 (in million Euro)

	Water supply		Sanitation		WSS	
Country	Total	Per capita	Total	Per capita	Total	Per capita
Armenia	58	18.1	26	7.9	84	26.0
Azerbaijan	102	12.8	87	10.9	189	24.0
Belarus	211	20.9	91	9.0	302	30.0
Georgia	69	15.3	29	6.3	98	22.0
Kazakhstan	233	16.1	100	6.9	333	23.0
Kyrgyz Rep.	80	16.0	30	6.0	110	22.0
Moldova	44	10.2	26	6.1	70	16.0
Russian Fed.	2 408	16.6	1 254	8.6	3 662	25.0
Tajikistan	85	13.1	32	4.9	117	18.0
Turkmenistan	120	22.7	32	6.1	152	29.0
Ukraine	868	18.0	384	8.0	1 252	26.0
Uzbekistan	411	16.5	142	5.7	553	22.0
TOTAL	**4 689**	**16.3**	**2 233**	**7.2**	**6 922**	**23.6**

Source: COWI (2004).

The **annual "Total costs" estimate of €6.9 billion per year** appears out of proportion with the so-called "MDG costs": over a 14-year period, it amounts to nearly €97 billion, more than six times the "MDG costs". In other words, based on COWI's draft report, the real challenge for the EECCA regions in the years to come lies much more with the O&M of the WSS systems and the maintaining of the existing infrastructure at its current level of quality/service than with extension costs or costs incurred to improve the current level of quality/service and bring it to an "MDG Target 10 compliant" level.

A number of points should be clarified or kept in mind in order to have a better understanding of both the "MDG costs" and the "Total costs" estimate calculated by COWI:

- It is unclear whether the population assumption varies in time;
- When it comes to sanitation, COWI's coverage estimates are quite systematically and significantly higher than household surveys' estimates published by the JMP[58];
- The calculation method used for the "Total costs" estimate, involving two different periods, needs clarifying. The same applies to the way the annual "Total costs" estimate is calculated.

f) Financing sources and financing gaps

In its draft report, COWI then studies the feasibility of financing the "Total costs" estimate. The three sources of financing available to the WSS sector are assessed and various scenarios designed in order to carry out sensitivity analysis using the FEASIBLE tool:

- User charges. These include the amount of private expenditures used to sustain all forms of non-centralised water supply systems, sanitation facilities, and methods (assumed to be equal to the total estimated cost of individual systems, *i.e*. €500 million), and represent approximately €3.7 billion or close to €143.5 per capita per year.

The possibility of tariff increases in most EECCA countries is also explored (only Moldova has already reached the affordability limit in this respect, with a ratio "household water bill/household

[58] See Annex.

consumption expenditures" amounting to four per cent, other countries ranking from 0.7 per cent [Belarus] to 2.76 per cent [the Ukraine]). Such affordability reserves can be enhanced by relatively high levels of real income growth prospects in the region.

Two scenarios are derived from the user charges data:

- The share of household payments for water services is gradually increased every year and reaches the maximum level of four per cent by the end of 2007;

- The share of household payments for water services is gradually increased every year and reaches the maximum level of four per cent by the end of 2007, while consumer expenditures rise by four per cent annually in real terms, reflecting the increase in income;

- Public subsidies, for which data collected is said to be subject to some uncertainty. Furthermore, the distinction between investment and current expenditures is often difficult to make. COWI estimates that an amount of €660 million is available for the WSS sector from public budgets each year, 60per cent to 80 per cent of which is allocated to cover current expenditures, *i.e.* €2.4 per capita. This financing source is by far the largest provider of funds to the sector.

One scenario provides for the possibility of an increase in the amount of public budget funds, even if it appears unlikely;

- International donors, defined as IFIs and individual country funds provided through national or international development assistance agencies, covering only a small fraction of the WSS financing needs in the region. EECCA countries were provided with €800 million in the form of IFI loans between 1995 and 2003, *i.e.* €0.36 per capita per year, which, projected to the entire EECCA population would represent €100 million per year. There is no clear pattern in terms of trend. Bilateral donor assistance stands at about 25 per cent of IFI funds provided (€192 million between 1997 and 2001). COWI's assumptions regarding the level of international donor finance during the implementation of the MDG Target 10 programme are not clearly stated, except for bilateral finance, which is maintained at its level over the period 1997-2001.

For each country, the following scenarios are run covering the period from 2000 to 2020 using the FEASIBLE tool, showing the amount of finance available and the gap between the uses and the sources of funds:

1. The current situation remains unchanged;

2. The share of household payments for water services is gradually increased every year and reaches the maximum level of four per cent by the end of 2007;

3. Same as Scenario 2 plus household income rising by four per cent annually in real terms;

4. Same as Scenario 3 plus moderate growth of public budget expenditures over the whole period.

There are obviously contrasts in the situation from one country to the other, but the overall picture appears alarming in terms of reaching Target 10 in the EECCA region:

- Scenario 2 only enables **Armenia** to cover O&M costs, and Scenario 3 to fully cover re-investment costs from 2008. The WSS sector should therefore continue to deteriorate until 2008. The total cumulative gap including the "MDG costs" can only be fully covered in 2020 under Scenario 4;

- **Azerbaijan** covers its O&M costs as well as 30 per cent of re-investment costs under Scenario 1. Only 50 per cent of re-investment costs are covered under Scenario 2, and 100 per cent under Scenario 3, but only in 2020. No scenario enables to fill in the total cumulative gap;

- No scenario enables **Belarus** to cover its O&M costs. At best, the total cumulative gap reaches €3 billion by 2020;

- **Georgia** does not cover its O&M costs and re-investment costs under Scenario 4. Its cumulative gap is never closed;

- Scenario 2 enables the full cover of O&M and re-investment costs by 2007 in **Kazakhstan**. "MDG costs" are covered under Scenario 4. Scenario 4 enables the closure of the cumulative gap by 2007;

- In the **Kyrgyz Republic**, not even 50 per cent of the O&M costs are covered under Scenario 1, and 100 per cent of them are only just covered under Scenario 4 in 2020. Just operating existing WSS infrastructure should present a substantial challenge in the Kyrgyz Republic. The financial deficit should continue to accumulate;

- Under the best scenario, **Moldova** will only just cover its O&M costs and re-investment costs by 2020;

- Under Scenario 1, **Russia** almost covers its O&M and re-investment costs, *i.e*. the deterioration process is stopped. "MDG costs" can be covered under Scenario 2. At best the cumulative gap will be closed in 2005;

- **Tajikistan** never covers its O&M costs and the cumulative gap reaches €1.5 billion by 2020 under the best scenario;

- As WSS services are free of charge in **Turkmenistan**, Scenarios 2 and 3 are not applicable. Scenario 1 is close to full coverage of O&M costs, and Scenario 4 does not enable to fully cover re-investment costs;

- Meeting Target 10 in the **Ukraine** will also be very difficult: O&M and re-investment are only fully covered in 2020 under Scenario 4. The cumulative gap is never closed over the considered period;

- In **Uzbekistan**, O&M costs can be covered under Scenario 1, but even under the best scenario re-investment costs are not fully covered.

3.4.4 Comparing MDG estimates

It is interesting to try and compare the MDG cost estimates calculated in both reports. This exercise can only be carried out for the three countries for which the WB undertook a detailed calculation. Operations and maintenance costs have been deducted from the WB MDG cost estimate, as they are not taken into account by COWI in its "MDG costs' aggregate. Similarly, the cost of establishing new sewerage treatment systems should also have been deducted from the WB MDG cost estimate, but could in fact not be done as this cost has not been isolated in the WB report:

Table 3.11: Comparison of cost estimates for Kazakhstan, Moldova and Ukraine in the COWI and the World Bank reports

MDG cost estimates	COWI 2002-2015 (14 years) (in million €)			World Bank 2000-2015 (in million 1995 US$)		
	WS	S.	Total	WS	S.	Total
Kazakhstan	565	481	1 046	539	166	705
Moldova	54	93	147	112	48	160
Ukraine	871	402	1 273	2 179	776	2 955

The difference in the periods covered and the currencies used cannot alone explain such a wide discrepancy in the country estimates, both in terms of absolute values and split between cost categories (Water supply versus sanitation). The cost of establishing new sewerage treatment systems does not seem to justify the difference between the two MDG cost estimates either, as in this case the WB estimates should systematically be equal or superior to COWI's ones.

When considering the whole EECCA region however, it should be noted that MDG cost estimates provided by COWI and the World Bank, *a priori*, appear to be of a more similar order of magnitude than country estimates. The WB provides a global **annual** MDG cost estimate of USD1.1 billion from 2000 to 2015 (presumably in 1995 USD), without including much detail on the calculations however. Over a 14-year period, this would approximately represent €15.3 million[59] compared to COWI's €14.6 billion over the period 2002-2015. However, the comparability of these two estimates remain questionable as the assumptions used by the WB in its calculation are not clearly defined: are O&M costs and the cost of establishing new sewerage treatment systems included in the global CIS MDG cost estimate of the World Bank ? Do both estimates point to a common order of magnitude or is this a mere coincidence? There is no obvious answer to this question with the information available at present.

3.5 Conclusion

The recent WB "Global monitoring report 2005 – Millennium Development Goals: from consensus to momentum" points to the inadequacy of progress made to ensure the reaching of the MDGs five years after the Millennium Declaration. This is especially true of the reaching of Target 10 in the EECCA region. Most information sources, be it from the countries themselves through PRS papers, or from consultants or IFIs working in the field, point to the disastrous condition of the WSS sector. The only comprehensive and quantitative study available on the feasibility of reaching Target 10 in the EECCA region, *i.e.* the COWI report, indicates that this goal will remain out of reach of the region as a whole[60] over the next twenty years, on the basis of "MDG costs" estimated at €14.6 billion over the period 2002-2015 and "Total costs" estimated at €138 billion over the period 2000-2020. This valuable finding, although interesting, can only be considered as indicative in the face of considerable uncertainties still involved in the costing exercise.

However, COWI's conclusions appear logical in the particular context of the region, where: (i) public financing is scarce or non-existent, (ii) user charges cannot be significantly increased due to affordability constraints, (iii) domestic capital markets generally cannot provide the necessary long-term funding, (iv) the international private sector, negligible anyway in terms of financial flows to the WSS sector, is no longer willing to invest in WSS infrastructure, while the domestic private sector, if it exists, suffers from a lack of access to domestic or foreign long-term funding, and (v) aid from international donors continues to play a limited role. As clearly stated by the WB in its 2005 "Global monitoring report", "*the bulk of the*

[59] 1995 USD 1.1 billion = 2004 USD 1.36 billion = €1.09 billion incl. O&M costs ⇒ €15.3 billion over the period 2002-2015.

[60] Obviously some countries, such as the Russian Federation, appear to be in a better position to reach Target 10 than others.

increase in infrastructure investment…will have to come from the public sector. Infrastructure spending (investment plus operation and maintenance) will need to rise in all regions to support stronger growth and service delivery consistent with MDG targets", but the mobilisation of domestic public funds alone will not enable the EECCA region to reach Target 10.

The challenge is all the more daunting that ODA[61] flows in the WSS sector have decreased in recent years. In its 2004 "Aid for water supply and sanitation" report, the OECD notes a "*drastic decrease in average donor commitments for WSS between 1990-2000 and 2001-2002*[62]*…In real terms, bilateral commitments were in 2002 at their lowest level since 1985*". Moreover, ODA flows into the sector have traditionally been concentrated in a relatively few recipient countries (half of the total bilateral and multilateral commitments in 2001-2002 were allocated to just ten recipient countries, none of them being from the EECCA region (OECD, 2004)). The poverty focus of donors' aid also needs to change if Target 10 is to be reached: only 16 per cent of total aid to the water sector in 2001-2002 went to countries where less than 60 per cent of the population had access to improved drinking water sources[53]. Hopefully with the Monterrey Consensus, the decline in ODA will be reversed. According to the UN Secretary General[63], (UN Secretary-General, 2005), on the basis of recent commitments to future increases by several donors, global annual ODA flows to all sectors should nearly double the levels they had at the time of the Monterrey conference, even though a significant proportion of this amount reflects debt write-offs and dollar depreciation rather than net long-term finance.

With only ten years remaining to reach Target 10, a massive and unprecedented mobilisation of donors and IFIs is more than ever needed to complement efforts to increase capacity at the national level. Drastic and urgent progress is necessary to avoid the related heavy costs of lost lives (particularly children), increased public health expenditures, and economic loss to the country. However, such mobilisation, if achieved, will be short-lived unless an effective progress monitoring system capable of properly assessing progress made towards the reaching of MDG Target 10 is put in place. Donors and IFIs increasingly need to be able to demonstrate to tax payers the effective impact of aid funds, failing which they will not be able to sustain their financial efforts. Therefore the first challenge on the way to reaching Target 10 appears to be a methodological one. Below are a few suggestions and issues, which, if addressed, could contribute to a significant improvement in the monitoring of progress towards the reaching of Target 10:

3.5.1 Sequencing of tasks

It is useful to underline the various steps that should be taken to establish a solid basis for the monitoring of MDG Target 10:

a) Determination of the proportion of the EECCA population that currently have sustainable access to safe and affordable water, and adequate sanitation; given the difficulty involved, this could take the form of an iterative process as data collection improves;

b) Determination of a 2015 WSS access coverage target and intermediary targets between now and 2015;

[61] Official development aid (ODA) consists of financial transfers with a minimum grant element of 25 per cent from government-to-government transfers from OECD member states ("bilateral aid") and from the World Bank's International Development Association (IDA), concessive funds operated by regional development banks, and various aid funds of the European Union and several UN agencies including UNDP.

[62] The total annual average aid commitment in the WSS sector worldwide amounted to USD 3.1 in 1999-2000 compared to USD 2.7 billion 2000-2001.

[63] UN Secretary-General (2005), "In larger freedom: towards development, security, and human rights for all".

c) Assessment of the investment needs related to the reaching of MDG Target 10, and translation of the global target into a development strategy over the next 10 years;

d) Determination of the amount of external financing needed to achieve Target 10.

3.5.2 Indicators

The weaknesses of the concept of "improved technologies" could be addressed through the determination of new monitoring indicators to account for the functionality, reliability, and quality of WSS services, such as the percentage of drinking water that meets quality standards being defined, or the percentage of time with uninterrupted water supply. Such indicators could be fed through additional WSS-related questions added to the already existing household surveys. In thisregard, it is worth mentioning the current initiative of the WB in the ECA region, where they are studying the possibility of improving Indicators 30 and 31 to account of quality, reliability, and sustainability of services. Another interesting development is that, this year, enters into force, the world's first legally binding international instrument in the fight against water-related diseases, *i.e*. the "Protocol on water and health" to the 1992 "Convention on the protection and use of transboundary watercourses and international lakes". This Protocol[64] obliges the signatories to set targets for access to drinking water and for the provision of sanitation forthe entire population, which requires the establishment and the publication of national and/or local targets for the standards and levels of performance that need to be achieved or maintained for a high level of protection against water-related diseases. The fact that this Protocol has come into force represents an ideal opportunity to revise or complement Target 10 indicators.

3.5.3 Baseline year

The choice of 1990 as baseline year for monitoring MDG Target 10 progress proves irrelevant in the case of the EECCA region. Various options are available:

- Estimate somehow the value of Target 10 indicators in 1990 for all EECCA countries;
- Choose another baseline year common to all EECCA countries;
- Accept to work with several baseline years corresponding to the earliest years for which countries deem the coverage data reasonably reliable.

The first option is not without risk as the baseline year is key in the whole MDG target setting exercise. A poor 1990 estimate will unavoidably lead to an irrelevant Target 10 level in 2015. The second and third options appear preferable in terms of reliability of coverage estimates in the baseline year, but raise another issue: should Target 10 definition be adapted when the period during which progress should take place is less than twenty five years, and if so how? As the status of the WSS sector has deteriorated in the EECCA region since the early 1990s, halving the proportion of the population without sustainable access to safe drinking water and basic sanitation on the basis of a more recent baseline year means making the reaching of Target 10 even more of a challenge for the EECCA region. An option needs to be selected and a methodology determined in order to overcome this difficulty.

[64] Among the EECCA countries, Armenia, Georgia, the Republic of Moldova, the Russian Federation, and the Ukraine have signed the Protocol, and Azerbaijan, the Russian Federation, and the Ukraine have ratified it.

3.5.4 Quality, quantity, and consistency of data collected

The availability of quality data consistent over time is instrumental in MDG progress monitoring. This implies the building of sound and sustainable national statistical capacity and systems in each country. Donors and IFIs play a useful role here through funds and technical assistance aid. Progress has already been achieved in the carrying out of "Household budgets surveys" thanks to the combined efforts of international organisations and the countries themselves. Some technical assistance schemes have been implemented to improve the statistical capacity of national entities. The involvement of international organisations in the form of support to "Household budget surveys", and to national data collection and analysis, needs to be sustained in order to improve the quality of MDG progress monitoring.

3.5.5 MDG-focused national development strategies and MDG needs assessments

The translation of Target 10 coverage levels in 2015 into a ten-year MDG focused development strategy is no easy exercise but is crucial if MDG Target 10 is to be achieved. Starting from the global 2015 objectives, such a strategy should result from an assessment of challenges and needs at the local level, involving local authorities and communities. It should also set intermediary medium-term targets and include a finance strategy showing financial gaps in order for donors and IFIs to understand the magnitude of the efforts needed over time to reach MDG targets by 2015 and induce them to provide financial support. Obviously such strategies need to be "owned" and therefore developed by the countries themselves. The first PRSs issued so far, although far from being comprehensive, constitute an encouraging move in the right direction. In this area too, IFIs and donors can provide valuable assistance. For instance, FEASIBLE-based WSS nationwide finance strategies already developed in a few countries with the assistance of the EAP Task Force can be particularly useful.

3.5.6 A common approach of MDGs and the way they should be monitored

In order for all stakeholders to co-operate in the field of MDGs, a common language and approach is needed. For instance, although widely used in the specialised literature, MDG costs have no definition.
This is illustrated by the difference in interpretation between COWI and the WB. Should wastewater treatment be taken into account for the calculation of the costs to achieve Target 10, although it is not directly implied in the definition of Target 10? Should part of the rehabilitation costs be taken out of the MDG bill?

Another area that needs to be clarified is whether the MDG monitoring system allows for the introduction of flexibility to account for country specificities or preferences. For instance, should collected data remain comparable from one country to the other, allowing for monitoring at the regional or global level, or can it be envisaged that each country adapts the MDGs, thereby making comparison between countries difficult if not impossible?

3.6 Annex

3.6.1 Historical background to the water supply and sanitation MDG target

The water supply and sanitation target outlined in the UN Millennium Declaration and the MDGs is the outcome of several decades of deliberations:

- In 1981, the International Drinking Water Supply and Sanitation Decade was being launched with the objective of providing safe drinking water and sanitation to underserved urban and rural areas by 1990, on the grounds that "*all people, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs*";

- In 1990, at the World Summit for Children, heads of state or government called for both universal access to safe water and sanitation by 2000. That same year, the New Delhi Statement, adopted at the Global Consultation on safe Water and Sanitation for the 1990s, formalised the need to provide, on a sustainable basis, access to safe water in sufficient quantities and proper sanitation for all, emphasizing the "some for all rather than more for some" approach;

- In 1992, Agenda 21 was adopted at the UN Conference on Environment and Development (UNCED), in Rio de Janeiro, which consisted of a comprehensive plan of action to be implemented globally and locally by organisations of the UN system, governments, and major groups in every area in which humans have an impact on the environment. The water and sanitation-related objectives focused on: (i) the promotion of human health and the meeting of primary health care needs for all by 2000 – implying, *inter alia*, the provision of safe water supply and sanitation, (ii) the control of communicable diseases through environmental control measures, and (iii) the protection of the quality and supply of freshwater resources[65]. That same year, the International Conference on Water and the Environment, in Dublin, issued four guiding principles, one of which was that "water has an economic value in all its competing uses and should be recognised as an economic good";

- In 1998, consensus was reached at the intergovernmental level on key water issues at the sixth session of the Commission for Sustainable Development;

- In 2000 and 2001, another two major conferences took place: the second World Water Forum, in the Hague, and the Bonn International Conference on Freshwater respectively, enabling stakeholders to exchange views and issue new recommendations as to how to address the increasingly challenging problems experienced in the water sector;

- In late 2002, the UN affirmed the "Right to water", noting that such a right is "indispensable for leading a life in human dignity" and "a prerequisite for the realization of other human rights";

- In 2003, the Third World Water Forum, in Kyoto, further stimulated global awareness of water problems, encouraging dialogue between different stakeholders and building on the commitments made in Johannesburg.

Although in many cases, considerable progress has been made, even though statistical targets have not been reached, the setting of global goals has drawn attention to the water supply and sanitation needs.

[65] At that time, the cost of developing lower cost but adequate drinking water supply and sanitation services that could be implemented and sustained at the community level was estimated at USD 20 billion/year from 1993 to 2000.

3.6.2 Water: a cross-cutting tool for the Millennium Development Goals[66]

Improved water resources management and access to water supply and sanitation has benefits for each of the eight MDGs:

MDGs and assorted targets		
Goal 1: Eradicate extreme poverty and hunger		
Target 1:	To halve the proportion of the world's people whose income is less than $1/day	➢ Water is a factor of production in agriculture, industry, and economic activities ➢ Investments in water infrastructure/services act as a catalyst for local/regional development ➢ Reduced vulnerability to water-related hazards reduces risks in investments and production ➢ Reduced degradation of ecosystems makes livelihood systems more secure ➢ Improved health increases productive capacities, reduces burden on those who care for the sick
Target 2:	Halve the proportion of the world's people who suffer from hunger	➢ Water is a direct input to irrigation for expanded grain production ➢ Reliable water for subsistence agriculture, home gardens, livestock, tree crops ➢ Sustainable production of fish, tree crops, and other foods gathered in common property resources (also affects poverty when such goods are sold for income) ➢ Reduced urban hunger due to cheaper food prices ➢ Healthy people are better able to absorb the nutrients in food than those suffering from water-related diseases, particularly worms
Goal 2: Achieve universal primary education		
Target 3:	To ensure that children everywhere complete a full course of primary schooling	➢ Improved school attendance from improved health and reduced water-carrying burdens, especially for girls ➢ Having separate sanitation facilities for girls and boys in schools increases girls' school attendance
Goal 3: Promote gender equality and empower women		
Target 4:	To ensure girls and boys have equal access to primary and secondary education	➢ Community-based organisations for water management improve social capital of women ➢ Reduced health, and care-giving burdens from improved water services give women time for productive endeavours, education, empowerment activities ➢ Water and sanitation facilities closer to home put women and girls at less risk for sexual harassment while gathering water and searching for privacy ➢ Higher rates of child survival are a precursor to the demographic transition toward lower fertility rates; having fewer children reduces women's reproductive responsibilities
Goal 4: Reduce child mortality		
Target 5:	To reduce by two-thirds the death rate	➢ Improved quantities and quality of domestic water

[66] *Source*: Interim report of the Millennium Project Task Force on Water and Sanitation and Global Water Partnership.

	for children under five	and sanitation reduce main morbidity and mortality factors for young children ➢ Improved nutrition and food security reduces susceptibility to diseases
Goal 5: Improve maternal health		
Target 6:	To reduce by three-fourths the rate of maternal mortality	➢ Improved health and reduced burdens from water portage reduce risks ➢ Improved health and nutrition reduce susceptibility to anaemia and other conditions that affect maternal mortality ➢ Sufficient quantities of clean water for washing pre-and-post birth cut down on life-threatening infections ➢ Higher rates of child survival are a precursor toward lower fertility rates, and fewer pregnancies per woman reduce maternal mortality
Goal 6: Combat HIV/AIDS, malaria, and other diseases		
Targets 7 & 8:	To halve, halt, and begin to reverse the spread of HIV, malaria, other major diseases	➢ Better water management reduces mosquito habitats ➢ Better water management reduces risk for a range of water-borne diseases ➢ Improved health and nutrition reduce susceptibility to/severity of HIV/AIDS and other major diseases
Goal 7: Ensure environmental sustainability		
Targets 9 & 10:	To stop the unsustainable exploitation of natural resources and to halve the proportion of people who are unable to reach or afford safe drinking water	➢ Improved water management, including pollution control and water conservation, is a key factor in maintaining integrity of ecosystems ➢ Development of integrated management within river basins creates situation where sustainable management of ecosystems is possible and upstream-downstream conflicts are reconciled ➢ Biodiversity conservation, combating desertification, furthered by sound water management
Target 11:	To have achieved a significant improvement in the lives of at least 100 million slum dwellers	➢ Improved domestic water supply and sanitation and better water management reduce the biological pathogens and chemical hazards to which slum dwellers are exposed
Goal 8: Develop a global partnership for development		

3.6.3 JMP-produced national coverage estimates

The data presented in this annex result from the processing, by the JMP, of data collected mostly in the framework of user-based surveys (for instance, some of the data collected have been revised by the JMP who considered that only 50 per cent of the number of protected wells and springs and 50 per cent of the number of traditional pit toilets established could be considered as "improved" technology).

Most of these data were subsequently used to derive 1990 and 2002 estimates. Note that figures that have been stricken through, though collected, were not used by the JMP to derive the linear trend line.

"Household connections" are defined by the JMP as "piped supplies into the household, plot, or yard" in the case of water supply and "connection to a public sewer" when it comes to sanitation.

Armenia	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1998 – Health and nutrition						
- Total population	99	77		100	91	
- Household connections	*97*	*58*		*95*	*33*	
2000 – DHS						
- Total population	99	87		95	60	
- Household connections	*97*	*72*		*90*	*20*	
2001 – Census						
- Total population	99	75		98	61	
- Household connections	*96*	*62*		*93*	*20*	

Azerbaijan	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1995 – SLC						
- Total population	85	53				
- Household connections	*68*	*17*				
2000 – MICS						
- Total population	93	58	76	73	36	56
- Household connections	*74*	*18*	*48*			

Belarus	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1999 - JMP F6 questionnaire						
- Total population	100	100				
- Household connections	*78*	*22*				
Georgia[67]	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1999 – MICS						
- Total population	90	61		96	69	
- Household connections	*83*	*30*				

[67] According to Mr Kandelaki, Head of the Gruzvodokanal, and based on recent work done related to the financing strategy for the water supply and sanitation sector in Georgia, the percentages should read:
- Percentage of access to improved drinking water sources in 1999: urban 80 per cent, rural 16 per cent;
- Percentage of access to improved sanitation in 1999: urban 57.8 per cent.

Kazakhstan	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1995 – DHS						
- Total population	98	82		86	50	
- Household connections	*91*	*33*		*71*	*4*	
1996 – LSS						
- Total population	103	76		85	54	
- Household connections	*88*	*25*		*71*	*4*	
1999 – DHS						
- Total population	95	63		90	52	
- Household connections	*87*	*23*		*75*	*4*	

Kyrgyz Republic	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1997 - DHS						
- Total population	98	66		75	51	
- Household connections	*87*	*28*				

Republic of Moldova	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1980 - National baseline data						
- Total population	85					
- Household connections	59					
1999 – JMP F6 questionnaire						
- Total population	100	100		100		
- Household connections	97			90		
2000 – MICS						
- Total population	97	88	92	86	52	66
- Household connections	*78*	*9*	*37*			
Russian Federation	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1992 – RLMS						
- Total population	98	87		94	70	
- Household connections	*87*	*49*		*85*	31	
1996 – RLMS						
- Total population	98	86		93	69	
- Household connections	*89*	*51*		84	30	
1996 – RLMS						
- Total population	98	87		93	69	
- Household connections	*90*	*51*		84	30	
1997 – RLMS						
- Total population	98	87		93	69	
- Household connections	*90*	*51*		84	30	
1999 – RLMS						
- Total population	98	87		93	69	
- Household connections	*90*	*51*		84	30	
1999 – JMP F6 questionnaire						
- Total population	100	96				
- Household connections	98	68				
2000 – RLMS						
- Total population	98	87		91	68	

- Household connections	*90*	*51*		83	30	
2001 – RLMS						
- Total population	100	89		94	71	
- Household connections	*92*	*52*		86	31	
2002 – RLMS						
- Total population	100	89		95	71	
- Household connections	*92*	*52*		86	31	

Tajikistan	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
2000 – MICS						
- Total population	93	47		71	47	
- Household connections	*82*	*26*				

Turkmenistan	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1980 – National base line data						
- Total population	85					
- Household connections						
2000 – DHS						
- Total population	93	54		77	50	
- Household connections	*81*	*29*				

Uzbekistan	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1996 – DHS						
- Total population	99	88	93	71	43	55
- Household connections	*87*	*38*	*60*			
2000 – MICS						
- Total population	94	79	84	76	54	60
- Household connections	*83*	*29*	*47*			

Ukraine	% of access to improved drinking water sources			% of access to improved sanitation		
	Urban	Rural	Total	Urban	Rural	Total
2000 - MICS						
- Total population	100	94	98	100	97	99
- Household connections	*93*	*49*	*79*			

3.6.4 Comparison between coverage estimates published by COWI and latest coverage estimates from household surveys published by the JMP

Water supply **% of population with access to improved drinking water sources**	**Urban**	**Rural**
Armenia		
- Census 2001	99	75
- COWI	98	83
Azerbaijan		
- MICS 2000	93	58
- COWI	93	58
Belarus		
- F6 quest. 1999	100	100
- COWI	100	100
Georgia[68]		
- MICS 1999	90	61
- COWI	94	61
Kazakhstan		
- DHS 1999	95	63
- COWI	98	91
Kyrgyz Republic		
- DHS 1997	98	66
- COWI	90	48
Rep. of Moldova		
- MICS 2000	97	88
- COWI	97	87
Russian Feder.		
- RLMS 2002	100	89
- COWI	100	100
Tajikistan		
- MICS 2000	93	47
- COWI	78	46
Turkmenistan		
- DHS 2000	93	54
- COWI	97	73

[68] According to Mr Kandelaki, Head of the Gruzvodokanal, and based on recent work done related to the financing strategy for the water supply and sanitation sector in Georgia, the percentages should read:

- Percentage of access to improved drinking water sources in 1999: urban 80 per cent, rural 16 per cent
- Percentage of access to improved sanitation in 1999: urban 57.8 per cent.

Water supply **% of population with access to improved drinking water sources**	**Urban**	**Rural**
Ukraine		
- MICS 2000	100	94
- COWI	100	92
Uzbekistan		
- MICS 2000	94	79
- COWI	90	68

Sanitation **% of population with access to improved sanitation**	**Urban**	**Rural**
Armenia		
- 2001 Census	98	61
- COWI	100	100
Azerbaijan		
- MICS 2000	73	36
- COWI	90	70
Belarus		
- COWI	100	100
Georgia[61]		
- MICS 1999	96	69
- COWI	100	99
Kazakhstan		
- DHS 1999	90	52
- COWI	100	99
Kyrgyz Republic		
- DHS 1997	75	51
- COWI	87	64
Rep. of Moldova		
- MICS 2000	86	52
- COWI	99	96
Russian Feder.		
- RMLS 2002	95	71
- COWI	100	100
Tajikistan		
- MICS 2000	71	47
- COWI	88	66
Turkmenistan		
- DHS 2000	77	50
- COWI	98	84
Ukraine		
- MICS 2000	100	97
- COWI Ukraine	100	96
Uzbekistan		
- MICS 2000	76	54
- COWI	88	68

CHAPTER 4 WATER SUPPLY AND SANITATION IN RURAL AREAS OF EECCA

4.1 Executive Summary

One hundred million people or 36 per cent of the population in EECCA live in rural areas, where the predicament of the water sector is even more alarming than in urban areas. Rural water systems have been deteriorating much faster than those in urban areas, largely due to the fact that no-one has taken over control of maintenance and operation of these systems since collective and state farms – which previously had this responsibility – were dismantled at the beginning of the 1990s. In Moldova, it is reported that more than 90 per cent of rural water supply systems are either in need of capital repairs or need to be reconstructed.

The level of access to what the UN defines as "improved" sources of water supply and sanitation in rural areas is 20 to 40 per cent lower than in urban areas. Figures for Moldova and Kyrgyzstan indicate that there has been a strong downward trend. In Kyrgyzstan, about 10 per cent of the rural population lost access to a sustainable water supply between 2000 and 2003.

Only about 10 to 15 per cent of the rural population have access to in-house water connections, while it has been shown that the health benefits of water become particularly noticeable once water becomes easily available at the household level *i.e*. inside the house.

An increasing share of the population has to fetch water from unsafe sources such as rivers, canals, individual wells, or vendors. In the Ukraine, which is one of the more industrialised countries in the region, more than 800 000 people in rural areas have been reported to rely on water from vendors for their supply, which is usually of poor quality and very expensive. In Tajikistan, a country which is recovering from a civil war, more than sixty per cent of the existing water supply system is ether not working or not meeting sanitary requirements. As a result, a large number of outbreaks of water-related epidemics, such as hepatitis A, typhoid fever, dysentery, and cholera, have been reported, to a broad extent in rural areas.

The health infrastructure is increasingly inapt to deal with this situation. The number of both physicians and hospital beds in EECCA has been significantly decreasing over the last 15 years and it is logical to assume that rural areas have been disproportionately hit. At the same time health care has also been increasingly privatised, in turn cutting off aid for many poor people who cannot afford these services anymore.

EECCA governments appear to have generally been slow to react to this alarming situation. Most of them lack national strategy and priorities for the rural water supply and sanitation sector. One exception is Kyrgyzstan, which has developed a rural water sector policy and is now working on improving the situation with support from donors and international financing institutions (IFIs).

Work that has been carried out by the WHO and donors suggests that significant health benefits can be achieved through the usage of low-cost measures such as hygiene education, or the usage of household treatment technology.

A key challenge in improving water supply and sanitation in rural areas of EECCA is widespread poverty. In most of the poorest countries in the region, about 50 per cent of the population lives below the poverty line, and poverty is usually more pronounced in rural than in urban areas. As a consequence, the

financial sustainability of water systems in rural areas is a key concern, and the risk that newly installed water infrastructure might quickly deteriorate due to insufficient local resources for maintenance and operation is real. Projects aimed at improving rural water supply and sanitation have usually tried to address this by requiring cash and in-kind contributions from local communities and by ensuring ownership through the establishment of local management structures and water users' associations.

4.2 Introduction

The purpose of this paper is to provide additional visibility to the particularly serious problems that exist in the rural water supply and sanitation sector in EECCA. Participants at a preparatory meeting for the Yerevan Ministerial Conference, that was held in June 2005, requested that the EAP Task Force Secretariat prepare a paper on this topic, and committed themselves to providing the Secretariat with information and data in order to do so. The paper draws, to a large extent, on the data that was received, mainly from the United Nations Development Programme (UNDP), the World Health Organisation (WHO), and donors, as well as on two case studies that the EAP Task Force had prepared previously.

Data on the rural water sector in EECCA is still much scarcer than data for the urban sector. Also, there is little analysis available. This paper therefore limits itself to presenting data that helps to characterise the situation in the sector (including data on rural populations and poverty, as well as data on rural water systems), and to highlighting a few of the lessons that have been learned so far.

4.3 Rural populations and poverty

The EECCA region is characterized by an important rural population: in 2002, 101million people, or 36 per cent of the population, were living in rural areas[69], compared to 180 million in urban settlements (Table 4.1). The average annual population growth of the EECCA countries - 0.66 per cent for the period 1975 to 2002; and projected to be -0.06 per cent in the period 2002 to 2015 - does not indicate major change soon.

There are significant disparities between countries in the region, with, for instance, Tajikistan having more than 75 per cent of its population living in rural areas, while in Russia this is only 27 per cent. More generally, the countries of the Caucasus and Central Asia have a significantly larger share of their populations living in rural areas (35-75 per cent) than the more industrialised countries of Eastern Europe (27-32 per cent - with the exception of Moldova, which has 53 per cent).

[69] For detailed figures and literature references, see Annex.

Table 4.1: EECCA Population (millions) urban/rural, (UNDP, 2004)

	Total		Urban		Rural		Share of rural population
	1975	2002	1975	2002	1975	2002	2002
Armenia	2.8	3.1	1.8	2.0	1.0	1.1	35.48%
Azerbaijan	5.7	8.3	2.9	4.2	2.8	4.1	49.40%
Belarus	9.4	9.9	4.7	7.0	4.7	2.9	29.29%
Georgia	4.9	5.2	2.4	2.7	2.5	2.5	48.08%
Kazakhstan	14.1	15.5	7.4	8.6	6.7	6.9	44.52%
Kyrgyzstan	3.3	5.1	1.3	1.7	2.0	3.4	66.67%
Moldova	3.8	4.3	1.4	2.0	2.4	2.3	53.49%
Russia	134.2	144.1	89.1	105.6	45.1	38.5	26.72%
Tajikistan	3.4	6.2	1.2	1.6	2.2	4.7	75.81%
Turkmenistan	2.5	4.8	1.2	2.2	1.3	2.6	54.17%
Ukraine	49	48.9	28.6	32.9	20.4	16.0	32.72%
Uzbekistan	14.0	25.7	5.5	9.5	8.5	16.2	63.04%
Total	**247.1**	**281.1**	**147.4**	**179.9**	**99.7**	**101.2**	36.01%

Statistics show that poverty is widespread in the EECCA region, with almost 37 per cent of the population having to live on less than two USD per day. Again there are important disparities between countries, with Russia at 7.5 per cent and Uzbekistan at 77.5 per cent (Table 4.2). Poverty is usually more pronounced in rural than in urban areas (with the exception of Armenia and Georgia). A UN assessment of Uzbekistan showed that the region of residency is the strongest indicator of vulnerability to poverty, with people in rural areas particularly exposed (UN, 2003c).

Table 4.2: Poverty levels in EECCA countries, (World Bank, 2005b)

	NATIONAL POVERTY LINE[70]				INTERNATIONAL POVERTY LINE				
		Rural	*Urban*	*National*		*Population below $1 a day*	*Poverty gap at $1 a day*[71]	*Population below $2 a day*	*Poverty gap at $2 a day*[72]
	Year	*%*	*%*	*%*	*Year*	*%*	*%*	*%*	**Survey year**
Armenia	**1998-1999**	50.8	58.3	55.1	**1998**	12.8	3.3	49	17.3
Azerbaijan	**1995**			68.1	**2001**	3.7	<1	9.1	3.5
Belarus	**2000**			41.9	**2000**	<2	<0.5	<2	0.1
Georgia	**1997**	9.9	12.1	11.1	**2001**	2.7	0.9	15.7	4.6
Kazakhstan	**1996**	39	30	34.6	**2003**	<2	<.5	24.9	6.3
Kyrgyzstan	**2000**	56.4	43.9	52	**2002**	<2	<0.5	24.7	5.8
Moldova	**1997**	26.7	19.3	23.3	**2001**	22	5.8	63.7	25.1
Russia	**1994**			30.9	**2002**	<2	<0.5	7.5	1.3
Tajikistan	**..**				**2003**	7.4	1.3	42.8	13
Turkmenistan	**..**				**1998**	12.1	2.6	44	15.4
Ukraine	**1995**			31.7	**1999**	2.9	0.6	45.7	16.3
Uzbekistan	**2000**	30.5	22.5	27.5	**2000**	21.8	5.4	77.5	28.9
Average		**35.6**	**31.0**	**37.6**		**10.7**	**2.8**	**36.8**	**11.5**
Minimum		**9.9**	**12.1**	**11.1**		**2.7**	**0.6**	**7.5**	**0.1**
Maximum		**56.4**	**58.3**	**68.1**		**22.0**	**5.8**	**77.5**	**28.9**

[70] The national poverty line is usually based on a minimum national food or consumption basket.

[71] The mean distance below the $1 (1993 PPP US$) a day poverty line, expressed as a percentage of the poverty line. The mean is taken over the entire population, counting the non-poor as having zero poverty gap. The measure reflects the depth of poverty as well as its incidence.

[72] ibid

4.4 The situation in the rural water sector

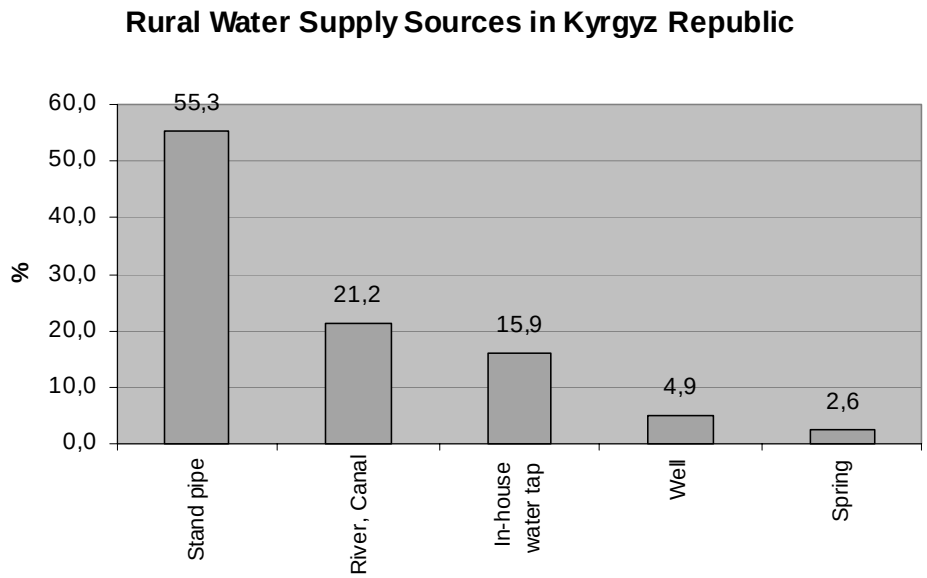
4.4.1 State of infrastructure

Against this background of poverty, it becomes clear that the challenges in establishing sustainable water services in rural areas are huge. This is exacerbated by low levels of coverage of such services largely due to the disastrous state of the rural water infrastructure. Water services are often no longer provided in rural areas and people have had to resort to private means of providing themselves with water. In rural areas, collective farms were traditionally responsible for building, operating and maintaining water systems, but were disbanded in the early 1990s.

Following the break-up of the former Soviet Union, and the subsequent dismantling of the collective/state farm system, this infrastructure became obsolete, since there were no arrangements made to transfer responsibility for operation and maintenance from collective farms to other institutions. As a consequence, much of the infrastructure is now out of operation and many rural inhabitants are forced to put in place private solutions where water quality is usually not being monitored. In Moldova it is reported that more than 90 per cent of rural water supply systems are either in need of capital repairs or need to be reconstructed, while more than 50 per cent of sanitation infrastructure has either been demolished or is in need of urgent capital repair.

The result of this situation is that access of rural populations to adequate water supply and sanitation has been continuously decreasing, and more and more people have to fetch water from unsafe sources such as rivers, canals, or unprotected wells.

Figure 4.1: Rural water supply sources in the Kyrgyz Republic

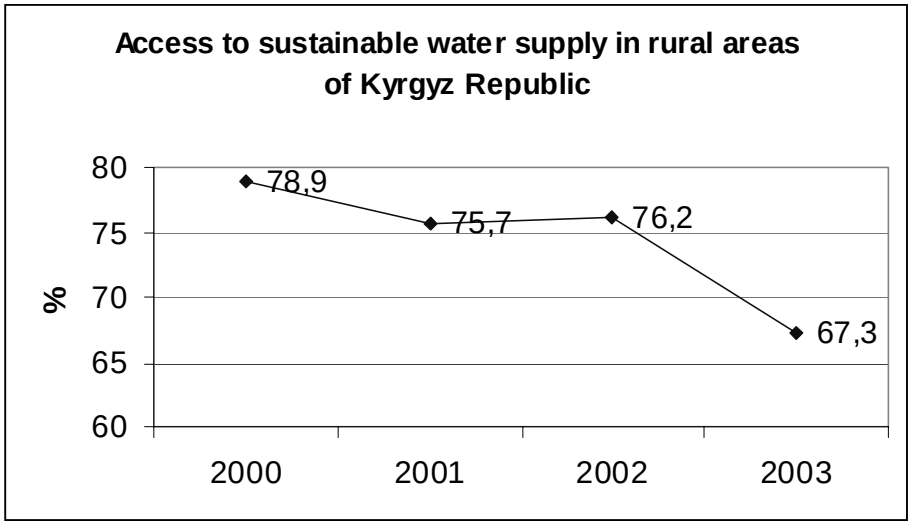


Source: National Statistical Office of Kyrgyzstan (2001).

In Kyrgyzstan, for instance, only 67 per cent of the rural population has access to a sustainable water supply (available throughout the year and of sufficient quality for drinking), and this has been continuously decreasing in recent years (Figure 4.2). Only 15 per cent of the population in rural areas has access to water

through in-house water taps[73], while stand pipes, or water collected from canals and rivers remain the main sources of drinking water supply (Figure 4.1). The most widely used sanitation technology is conventional pit latrines.

Figure 4.2: Sustainable access of rural population to clean drinking water in the Kyrgyz Republic, 2001



Source: National Statistical Office of Kyrgyzstan (2001).

Data from the UN's Joint Monitoring Programme (JMP)[74] indicates that the level of connection to "improved"[75] water sources in rural areas of EECCA remains significantly below that of the urban population. It varies from 47 per cent in Tajikistan to 100 per cent in Belarus, which is approximately 20 to 40 per cent less than coverage in urban areas (Figure 4.3).[76]

The share of people in rural areas that have access to in-house tap connections is very low in most EECCA countries. Even in the Ukraine, though one of the most industrialised countries in the region, more than 70 per cent of the rural population (settlements with a population of less than 20 000) are not connected to centralized water systems, and as much as 91 per cent lack access to corresponding sewerage services. As a consequence these populations have to use water from wells, reservoirs, and open springs, which often do not meet sanitary standards. More than 800 000 people use water from vendors, which is usually of poor quality. In recent years, problems with nitrates, oil, pesticide, and bacteriological contamination of these water sources has become particularly acute. As most people use this water without any treatment, an increasing number of outbreaks of infectious diseases have been observed. (MAMA-86, 2004).

[73] The UN's JMP reports a higher figure at 28 per cent.

[74] The Joint Monitoring Programme is conducted by the WHO and UNICEF, the goals of which are to report on the status of water supply and sanitation in the framework of the millennium development goals, and to support countries in their efforts to monitor this sector, which will enable better planning and management.

[75] The UN defines improved sources of water supply as being: household connection, public standpipe, borehole, protected dug well, protected spring, and rainwater collection. Improved sewerage technologies are defined as: public sewer, connection to septic system, pour-flush latrine, simple pit latrine, and ventilated improved latrines.

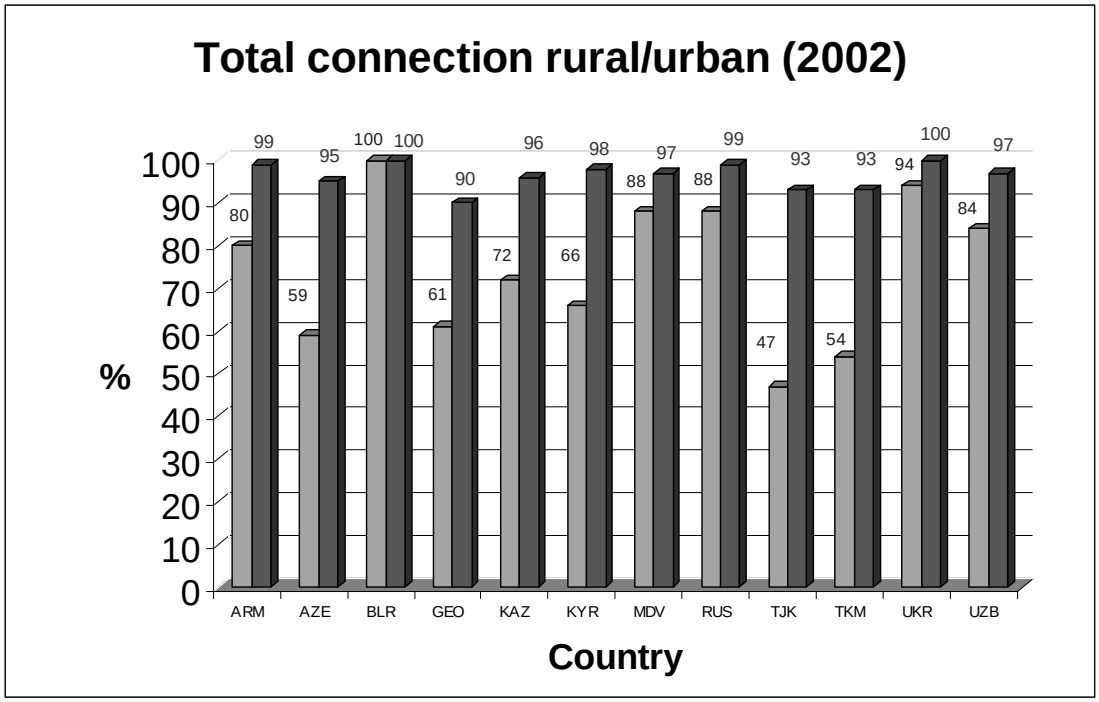
[76] It should be noted that JMP figures have been found to over-estimate access to clean drinking water, since no account is taken of the quality of the water delivered. It is therefore likely that for both urban and rural areas effective access to clean drinking water can be significantly lower.

Probably one of the most serious situations exists in Tajikistan, where only eleven per cent of the rural population has access to sewage facilities. According to a study made by the Ministry of Health in 2001 113 out of the 669 water supply systems in the country were not working and 358 did not meet the sanitary requirements. The majority of schools and medical institutions in the country lack access to proper sanitation and safe water. Only 1,718 schools have access to piped water out of 3,694 (including 3,148 rural). In the village of Gbao it has been reported that 28 per cent of the population does not have any toilet facilities (UN, 2003b).

Less than 50% of the rural population of Tajikistan have access to safe drinking water. During the winter months, reduced power supplies restrict water supply to an average of 2 hours per day and many rural people have to pay more than $3 for a cubic meter (m3) of poor quality water delivered by truck, which is 60 times higher than the price of water provided through piped networks.

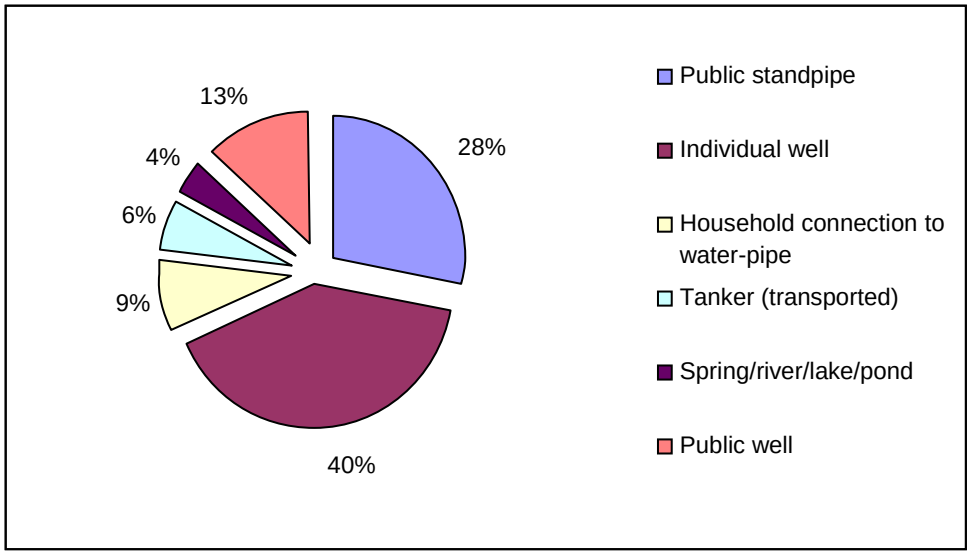
Health benefits become particularly noticeable once water becomes easily available at the household level, inside the house. Low levels of house connections therefore indicate that there are potentially important health benefits that could be achieved by extending such connections in rural areas of EECCA.

Figure 4.3: Total connection to improved water source rural/urban (2002), (WHO-UNICEF Joint Monitoring Programme)



Box 4.1: Water supply sources in rural Kazakhstan

In rural Kazakhstan, only about nine per cent of the population have available the facility of centralised pipelines and the remaining 91 per cent rely on other sources, although only 4% of the rural population consuming water from unprotected wells.



The draft State Programme for Poverty Reduction for 2003-2005 states that around one million residents (representing more than six per cent of the population) use untreated water from rivers for drinking and for household use. In Kyzyl Orda *oblast*, about 80-85 per cent of the rural population not served by piped water systems utilise water from highly polluted unprotected sources. It has also been observed that the lowest consumption of water in Kazakhstan is in the rural areas of West Kazakhstan, North Kazakhstan, and Zhambyl *oblast* with people consuming only 10-16 litres per person per day.

Source: UNDP (2002), based on Agency of Statistics, "Main Socio-Demographic Household Indicators" 2002.

4.4.2 Water and health

The above figures indicate that water supply and sanitation services in rural areas are much less developed than in urban areas. Moreover, anecdotal information suggests that the quality of water available in rural communities is frequently insufficient.

In Moldova, between 50 to 60 per cent of the population rely on groundwater for domestic use. In the case of rural areas, it is more than 90 per cent. With respect to water quality, groundwater can be classified as being either from shallow sources (30 to 40metres) or from deep sources (more than 40 metres). Almost all of the rural, and part of the urban, population relies on water supplied from shallow wells. In the case of shallow sources in rural areas, 60 per cent of the water does not meet the requirements of drinking water standards. The main pollutants are agricultural chemicals (OECD EAP Task Force-DEPA/DANCEE (2000).

The state of the water supply, particularly in rural areas, in Ukraine is extremely unsatisfactory because of the chemical and bacterial pollution of the majority of local water sources. Up to 30 per cent of samples taken in 1996 fail to meet standards for the centralised system (COWI, 2002). Each ninth sample of potable water from rural water pipelines and each fourth sample from sources of decentralised water supply do not meet hygienic requirements and bacteriological standards (Grida, 2003).

As a result of this situation, outbreaks of water-related epidemics are common in the EECCA region, and those that are reported probably only constitute the tip of the iceberg. Only recently, in Yerevan, where indications of water quality have been relatively positive, and 80 per cent of the population say that they never use purification devices, several hundred children had to be hospitalised due to a sewerage spill into the supply network. A similar accident occurred in the town of Sukhodolsk in the Ukraine, where more than 700 people had to be taken to hospitals, about 250 of them children. Almost all of them were diagnosed with viral hepatitis A. Similar episodes are reported from many locations in EECCA.

4.4.3 Health infrastructure

This situation is being exacerbated by a steadily deteriorating health infrastructure in most EECCA countries. For instance, over the period 1990–2004, the number of physicians per 1 000 people decreased from 2.6 to 2.2; and the number of hospital beds available per 1 000 people decreased from an average of 9.1 in 1990 to 4.3 in the 1995–2002 period. Three EECCA countries are assessed as to having only low sustainable access to affordable essential drugs, while in all others, access is medium (WHO, 2005).

At the same time, an increasing share of health care falls outside of the public system and needs to be paid for directly by patients. In 2002, public health care accounted in average for 48.4 per cent of all health care, representing 2.4 per cent of GDP. Private health care constituted an important component of health care, funded, for 93.3 per cent, by out-of-pocket expenses (World Bank, 2005b). Given the more pronounced poverty in rural areas, where many people lack cash to pay for such services, it can be assumed that the health care infrastructure is particularly deficient in rural areas.

It must therefore be assumed that the poor quality of water services in rural areas has a high negative impact on the health of populations residing there. This incidence is probably significantly higher than the national average.

4.5 Lessons learned and conclusion

Hence, the situation in the rural water supply and sanitation sector of EECCA is even more alarming than in urban areas, with adequate water services having become unavailable in many villages in the course of the last 10 years. A large part of the rural population is therefore exposed to significant health risks, both because of poor water services and a lack of health infrastructure. These problems are compounded by the widespread poverty that exists in rural areas. The countries most affected are the poorest countries in the region, which also happen to have a very large share of their population living in rural areas.

EECCA governments have been slow to react to this situation, some countries not even having allocated responsibility for rural water systems clearly within government. A first important step would therefore be for EECCA governments to recognise the significant problems that exist in rural water supply and sanitation and to develop a strategy on how to deal with it. The experience of Kyrgyzstan, where two large assistance projects have been implemented to improve rural water supply, suggests that once this is done, EECCA countries could greatly benefit from the support of donors and IFIs.

So far only a few assistance projects to support the improvement of water supply and sanitation services in rural areas of EECCA have been implemented. The two projects that concern the Kyrgyz Republic, mentioned above, are described in Annex 2. Annex 3 of this paper provides some insights into the situation in Moldova. WHO activities relating to rural water supply and sanitation - current and planned - are described in Annex 1. Some of the key lessons that emerge from this experience are summarised below:

4.5.1 Improving people's health

The WHO has found,(Howard G. and Bartram, J., 2003), that public health gains derived from access to increased volumes of water typically occur for two main reasons, with one particular spin-off: :

- Firstly, this leads to overcoming health problems resulting from the inability to support basic personal hygiene needs, and the inability to meet basic human consumption needs;
- The second major health gain occurs when water is made available at the household level;
- A major added effect is the time gained at the household level, which can be devoted to child-care, productive activities, and food preparation.

Where possible, the installation of household connections should therefore be the preferred supply technology, provided that this is affordable by the population.

Besides the improvement of the quality and quantity of water supply and sanitation, significant health benefits can also be generated through measures of hygiene education. Maintaining the quality of water during collection from non-piped systems, as well as during manual transport and subsequent storage is the responsibility of the household. Good hygiene practices are required and should be supported through hygiene education. Hygiene education programmes should provide households and communities with skills to monitor and manage their water hygiene.

A project to improve water services in rural areas of Kyrgyzstan - which is being jointly implemented by the World Bank (WB), the UK's Department for International Development (DFID), and the Kyrgyz authorities - shows that very significant health benefits can be achieved through the provision of hygiene education in schools and households. More than 2 000 children were examined together with local doctors. Giardia infection was found in 25 per cent, 34 per cent, and 31 per cent of the children in Talas, Naryn, and Issyk-Kul, respectively. Following project implementation, the two parasite diseases **giardiasis** and **enterobiosis** dropped by 70-80 per cent and 50-75 per cent respectively (Table 4.3), (DFID, 2004).

Table 4.3: Incidence of water related diseases before and after the provision of hygiene education in two villages in Kyrgyzstan

Villages	**Giardia % infected**	**Enterobiosis % infected**
Aral		
June examination 2003	48 %	74 %
Oct. examination 2003	9 %	18 %
Reduction	80%	75%
Kosh Dobo		
June examination 2003	29%	41%
Oct. examination 2003	8%	20%
Reduction	70%	50%

Source: DFID (2004).

Similarly, household treatment of water (i.e. filtering water in the household before consumption) has proven to be effective in delivery of public health gains. A classic randomised intervention study in Nukus, Uzbekistan, (Semenza J.C. et al,1998), showed that household treatment of water can lead to a dramatic reduction of diarrhoeal disease. Monitoring of treatment processes is specific to the technology, therefore when household treatment is introduced, it is essential that information (and, where appropriate, training) be provided to users to ensure that they understand basic operational monitoring requirements.

The health sector has a specific role to play in addressing the challenges in the rural drinking water sector. The health sector can co-operate with public works and financing agencies by providing aid and know-how, such as co-operation during project design, hygiene education, and water quality regulation. Cost effectiveness analysis should measure the incremental health impacts attributable to health sector investments, using the actual call on health sector resources, as well as the time gained through the avoidance of water-related diseases as a measure of cost (Varley R.C.G., Tarvid J., and Chao D.N.W., 1998).

The health sector in general acts as a facilitator between all stakeholders, including surveillance agencies, public health professionals active at the national or lower administrative levels, and members of community-owned utilities.

The health sector also has a role to play in non-piped water supply to rural communities, particularly in the design of appropriate water safety plans for local water supply, the development of capacity building, and human capital development. It also supports community initiatives through auxiliary operations such as hygiene education, public awareness, and outreach programmes.

4.5.2 Ensuring long-term sustainability of water systems in rural areas

One of the key threats to rural water systems is that they may not be operated and maintained properly beyond the duration of the project. Community mobilisation, *i.e.* direct involvement of the population, and ownership is therefore crucial for the success and sustainability of such systems in rural communities. To achieve this, responsibility for managing water systems needs to be placed in the right position within the community. Several rural water projects in EECCA have been addressing this issue through the development of community drinking water user unions or cooperatives. These entities are crucial to ensuring project sustainability since they are responsible for operating water systems, including the collection of payment from users. Projects have been most successful where the chairmen of such entities have benefited from the backing of both the local population and the regional administration.

One challenge in establishing community water user unions/cooperatives is to overcome the lack of capacity to carry out management tasks that usually exists in such entities. The WHO finds that community initiatives are rarely sustainable on their own. The correct assessment of health hazards; the development, implementation, and verification of control measures; the overall operation and maintenance of the systems, often require a level of education and training that may not, or only partially be available at the rural community level. The sustainable development of such initiatives therefore requires significant support measures (WHO, 2005).

To foster community ownership of water projects, relying on local contributions to partially cover project costs has proven to be an effective tool. In a project in Kazakhstan, which was carried out jointly by the US Environmental Protection Agency and the Central Asia Regional Environment Centre, villagers were asked to contribute 10 per cent of the project cost and the regional administration had to provide 20 per cent. (CA REC, 2005).In two projects led by the World Bank and the Asian Development Bank (ADB) in Kyrgyzstan, a five per cent cash contribution was expected from the population and another 15 per cent in the form of in-kind contributions, such as participation in the construction of facilities in the form of labour forces (see Annex).

Due to widespread poverty in rural areas, and many households living from subsistence, the collection of cash payments may however be problematic. For instance, in the framework of the World Bank and ADB projects in Kyrgyzstan, the collection of a five per cent cash contribution from local communities has

proven to be problematic: only 40 per cent of this amount can usually be collected.[77] Some communities have therefore had to resort to other collection methods, such as disposal of communal property, or the assistance of sponsors. In other cases, grants or loans were obtained to finance the five per cent. Due to a slower collection pace than anticipated, the five per cent rule has not been strictly complied with. Cases were recorded under which the water supply system was already operating in spite of only 29 per cent of the five per cent contribution having been collected (see Annex).

Similarly, the contribution of 15 per cent of project costs in-kind under the ADB and WB projects has been problematic. This is due to the fact that this contribution is supposed to take the form of a labour contribution from the population, which, as unskilled labour is very cheap, implies a very large volume of work. There is also a negative impact on this in-kind contribution due to the poor mobilisation of the population, the lack of special equipment, and the bad timing of the work, as this sometimes overlaps with the period when the population is engaged in agricultural work.

4.6 Annex

4.6.1 WHO activities in non-piped, community, and household systems

a) Publications and guidance materials

The WHO has historically taken a keen interest in community water supply and sanitation, dating from the 1959 "spearhead" programme for community water supply.

The outcome of this work is a number of manuals and guidelines that are of relevance to the needs of the EECCA countries. Amongst these are:

a) Sawyer R, Simpson-Hébert M., and Wood S., *PHAST step-by-step guide: a participatory approach for the control of diarrhoeal disease,* Geneva, World Health Organization, 2002, ref. WHO/EOS/98.3;

b) Simpson-Hebert M., Sawyer R., and Clarke L., *Participatory hygiene and sanitation transformation: a new approach to working with communities*, World Health Organization, 1996, ref. WHO/EOS/96.11;

c) Food, water, and family health: a manual for community educators, Geneva, World Health Organization, 1994, ref. WHO/HEP/94.2;

d) Howard G., *et al*, *Healthy villages: a guide for communities and community health*, Geneva, Geneva World Health Organization, 2002, ISBN 92 4 154 553 4;

e) Sobsey M., Managing water in the home: accelerated health gains from improved water supply, Geneva, World Health Organization, 2002, ref. WHO/SDE/WSH/02.07;

[77] However, the involvement of the population in the sub-projects, as under the WB project, seems to contribute to a higher collection rate. The ADB project does not include any population mobilisation component, with the role of the Project Implementation Unit mainly limited to consultations regarding the creation of the CDWUUs, participation at the CDWUU constituent meetings, and the registration of the CDWUU with the relevant oblast authorities. The setting up of a CDWUU has remained a formality in many places. The population is not adequately informed about the project, its terms and conditions, and the role of the CDWUU, and is not actively involved in the creation of the CDWUUs or election of their management bodies.

f) *Sanitation and hygiene promotion: programming guide*, Water Supply and Sanitation Collaborative Council and World Health Organization, 2005, ref. ISBN 92 4 159 303 2;

g) Guidelines for drinking water quality, 3rd ed,. Vol. 1, Recommendations, Geneva World Health Organization, 2004;

h) Guideline on surveillance and control of community supplies, 2nd ed., Vol. 3, 1997.

b) Current activities

The WHO is actively considering further possibilities to support the development of small-scale water supply systems. During a recent meeting (Reykjavik, Iceland, 24–26 January 2005), a number of key principles for community water supply were highlighted, including:

a) High-level political support is needed from the planning phase onwards. In particular, national authorities should ensure the provision of water safety plans (WSP) as part of a larger water safety framework that reflects all water supply and community characteristics;

b) Successful community water supply requires the active involvement of all stakeholders: owners of community water supplies, national or regional surveillance agencies, public health professionals, clients/customers;

c) Resources need to be allocated in accordance with a locally relevant risk-based prioritisation plan.

d) Safety and quality, including aesthetic aspects, should not be overlooked to increase rate of coverage;

e) Capacity building and human capital development should be an integral part of community water supply projects to ensure their sustainability;

f) Responsibilities placed with the community must be backed with the requisite levels of financial and technical support, and education and training.

c) Future plans

The WHO will continue to build on the outcome of the Reykjavik consultation at the second meeting on small community water supply management (Alice Springs, Australia, 18–22 July 2002). The meeting will address the following topics:

Development of tools, particularly the development of generic outline/framework for small supply development, including establishment of generic water safety plans;

a) Start pilot projects: identify countries willing and able to start carrying out pilot projects, subject to available tools and funding;

b) Development of an international network on small community water supply and management;

c) Information and communication;

d) Management to support technology;

e) Creation of an evidence base in relation to small supplies, including the production of a dedicated WHO/UNICEF JMP report for small community supplies highlighting links with the MDGs;

f) Guidelines updated and expanded, particularly WHO GDWQ Vol. 3 - Surveillance and control of community supplies.

4.6.2 EAP Task Force case study of rural water and sanitation sector in the Kyrgyz Republic

a) Introduction

With 65 per cent of the 5.37[78] million Kyrgyz population living in rural areas, the Kyrgyz Republic appeared as particularly relevant for a rural water supply and sanitation[79] (RWSS) case study. The purpose of this study is - based on the experience accumulated so far in the Kyrgyz Republic - to provide the reader with a thorough understanding of the situation in the rural water sector of the Kyrgyz Republic and the various projects conducted by international financial institutions or donors.

This paper specifically focuses on the institutional framework applicable to the RWSS sector, the characteristics of the Kyrgyz rural water supply and sanitation sector, and a review of past and ongoing RWSS-related projects and/or programmes developed by international financial institutions and donors. The study also draws on a few field visits to existing rural entities and organizations.

b) Overall sector condition

The deterioration of public utilities, especially in rural areas, has resulted in declining living standards and an aggravation of the social situation. The majority of systems are more than thirty years old and in desperate need of replacement and repair. Lack of maintenance has exacerbated the problems of initially inadequate designs, poor materials, and poor construction. While 72 per cent of village inhabitants were supplied with water before the collapse of the Soviet Union and only 700 000 inhabitants (737 villages out of 1 750) lacked adequate access to water services, the situation drastically deteriorated as collective and state farms were dissolved. Many waterworks became impossible to operate due to lack of funds for operation and maintenance. As a result, tap water consumption in rural areas significantly dropped[80] and rural populations turned to irrigation canals, rivers, and surface sources exposed to pollution as alternative sources of water supply[7]. According to the National Statistical Committee, in 2001, as much as 20 per cent of the rural population consumed water from rivers and irrigation canals, and only 50 per cent used a standpipe as a water supply source.

[78] *Source*: National Statistical Committee, as at 1 January 2005.

[79] Agriculture, including irrigation, does not fall within the scope of the case study.

[80] According to the National Statistical Committee, tap water consumption in rural areas decreased by more than 23 per cent from 115.8 million m^3 in 1998 to 88.5 million m^3 in 2002 (see table below).

The decrease in tap water consumption over the past few years illustrates worsening water supply conditions in rural areas:

Table 4.4: Tap water consumption in rural areas (population and utilities)

Tap water consumption in rural areas (population and utilities) (In millions of m^3)					
	1998	**1999**	**2000**	**2001**	**2002**
COUNTRY TOTAL	**115.8**	**113.8**	**118.1**	**115.1**	**88.5**
Batken *oblast*	-	-	4.2	4.4	0.6
Zhalal-Abad *oblast*	24.5	27.5	31	30.5	16.3
Issyk-Kul *oblast*	15.8	14.8	14.5	14.5	14.9
Naryn *oblast*	7.4	8.6	6.2	6.5	6.4
Osh *oblast*	20.8	19.9	17.5	15.6	10.3
Talas *oblast*	7.4	4.5	4.2	5.2	4
Chu *oblast*	39.9	37.7	40.5	38.4	36

Source: Social development of Kyrgyzstan (1998-2002), Statistical publication, Bishkek (2003).

Per capita water consumption in rural areas dropped from 101 litres in 1998 to 75 litres in 2004:

Table 4.5: Per capita tap water consumption

Per capita tap water consumption (Inlitres)					
	1998	**1999**	**2000**	**2001**	**2002**
COUNTRY TOTAL	**101**	**98**	**101**	**98**	**75**
Batken *oblast*	-	-	37	41	5
Zhalal-Abad *oblast*	101	113	124	119	63
Issyk-Kul *oblast*	152	140	135	134	137
Naryn *oblast*	99	144	82	84	82
Osh *oblast*	47	44	51	45	29
Talas *oblast*	122	73	69	83	63
Chu *oblast*	182	171	184	176	166

Source: Social development of Kyrgyzstan (1998-2002), Statistical publication, Bishkek (2003).

Many populated areas of the Republic lack water supply networks, while the supply of potable water to the population provides only 15-20 percent of the needed volume. Based on the 2000-2003 household survey, access to safe drinking water declined from 78.9 per cent in 2000 to 67.3 per cent of the overall population in 2003. According to the Department of Rural Water Supply, 1 110 villages corresponding to a population of 2.4 million people had access to water supply systems at the end of 2004, *i.e.* only 62 per cent of villagers.

In the above-mentioned household survey, access to adequate sanitation is reported as very low and in continuous decline. Access to centralised sanitation remains very limited and in decline in most *oblasts*:

Table 4.6: Access to centralised sanitation by oblast

Access to centralised sanitation by oblast (In per cent)				
	2000	**2001**	**2002**	**2003**
Kyrgyz Republic	13.4	12.4	10.3	5.2
Batken *oblast*	0.0	0.0	0.0	0.0
Zhalal-Abad *oblast*	0.0	0.0	0.0	2.2
Issyk-Kul *oblast*	27.7	25.7	22.4	4.3
Naryn *oblast*	0.0	0.0	0.0	0.0
Osh *oblast*	0.4	1.3	1.7	0.3
Talas *oblast*	0.0	0.0	0.0	7.1
Chu *oblast*	56.8	52.0	42.2	21.2

Source: CDF/NPRS/MDGs – Statistical development indicators for the Kyrgyz Republic and its regions, Statistical publication, Bishkek (2004).

Throughout the country, wastewater treatment plants, which are either out of use or in extremely poor operating conditions, are a cause for particular concern. Out of a total of 120 wastewater treatment plants (departmental and municipal), 84 (60 per cent) are not in operation. The wastewater flow through treatment plants has been continuously decreasing over the last few years. Wastewater collection systems became virtually non-operational due to discontinuous water supply but also because of their use despite insufficient water flow, which contributed to the clogging of systems and pipes. Also, many septic tanks were shut down or dismantled. While in 1998 the total wastewater flow going through treatment plants was 9.1 million m³ in rural areas, it fell to 3.2 million m³ in 2002. Treatment plants in the Chu and Zhalal-Abad *oblasts* more than halved their flow of wastewater. In the Osh *oblast*, they stopped operating, and there is no treatment in the Batken or Naryn *oblasts*:

Table 4.7: Wastewater flow through treatment plants

Wastewater flow through treatment plants (In millions cubicmetres)					
	1998	**1999**	**2000**	**2001**	**2002**
COUNTRY TOTAL	**9.1**	**3.6**	**3.4**	**3**	**3.2**
Batken *oblast*	-	-	0	0	-
Zhalal-Abad *oblast*	0.9	0.7	0.6	0.7	0.4
Issyk-Kul *oblast*	0	0	0	0	0
Naryn *oblast*	-	-	-	-	-
Osh *oblast*	0.1	0.1	-	-	-
Talas *oblast*	0	0.2	0.1	0.2	0.2
Chu *oblast*	8.1	2.6	2.7	2.1	2.6

Source: Social development of Kyrgyzstan (1998-2002), Statistical publication, Bishkek (2003).

Today, wastewater either infiltrates the soil through leaking sanitation pipes or is discharged untreated into rivers.

In rural areas, each household uses a simple individual pit latrine. As a pit gets filled, the latrine is moved to another place. Latrines are usually in poor sanitary condition.

c) Water and health

The critical state of the rural water supply and sanitation sector has been one of the causes of the high incidence of infectious and parasitical diseases in the population. In 2003 for instance, there were 5.4 cases of abdominal typhoid and paratyphoid per 100 000 people, compared to 3.2 cases recorded in 1995. Although cases of viral hepatitis A have declined over the past few years (126.6 per 100 000 people in 2003 compared to 408.1 cases in 1995), the incidence of the disease remains very high[81]. Various water-related disease outbreaks were experienced over the past few years, such as typhoid fever, dysentery, and cholera[82]. Intestinal infections account for 40 per cent of the total incidence of infectious diseases. Infectious and parasitical diseases caused 11.3 per cent of deaths among children under 15 and 6.9 per cent of deaths among people above 15. The epidemiological and sanitary situation appears particularly bad in the southern regions of the Republic.

d) Overview of the rural water and sanitation sector institutional framework

While a number of central institutions deal with water and sanitation, such as – *inter alia* - the Ministry of Health and the Ministry of Ecology and Emergencies, the only entity specifically focussed on RWSS is the Department of Rural Water Supply (DRWS), created in 2000 within the Ministry of Agriculture, Water Sector, and Processing Industry. It is a political and advisory body with units in all the *oblasts* of the Republic, funded from the national budget or from special-purpose grants or funds. Its main purposes are the following:

- Develop a strategy for the rural water sector;
- Revise legislation related to drinking water;
- Co-ordinate international donor assistance and foreign investment, including project preparation and implementation;
- Draft legal and regulatory documents.

The effective supply of safe drinking water lies under the responsibility of local governments:

- *Oblast*-level local public administration headed by governors; and
- Regional-level local public administration headed by "*akims*"[83]

The role of the DRWS ranges from the supply of safe drinking water to the local population; the development and approval of water supply systems programmes; data collection and assessment of the availability and status of water resources; the setting up of sanitary protective zones and the management of water sources; the planning, financing, and provision of logistical support for drinking water supply;

[81] Health care in the Kyrgyz Republic statistical publication, National Statistics Committee, Bishkek, 2004.

[82] In 2000, cholera outbreaks struck in the south of the country, and 2 900 people contracted hepatitis A in the Talas oblast. Eight per cent of the total mortality rate in children was caused by diarrhoea in 1997.

[83] "Akims" are the heads of a regional public authority or administration.

water quality improvement and control; decision-making in case of emergencies; through to the approval and setting of drinking water tariffs.

The lowest level public authorities in rural areas are the "*Ayil Keneshes*", self-governing authorities made up of representatives of one or several villages, that ensure co-ordination with public authorities, non-governmental organisations (NGOs), and the private sector.

As far as drinking water supply is concerned, they are responsible – through their executive and management body, the "*Ayil Okmotus*"[84] - for the development and approval of drinking water supply development programmes, management, maintenance, and repairs of the RWSS systems, as well as control over the sanitary conditions. Current budgetary constraints make it impossible for *Ayil Keneshes* to actually invest in the development of drinking water supply systems.

Community drinking water users unions (CDWUUs) represent the other local level group of entities involved in the provision of water supply to the rural population for drinking and domestic purposes and are a direct consequence of the Asian Development Bank (ADB) and World Bank (WB) rural infrastructure projects developed in the Kyrgyz Republic[85]. These are non-profit legal public organisations headed by a management board composed of at least seven members, of which a water supply system co-ordinator and a sanitation co-ordinator. CDWUUs own the water supply systems that are operated by their members. They are meant to be financially autonomous and therefore costs related to the management, and the operation and maintenance of the water supply systems are to be exclusively recouped through payments collected from the population. They are in charge of supplying safe drinking water supply, collecting data, and assessing the availability and status of water resources, meeting the water demand, ensuring the reliability of the systems, setting up sanitary protective zones, and decision-making in co-ordination with the relevant public authorities in case of emergencies.

e) Legal and regulatory framework

The Law on Drinking Water, drafted after the Russian model, was adopted in 1999 and significantly amended in 2000 to take into account the developments in the rural water sector and create adequate conditions for the implementation of the ADB and WB rural infrastructure projects. Changes mainly concerned the responsibility of local self-governance authorities and local public administration in the supply of drinking water to the rural population, as well as the protection of water sources against pollution. Under the amended law, CDWUUs are, *inter alia*, entitled to own local and autonomous decentralised systems and set tariffs for drinking water services.

Another important change took place in 2002 when the State Property Committee approved the transfer of ownership of rural water supply systems[86] from local self-governance authorities to CDWUUs.

In December 2004, the Water Code of the Kyrgyz Republic was approved by the Legislative Assembly. Its purpose is to regulate water relations in the field of use, protection, and development of water resources for guaranteed, adequate and safe supply of water to the population, protection of the environment, and promotion of the rational development of the water fund of the Kyrgyz Republic. Under this code, the National Water Council was created among other entities to prepare the National Water Strategy to be reviewed at intervals of not less than five years.

[84] According to the National Statistical Committee, there are 471 Ayil Okmotus in the Kyrgyz Republic.

[85] See below.

[86] Except those of regional centres.

f) Governmental strategy in the field of Rural Water Supply and Sanitation

The key elements of the government's RWSS strategy have been over the past few years: (i) comprehensive institutional sector reform and capacity building to lay the groundwork for sustainable sector development; (ii) decentralised planning and management services based on community driven development, and giving local governments the responsibility and means to assist communities in improving their services; (iii) introduction of cost recovery policies as the only means to finance the rehabilitation and maintenance of water and waste water systems; (iv) careful selection of cost effective investments based on affordability and consumer preference; and (v) promotion of private sector participation, including operation and maintenance of facilities.

The implementation of this strategy was a prerequisite for the ADB and the WB to go ahead with their respective rural infrastructure projects in the Kyrgyz Republic.

g) National Poverty Reduction Strategy

In the Kyrgyz National Poverty Reduction Strategy (NPRS) 2003-2005[87], which represents the first phase in the implementation of the "Comprehensive development framework" of the Kyrgyz Republic (to be implemented by 2010), access to quality water supply and sanitation is defined as one of the priority actions in the fight against poverty. At the same time, the paper points out significant problems arising from the lack of development of the regulatory and legal framework regarding water use and the ineffective functioning of associations of water users. Furthermore, the absence of clearly-defined national strategy on water use is also stressed.

h) Current trends in the rural water supply and sanitation sector

Over the past five years, the rural water supply and sanitation sector experienced institutional changes resulting from the implementation of IFI projects, such as the devolution of management, and the operation and maintenance of the water supply systems to the local communities represented by the CDWUUs. Communities set the tariffs, determine the budget, and introduce changes in the water supply systems (extension, household connections). Users pay for the water supply and sanitation services that they receive. In the short term, it is expected that the government will continue fund raising efforts for the rehabilitation of the water supply systems not covered under the ADB and WB projects and further decentralise the rural water supply and sanitation sector.

There is a danger, however, that water supply systems constructed/reconstructed under the ADB and WB projects would start to deteriorate again soon after donors and IFIs have departed. There are already examples of water supply systems which, a year after they have been rehabilitated, are in very poor operating condition with standpipes broken, well doors missing, pumps being out of order, etc. This is evidence of the fact that investing CDWUUs with their mandate is a challenge and that many have not yet fully realised their responsibility towards the population for quality drinking water supply.

Tariff collection rates tend to remain an issue, as the overwhelming majority of rural residents has no permanent income and cannot pay tariffs on a regular (monthly) basis. Furthermore, the remnants of welfare mentality and the desire to receive services for free are still strong.

[87] "Comprehensive development framework" of the Kyrgyz Republic (to be implemented by 2010), "Expanding the country's capacities", National poverty reduction dtrategy, 2003-2005.

Continuously rising electricity prices and irregular electricity supply in rural areas create additional difficulties. The situation is aggravated by the fact that more than 50 per cent of tariffs collected by CDWUUs is allocated to electricity payments.

Today, the rehabilitation of existing rural waterworks is mostly funded out of foreign loans (USD 36 million from the ADB, and USD 15 million from the WB) on concessive terms. The government is currently trying to find solutions for the rehabilitation of systems in those rural areas that remain uncovered by IFIs.

i) The ADB and the World Bank rural infrastructure projects

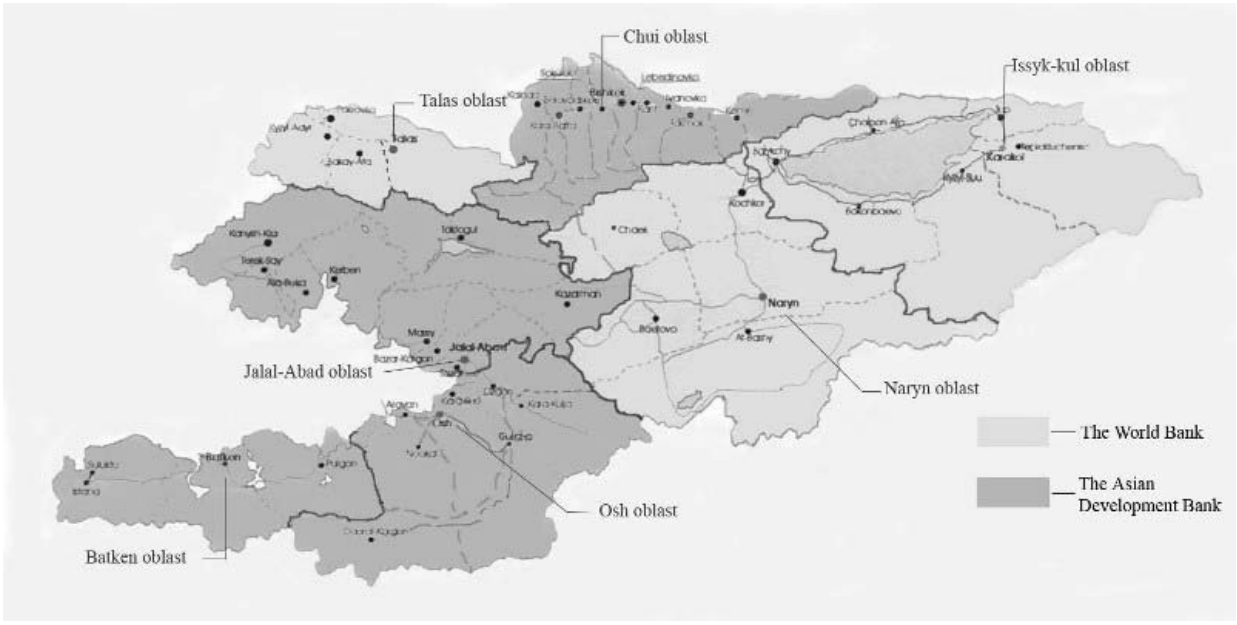
As mentioned above, the implementation of the ADB's "Provision of infrastructure services at the locality level" project and the WB's "Rural water supply and sanitation" project has accelerated the devolution process in the rural water sector and influenced the entire rural water and sanitation sector in Kyrgyzstan. This is the case not only because of the size of the projects, but because for the first time an opportunity has arisen whereby rural water supply issues can be addressed in an integrated manner, together with sanitation and hygiene issues, and the rural population can be involved in the implementation of the projects. Both IFIs set as a prerequisite: large-scale involvement of the population in the implementation of the projects, and the devolution of the management of the water supply facilities to the communities, seeking to ensure the sustainability of rehabilitated (or newly-built) water supply systems; implementation of a self-financing policy in the management, operation, and maintenance of the water supply systems; and the timely repayment of borrowed funds. Under these projects, cost recovery became the basis for financially sustainable development.

The concept of a community-level legal body representing the interests of the entire village community was developed, *i.e*. the CDWUU, a public association comprising all village residents. The property rights to rural water systems were transferred from the local self-governance authorities to these associations free of charge (except those in regionalcentres).

Both projects imply the rehabilitation of the entire water supply system, *i.e*. head facilities, water mains, distribution networks, and standpipes.

The territory of the Kyrgyz Republic was divided between the two IFIs projects:

Figure 4.4: ADB and World Bank project areas



A single project management unit (PMU) common to the two projects was set up within the Department of Rural Water Supply with a view to harmonizing and developing a uniform approach to the implementation of the projects.

The terms and conditions of both projects are as follows:

	ADB's "Provision of infrastructure services at the locality level" project	**WB's "Rural water supply and sanitation" project**
Funding	**ADB**	**International Development Association (IDA)**
Total project value	USD 45 million	USD 24.5 million
Financial terms and conditions	Repayment period: 32 years; Interest rate: 1% p.a. during the 8-year grace period; 1.5 % p.a. thereafter	Standard IDA credit: Repayment period: 40 years; Service charge: 0.75%; Commitment fee: 0.5%
Loan amount	USD 36 million	USD 15 million (+ DFID grant of GBP 3.48 million)
Co-financing by the Government of Kyrgyz Republic	USD 9 million	USD 3.25 million, mostly in the form of exemptions from taxes, charges, & duties
Utilisation period	Until 31 December 2006	Until 31 October 2007
Inception	End 2000	March 2002
Coverage	Batken *oblast*, Zhalal-Abad *oblast*, Osh *oblast*, Chu *oblast*	Issyk-Kul *oblast*, Naryn *oblast*, Talas *oblast*
Number of villages	730	230
Number of population	1.2 million people	325 000 people

	ADB's "Provision of infrastructure services at the locality level" project	WB's "Rural water supply and sanitation" project
Implementing agency	Dar Muhendislik Company (Turkey) in association with Hifab International AB	Carl Bro International (Denmark) jointly with INTRAC (UK)
Sub-lending scheme	Creation of CDWUUs 5% cash contribution of the sub-project value before the construction work begins 15% in-kind contribution of the sub-project value during the construction work	
Sub-loan repayment scheme	5 % loan repayment in local currency (soms) over 7 years, incl. 4-year grace period, interest-free; Foreign exchange risk taken by the Kyrgyz government	
Design costs	Part of total construction costs	Covered by DFID grant
Project objective	Improve the living conditions and health of the population in identified rural and urban localities, in particular, of poor population by ensuring the provision of basic infrastructure services	Improve access to drinking water supplied by the systems owned, operated, and maintained by the communities on a sustainable basis Improve hygiene and sanitary conditions and water use practices at various levels in rural areas.
Project components	1. Rural water supply 2. Rural sanitation 3. Drainage and flood control 4. Rural roads 5. Urban water supply 6. Institutional development programme 7. Consulting project management services 8. Hygiene and sanitary education programme	1. WSS reconstruction and construction 2. Advocacy of rural hygiene and improvement of sanitary conditions 3. Project implementation and capacity building in villages 4. Project management and control 5. Additional operational costs
Pipes used	Asbestos-cement pipes	Polyethylene pipes[88]

The CDWUU's contribution is 25 per cent of the total sub-project's costs[89], of which:

- A five per cent initial cash deposit, serving as a guarantee of the CDWUU's participation in the project[90];
- A 15 per cent in-kind contribution (labour) at the construction stage;
- A five per cent loan repayment over seven years, including a four-year grace period.

Seventy-five per cent of the total sub-project costs are provided as a grant from the Government of the Kyrgyz Republic.

Progress status

- ADB's "Provision of infrastructure services at the locality level" project
  - The setting up the 420 CDWUUs was completed in the first half of 2002;

[88] Such pipes allow for the use of chlorine products to disinfect water rather than ultraviolet water treatment .

[89] It should be noted that these contributions are higher in the case of the ADB project, as technical assistance is included in the water supply system costs.

[90] The average per capita five per cent cash contribution ranges from Som 320 to Som 460. In some cases, it can be as high as Som 520 (1 USD was on average worth 47 soms in 2002).

- So far approximately 95 per cent of the total number of design contracts have been completed, and about 43 per cent of the sub-projects are under construction;

- The project enabled the construction of waterworks in 147 villages, the repair of 180 km of water supply lines and the construction of 542 km of new ones, as well as the repair of 1 169 standpipes and the installation of 1 934 new ones. A total of 225 735 people benefit from the project. Construction is underway in 125 villages. As at 1 April 2005, 50 per cent of the project funds had been disbursed[91];

- With the resources at hand, it is extremely difficult to train the CDWUUs , and many currently go without. Consequently, due to this lack of practical training, CDWUU staff has difficulties, *inter alia*, in operating the systems, maintaining accounts, and developing water tariffs. In addition, the implementation of the hygiene and sanitary education programme has been delayed due to the tardiness in setting up training centres.

- World Bank "Rural water supply and sanitation" project

  - Including the 2005 sub-projects, the number of the sub-projects amounts to 162, covering 198 villages and 327 442 people;

  - The length of the networks covered by construction and repair operations is more than 49.5 km; 171 standpipes were repaired;

  - Work is underway on 784.7 waterworks and 2 780 standpipes;

  - Cumulated loan disbursements of USD 13.3 million are expected after approval of the 2005 programme [92].

j) DFID's "Rural hygiene and sanitation" project

This USD 6.25 million DFID-funded project can be defined as the "water quality assessment" component of the WB project. Its purpose is to reduce morbidity in children by altering unhygienic behaviour and improving sanitary conditions in villages. Its components are as follows:

- Setting up initiative groups; population training in participatory hygiene and sanitation transformation ("PHAST"[93]);

- Laboratory testing of children aged one to 12 for helminth eggs;

- Construction of lavatories;

- Water quality control, jointly with the CDWUUs;

[91] According to the Department of Rural Water Supply.

[92] Medium-term report of the rural water supply and sanitation project, PMC, Bishkek, December 2004.

[93] Methodology of participatory hygiene and sanitation transformation originally developed by the WHO, in which local communities learn to identify their own health, hygiene, and sanitation problems (problem mapping), based on which the communities set their tasks and formulate their action plan.

- Setting up of initiative groups in all the villages where water supply systems are being rehabilitated under the World Bank project.

Progress status:

- PHAST training completed in almost all 2003 and 2004 WB sub-projects;
- 122 villages in Issyk-Kul, Naryn, and Talas *oblasts* covered;
- 1 500 rural initiative groups (RIGs) set up, comprising volunteers, to advocate hygiene;
- Approximately 35 000 adults and children trained;
- Co-operation with the Swiss Red Cross in the Talas and Naryn *Ooblasts* to ensure the incorporation of the RIGs into rural health committees;
- As of August 2004, the construction of 111 school lavatories had been launched (of which 32 had already been completed);
- 125 project proposals were received and 39 grants approved, based on the applications received from villages. Activities funded by the grants consist of the training of neighbouring villages, the installation of wash-stands and drinking fountains, medical examination and treatment by paediatricians, and theatre performances to advocate the best hygiene skills.

k) Issues/lessons learnt from the ADB and World Bank projects

- The five per cent cash contribution expected from the population under the ADB and WB projects is a problem: only 40 per cent of this amount can usually be collected.[94] *Ayil Okmotu* chairmen have therefore had to resort to other collection methods, such as disposal of communal property, marathons, and sponsor assistance. Sometimes grants or loans were obtained or money was borrowed to finance this five per cent. In 2003, eight per cent of *Ayil Okmotu* chairmen were replaced because they failed to collect the requested amount. Due to a slower collection pace than anticipated, the five per cent rule has not been strictly complied with. Cases were recorded under which the water supply system was already operating in spite of only 29 per cent of the five per cent contribution having been collected;
- The five per cent cash contribution is moreover subject to full taxation, including VAT, unlike the 95 per cent share of the sub-projects. This increases sub-project costs and therefore financing costs;
- The 15 per cent in-kind contribution requested under the ADB and WB projects is another source of concern, as it is supposed to take the form of a labour contribution from the population, which, as unskilled labour is very cheap, implies a very large volume of work.

[94] However, the involvement of the population in the sub-projects, as under the WB project, seems to contribute to a higher collection rate. The ADB project does not include any population mobilisation component, with the PIU role mainly limited to consultations regarding the creation of the CDWUUs, the participation to the CDWUU constituent meetings, and the registration of the CDWUU with the relevant oblast authorities. The setting up of a CDWUU has remained a formality in many places. The population is not adequately informed about the project, its terms and conditions, and the role of the CDWUU, and is not actively involved in the creation of the CDWUUs or election of their management bodies.

Some CDWUUs have been very reluctant to provide labour. In addition, there is no contractual or official leverage to induce CDWUUs to fulfil their obligations. CDWUUs are sometimes made responsible for performing complicated operations, which require certain skills, without having the required construction experience. Failure to carry out work by the population often leads to the suspension of construction operations and delays. As of 1 December 2004, 53.3 per cent of the 15 per cent in-kind contribution was completed at the facilities under construction20. There is also a negative impact on this in-kind contribution due to the poor mobilisation of the population, the lack of special equipment, and the bad timing of the work, as this sometimes overlaps with the period when the population is engaged in agricultural work. However, it should be noted that the experience is sometimes positive, with communities co-operating closely with contractors and finding arrangements with them (provision of oil and lubricants to contractors against them doing the work, barter arrangements, etc.);

- While the cost of the water supply systems was originally not to exceed USD 20 per capita, by the time the ADB project started the economic situation in Kyrgyzstan had evolved in such a way that the current per capita cost now can be as high as USD 80[95]. Out of the 730 villages that were covered by the initial rehabilitation programme, 265 will eventually benefit from the ADB project. For this reason, among others, the rural sanitation and urban water supply components of the ADB project have not been implemented. It should be noted that the ADB expressed the intention to commit new funds in order to complete the initial rehabilitation programme;

- CDWUUs still do not fully understand the need to use efficient water disinfection techniques and their responsibility towards the population as far as the quality of water supplied is concerned;

- Too much depends on CDWUU chairmen who are not remunerated. There is the constant threat that, should they become weary, the work might stop or be unsatisfactory. Moreover, they often have no real power or leverage to influence events. Their performance has been more successful where they were supported by *Ayil Okmotus*;

- National construction (SNiP) standards developed in the 1970s are obsolete. They are very complex and lead to an increase in the construction costs and value of facilities.

- CDWUUs are public non-profit organisations engaged in water production and supply to the population, *i.e.* engaged in a commercial activity. As a public entity, the CDWUU must not generate profit, but as a water enterprise, the CDWUU should seek to generate income from its production activities. It is likely that once the IFIs projects are completed, tax authorities will seek to tax profit generated by the CDWUUs;

- CDWUUs were created, *ex nihilo*, as water enterprises without any equipment, machinery, or basic tools for maintenance, repairs, or subsequent extension of the water supply networks, the procurement of which cannot be financed from tariffs. Therefore, it is not clear whether CDWUUs will be able to operate and maintain the water supply systems.

[95] The price of construction materials and equipment went up several-fold due to the increase in inflation.

4.6.3 EAP Task Force "Case study of rural water supply and sanitation in Moldova"

a) Strategic planning, construction, and ownership in 1960-1991

The water supply and sanitation (WSS) infrastructure in rural settlements[96] in Moldova was developed primarily from 1960 to 1991, when Moldova was a part of the Soviet Union. Despite the central planning system there was no national development plan for the rural WSS infrastructure. Instead, many rural settlements developed individual "master plans", including an infrastructure development plan. But those plans were not fully implemented as they were highly demanding in terms of infrastructure development, and of building roads and municipal housing, and generally lacked financial support from central government.

Most WSS infrastructure was built and owned by former state and collective farms, usually applying construction and sanitary standards, rules, and norms effective in the Soviet Union. The water consumption norm of 35-80 litres per person per day was determined for rural households without connection to the centralised sewerage system and 160-250 litres for households with access to such a system. The construction, environmental, and sanitary norms and standards in the Soviet Union were very stringent, even more restrictive than those in developed industrialised countries and were often impossible to comply with.

Moreover, state and collective farms were not able to design and build WSS and other engineering infrastructure independently, as all was pre-decided as anticipated in the master plans. Construction projects in WSS were therefore approved only if centralised water supply and sewerage were initially incorporated into the project design for municipal housing and/or social infrastructure (schools, hospitals, etc.) to be built in a rural settlement. The demand for water supply and sanitation services was usually substantially overstated when designing the master plan in order to cover future needs assessed on the basis of very optimistic forecasts for economic development and population growth. As a result, *e.g.* the sanitation infrastructure in more than 35 per cent of rural settlements was built with highly excessive capacity. Sometimes capacity utilisation rates were so low that the systems were just not operational (e.g. a wastewater treatment plant can not provide effective treatment if the inflow is some 5-10% of its capacity).

In the central planning system, quotas for pipes and other equipment were usually not allocated for the small constructions undertaken by the farms, as the system was focused on major constructions financed from central and regional budgets. The farms had to get the pipes, materials, and equipment somehow, often through barter schemes, and the quality of the pipes, materials, and equipments was usually quite low.

For the above reasons the WSS infrastructure in rural settlements was usually poorly designed and built, and was very inefficient.

b) Operating rural WSS systems in 1960-1991

Specialised entities professionally operated the WSS systems in only a few rural settlements. Usually, the owner of the infrastructure (a state or a collective farm) was solely responsible for the operations and maintenance (O&M) of the infrastructure. O&M was often rather poor as the farms lacked appropriate skills.

In most rural areas, the prices set for WSS services by the state and collective farms were either very low ($0.02-0.04/m^3), or even free, as the population represented their present or former employees and

[96] There are some 1533 rural settlements in Moldova

their families. This attitude resulted in a widespread wrong perception among the rural population that the WSS services should be free of charge.

In addition, it created no incentives for rational water use: rural households often use drinking water to also water their gardens and for agricultural production on their small land spots. Generally, there was no water metering - neither with end-users, nor even at water pumping stations - and usual practise was to use electricity meters readings from the pumping stations to assess the amount of water pumped into the system. This practice easily caused errors of 30 per cent or more.

c) Coverage and present state of WSS infrastructure

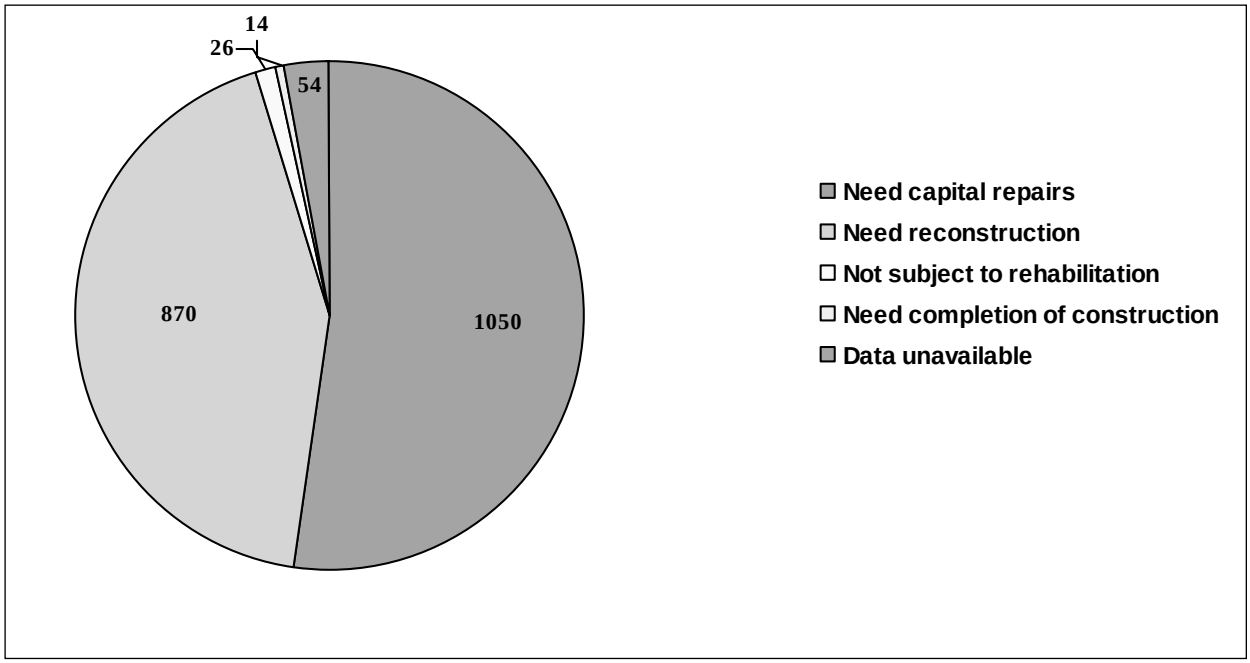
Like in other EECCA countries, following the break-up of the former Soviet Union and the subsequent dismantling of almost all state and collective farms, this infrastructure became almost obsolete, since usually there was no arrangement made to transfer responsibility for operation and maintenance from state and collective farms to appropriate institutions, while local self-governing communities most interested in WSS services lacked resources to operate and maintain the systems. Also, nobody paid electricity bills. For these reasons, after 1995, many centralised WSS systems in rural areas in Moldova were shut down and then abandoned.

The present rural water supply and sanitation infrastructure in Moldova is underdeveloped and deteriorated. Available statistical data usually reflects only territorial coverage rather than the actual number of people with access to a centralised water supply. Despite a documented high number of existing centralised water supply systems (statistics report 1 032 systems), coverage of rural population by centralised water supply did not exceed 30 per cent even in the Soviet time. Taking into account that some 93 per cent of the systems built in the past now require substantial rehabilitation/capital repair or reconstruction (see Figure A), at present now only a small portion of the rural population is provided with relatively stable water supply through the centralised systems. Official reports say about 17 per cent, but in fact this portion is likely to be even lower.

The rest of the population takes water mostly from shallow wells, 65 per cent of which are highly polluted. Contaminated shallow ground water contributes to a substantial number of cases of hepatitis A and other water-born diseases in Moldova.

Coverage of the rural population by centralised wastewater collection systems (by sewerage) iseven lower: in Soviet times, when 33 per cent of rural settlements had such systems, it did not exceed seven to eight per cent of the rural population. Currently around 55 per cent of existing sewerage infrastructure requires substantial rehabilitation or reconstruction, so the coverage is likely to be even lower than seven to eight per cent.

Figure 4.5: Technical status of rural water supply systems in Moldova



Source: Apele Moldovei (2003).

d) Institutional set up, national, and local strategies in rural WSS – from 1992 onward

Changes in the legal and regulatory framework

Decentralisation of responsibility for providing WSS services to the population in Moldova was initiated in 1995 and completed in 1998. However, significant changes in the legal and regulatory framework in the WSS sector were initiated only in 1999 with the introduction of the **law on potable water**. This regulation defined principles for installation and operation of the centralised water supply systems; and determined the responsibilities of the state, municipalities, operators, and customers. It also put forth requirements and conditions for co-operation among stakeholders. Unfortunately it was only a declarative act with a number of contradicting provisions and definitions. It did not suggest effective implementation mechanisms.

In 2002 a new **law on communal services** enabled diversified forms of property acquisition and operation schemes in the sector, including concessions and private operators. **Local regulation on providing WSS services** was developed in some municipalities, but still, there are large gaps in the regulatory framework, and water supply and sanitation norms and standards still remain stringent, thus inhibiting compliance.

Planning, programmes implementation, and co-ordination

Current planning activity in the rural WSS sector in Moldova often produces disconnected and only declarative programmes (including provisions on rural WSS in the PRSP and in the "Moldovan village" programme), though with a strong political accent. The amount of financial resources required for programme implementation is often calculated based on rather weak assumptions for demand (water consumption norms) and other parameters; and expenditure needs are rarely thoroughly assessed and analysed. Programmes are still not always technically and financially feasible, and are rarely supported by justifying calculations.

"**The comprehensive water supply and sanitation scheme for Moldova, until the year 2015**" was a positive exception from this trend. This scheme was created on the basis of a thorough and in-depth study of the WSS sector in Moldova, and of the ongoing and implemented international and local WSS projects. The document also helped develop a comprehensive sector-wide **information database**. The OECD/EAP Task Force assisted in setting realistic, financially feasible development targets in the urban water supply and sanitation sector by applying **financial strategy** (FS) methodology. Despite the obvious practical and methodological value of the document, the approaches and recommendations it suggested have not been implemented. This happened, *inter alia*, due to lack of co-ordination between government agencies responsible for the WSS sector.

Tariff policy and user charge revenues

The first sign of improvements in the tariff-setting policies came in December 2000 when the government approved a "**Methodology of water supply and sanitation tariffs calculation and implementation**". The methodology introduced a new tariff-setting approach based on the full cost recovery principle. The methodology was replicated from the tariff-setting practices existing in the energy sector, which was already privatised. According to the methodology, utilities and infrastructure operators are responsible for tariff calculations on the basis of previous year total operations and maintenance costs. Local governments approve the tariffs on the **no objection** basis from the Department for Construction and Territorial Development.

The "**Regulation of public water supply and sanitation services in the municipality of Chisinau**" was issued in December 2002. The document contributed to establishing sound tariff-setting rules, it also established a framework for tariff calculation and for sound financial settlements between service providers and consumers. The document has been adapted and adopted in many municipalities in Moldova.

The current water tariffs in Moldova still depend on cross-subsidisation and therefore water tariffs are different for industrial users and households. In rural areas tariffs remain rather low (on average some USD 0.4 per cubic meter of supplied water, possibly equal to the price of a bottle of local beer). Collection efficiency is being improved, not least due to the improved **willingness to pay** (WTP) demonstrated by those hundreds of thousands of former labour emigrants living in rural areas who appreciated the benefits of a regular water supply, quality water, and good sanitation they enjoyed when working abroad (labour emigration from Moldova amounts to one quarter of the population), .

Financing from the public budget

Since 1993, allocations from the central budget to the WSS sector have been limited to co-financing amounting to USD 2.7 million, representing a loan provided by Turkey. Allocations for other projects were negligible. Current financing practices are still based on attempts to distribute scarce budget resources among a maximum number of applicants. There is no prioritisation/ranking of the projects based on priorities set by the competent jurisdictions, and using sound and transparent criteria.

The Ecological Fund is the only available source of public funding to co-finance WSS projects: up to MDL 100 000 (USD 8 200)[97] per project. Some limited financial resources are also available from the State Reserve Fund, though allocations from it are not systematic.

Operating and maintenance, management and technical capacity

[97] MDL – Moldovan lei, USD - USA dollar – national currencies.

The situation as regards the supply of raw materials and equipment required for maintenance and operation of WSS infrastructure in rural areas has been significantly improved since 1991. Unlike during the Soviet era, there are no quotas and everything is available if it can be paid for. A wide network of international distributors of equipment and maintenance materials for the water supply and sanitation systems makes it rather easy to purchase any required item, provided there are sufficient financial resources available. Tenders have become a common attribute of all procurement transactions.

Lack of qualified managers and technical staff, however, remains one of the major obstacles to improvements in the sector: very low salaries and wages, and inadequate working conditions present major obstacles to satisfying the demand for human resources in the sector. There are very few incentives for young people to concentrate their studies on water supply and sanitation.

Although the Technical University of Moldova makes considerable efforts to provide good training for the specialists, it can not meet the demand as there is not much opportunity to provide students with on-the-job training involving advanced water supply and sanitation technologies and managerial practices. Transfer of international managerial and technical expertise is highly needed. Without international support it will not be possible for Moldova to build sufficient capacity in the foreseeable future.

e) Projects in rural Water Supply and Sanitation supported by donors and IFIs

Since 2000, international financial institutions (**IFIs**) and donors have become more active in the WSS sector in Moldova, additionally bringing expertise and know-how, and facilitating development of the sector. As a national programme for rural WSS development in Moldova is lacking (unlike in the Kyrgyz Republic), as well as co-ordination of different actors by the Government of Moldova (**GoM**), IFIs, donors, local communities, and other stakeholders (including direct involvement of population and local private investors) undertake **decentralised initiatives** aimed at improving the situation in the rural WSS, as presented below.

The **Danish Ministry of Environment** helped to build or rehabilitated water supply systems in three rural and in three urban settlements, providing **comprehensive solutions** to water supply problems in the involved settlements.

Local contribution consisted of civil works implemented by specialised local organisations selected through tenders, while the donor provided pipes, pumps, valves, and other equipment of high quality. Training for local operators was organised and now the systems are operated by local staff (one person per 1 000 people served).

The project was supported by the **information and public awareness campaign**. The population contributed to the project in cash and in-kind. All household connections are metered and people pay for water fully and on time. The collection rate stands at 98 per cent.

Turkey has provided a loan to rehabilitate the WSS infrastructure in the southern part of Moldova. Two towns (52 000 people) and two big rural settlements (20 000 people) benefited from the first instalment (USD 17.7 million plus USD 2.7 million of local contribution provided by the GoM). The second instalment (USD 22 million) was also anticipated to resolve the problem of quality water supply in two more towns and in some 20 rural settlements in the **Gagauz autonomy** (with 140 000 Turkish-speaking people living there). Unfortunately, due to problems with repayment of the first instalment, the Turkish government decided to delay the second one, and to limit its support to a USD three million grant to complete the projects funded from the first instalment and prepare projects for the second instalment – assuming that there will be the second instalment some years after.

The **Social Investment Fund (the World Bank [WB] project)** has also financed some projects in the WSS. However, the resources were distributed rather thinly: support provided by the fund (as a sub-loan) amounted to only USD 50 000 per project, which is **not enough for a comprehensive project** that could fully resolve the water supply problem in a settlement. Therefore, only small projects like the rehabilitation of a water tower or of a part of a water pipe network were financed from the fund. Thus the success of such projects in terms of their impact on public health and on improving living conditions of the population was assessed as low.

The **Word Bank project on WSS** – presently four urban settlements are involved, but in the future 10-12 rural settlements will also be included in the project.

The **Arab Economic Development Fund (AEDF, Kuwait)** provided substantial support (a grant) for WSS project preparation. A project-ranking methodology, based on expected impact on human health (health risk criterion), willingness to participate, economic benefits, technical and financial feasibility, and other criteria was developed in the framework of this project. On the basis of this project identification and ranking methodology, six projects were selected (three in towns and three in rural settlements, with the total population amounting to 60 000 people). To implement the projects the Government of Moldova has signed a loan agreement with the fund.

Japan provided a grant (via **JICA – the Japan International Co-operation Agency**) for a study on WSS systems in the northern part of Moldova. Some projects included in the WB project on WSS were identified and prepared in the framework of the study.

The **"Local government reform project", financed by US AID**, contributed to capacity building in municipalities, *inter alia*, supporting NGOs working on municipal development issues and providing training for NGOs and local officers on how to set priorities and design development plans for municipalities, including rehabilitation and development of WSS infrastructure. Such programmes were prepared in several villages *e.g.* in **Roshietich** village.

The **WATSAN programme, financed by Switzerland**, supported the creation of water supply systems in seven rural settlements with some 8 600 people benefiting; a water distribution system through stand pipes was established in seven other rural settlements with 7 600 people. The programme was implemented in co-ordination with the above-mentioned US AID project.

f) Success stories, including local initiatives

Based on field trips to nine rural settlements, the case study includes several "**success stories**" related to rural WSS. Some of the stories are presented below:

In **Kirkaesht village** (3 000 people): a 24-hour water supply was recovered with Danish assistance. The system is operated by three people attached to the local public authority (*primaria,* local self-governance body). The price for water is equal to USD 0.34 per cubicmetre. Water sold is metered and connected households pay fully and on time. In 2003 the water utility paid MDL 10 000 of taxes to the local budget. The tax revenues were used to further develop a gas supply system in the village.

In **Stavchen village** (10 000 people with a growing population), near Chisinau: the municipality has invited a private company to operate the WSS system. The contractor was selected through tender; criteria for selection were lowest prices for improved communal services (WSS, gas, and heat supply). Price for water is below USD 0.4 per cubicmetre. The contractor demonstrated substantial improvements in the performance indicators during the first year and has signed a 49-year concession-like contract with the municipality.

Karbolia (a small village in the **Gagauz** autonomy): water was delivered to the village in tanks, at a price of USD 2.5 per cubicmetre. The people voted for attracting a sub-loan (provided by the **AEDF, Kuweit**) to build a local centralised water supply system and get piped water. The unit cost (including interest on the loan) is rather high and amounts to USD 280 per connected person, but people found the annual payment of USD 25 per person affordable taking into account that average household cash income in the village amounts to USD 1 500 per annum.[98]

Lebedenko village: a group of local citizens leased a spring located in the village and owned by the local community and invested their own money (earned when working abroad) in building a pipeline from the spring to their homes. Local authority agreed to lease out the spring under condition that a school and a kindergarten located along the pipeline would also be supplied with water. The tariff was set at five MDL per cubicmetre. Six months later, some other households expressed their interest in buying water from the system. The owners created a small enterprise to operate and further develop the water supply system in the village and engaged in contractual relations with the local public authority (*primaria).* In 2004, after preparing a feasibility study and designing documents, the system was extended, and many other households and enterprises were connected. Water sold is metered, and the local public authority approved a new tariff, which was increased to MDL 10, to cover investment costs. There are plans to further extend the system to supply water to neighbouring villages.

Suslen village: after the collapse of the centralised water supply system, built in the past, many households started drilling their own boreholes. Due to uncontrolled drilling the level of the water table decreased and water disappeared in many dug wells. Water crises in the village happened intermittently until one private farm suggested that they operate the whole of the village's water supply system. To begin with, a new deep borehole was constructed by the farm, while the others (built without official permissions) were shut down. The farm invested some USD 12 000 in the construction, while the Moldovan Ecological Fund granted another USD 8 000. Design documentation was prepared in line with the effective rules and construction standards. However, shortly after the construction was launched, it became apparent that investment costs related to building a water tower were higher that expected, and the farm started searching for a loan to complete the construction.

A good feasibility study could have prevented such a problem of underestimating investment cost, but rural communities and farmers usually lack relevant expertise and need support from the government in project preparation. A serious obstacle for projects implementation is that local banks are not eager to provide loans for WSS projects, while there is no public fund that could grant "soft" loans.

Kopchak village (12 000 people; **Gagauz** autonomy): a local collective farm operated part of the water supply system until 2004, but lacked resources to rehabilitate it. A group of citizens suggested creating a **"water users association",** which would be responsible for rehabilitating and operating the water supply system in the village. The association was created, it undertook an audit of the system, and prepared a rehabilitation project. Households, the collective farm, and the local public administration contributed to rehabilitating the system, which uses good quality spring water. Technical and legal support was highly needed by the association when it started working, but there is no institution in Moldova that provides such support.

g) Lessons learnt from the case study

- Lack of national strategy and lack of coordination between the government agencies responsible for the WSS sector, as well as between local stakeholders, international donors, and IFIs, and

[98] According to national accounts statistics in 2001 in Moldova final consumption of households amounted to MDL 4,505 (USD 350) per capita per annum.

between different projects in Moldova, are serious obstacles for the comprehensive development of the rural WSS sector, as well as for the cost-effective use of available scarce resources. Another obstacle is rigid, unrealistic standards for WSS systems.

- There are two pre-requisites for the success of projects in the rural WSS initiated by the government, donors, or IFIs:

  A. **Participatory approach**: community mobilisation and ownership, strong commitment of the community, and direct involvement of the population in project implementation;

  B. **Affordable level of services/the technological choice should fit available resources:** this includes the managerial capacity and technical skills of the people living in the community, as well as the household incomes - level, structure (cash, non-cash), and seasonal fluctuations - ensuring that people are able to pay for the service level they have selected.

- On the one hand, the outcome (in terms of the impact on public health and on improving living conditions of the population) of the support and co-financing provided to WSS projects by the public budget, donors, and IFIs is much more significant and resources are used more cost-effectively when allocation to a settlement is made on the basis of the **estimated cost of a comprehensive solution**, anticipating full rehabilitation and planned extension of the water supply system that would ensure 24-hour quality water supply. On the other hand the outcome is rather inadequate, suggesting only limited or partial improvements if, the investment programme for a specific settlement **was designed to fit the prescribed allocation of funds**.

- Moldova, like other EEECCA countries, lacks managerial and technical capacity in the WSS sector, particularly in rural areas. Without international support it would not be possible for Moldova to build sufficient capacity in the foreseeable future. The same is true for other EECCA countries. Transfer of international managerial and technical expertise, as well as cross-fertilisation by disseminating success stories and best practices from Moldova and other EECCA countries are highly necessary to addressing the problem.

- Though local initiatives undertaken by local communities, and private investors and operators can only partly compensate for the lack of national strategy and priorities in the WSS sector, **these initiatives can be successful, even in rural areas**. Pre-requisites for success are: a legal framework favourable to private sector participation (concessions, private operators, etc.), strong commitment from the initiators/sponsors, and sufficient willingness to pay (WTP) from the population.

- Labour emigration created favourable conditions for local initiatives in Moldova: former labour emigrants who have come back home have demonstrated a much higher commitment and WTP for WSS, since when working abroad they appreciated the benefits of a regular water supply, quality of water, and good sanitation. In addition, some of them had accumulated capital sufficient to start small businesses in agriculture and in rural WSS, or to sponsor rural WSS projects.

- However, local initiatives require technical, legal, and financial support from the government. Technical support, *inter alia*, could include: access to a data base on water sources and WSS technologies applicable in rural areas, and help in selecting feasible and affordable solutions; training on how to properly build and operate rural WSS systems, on metering and sound tariff policy, on sound legal and financial arrangements ensuring sustainability of operations, etc. The establishment of an institution providing such support to local initiatives, together with co-

financing from the public budget and/or soft loans from ecological and other ear-marked funds, to help cover high up-front investment costs, would promote development of the rural WSS sector.

4.6.4 Table – Health infrastructure of EECCA countries

Table 4.8: Health infrastructure of EECCA countries, World Bank (2005b)

	Total	*Public*		*Out of pocket*	*External resources*	*Health expenditure per capita*	*Physicians per 1 000 people*		*Hospital beds per 1 000 people*	
	% of GDP	**% of GDP**	**% total**	**% of private**	**% of total**					
	2002	**2002**	**2002**	**2002**	**2002**	**2000**	**1990**	**2004**	**1990**	**1995-2002**
Armenia	5.5	1.3	24.1	82.3	19.6	42	3.9	3.5	9.1	4.3
Azerbaijan	3.7	0.8	22.1	100	4.0	27	3.9	3.5	10.1	8.5
Belarus	6.4	4.7	73.9	79.7	0.1	93.0	3.6	4.5	13.2	12.6
Georgia	3.8	1.0	27.1	98.7	12.6	25.0	4.9	3.9	9.8	4.3
Kazakhstan	3.5	1.9	53.2	100	0.6	56.0	4.0	3.3	13.7	7.0
Kyrgyzstan	4.3	2.2	51.2	100	14.0	14.0	3.4	2.7	12.0	5.5
Moldova	7.0	4.1	58.2	100	2.8	27.0	3.6	2.7	13.1	5.9
Russia	6.2	3.5	55.8	63.6	0.2	150.0	4.1	4.2	13.1	10.8
Tajikistan	3.3	0.9	27.7	100	14.9	6.0	2.6	2.2	10.7	6.4
Turkmenistan	4.3	3.0	70.7	100	0.7	79.0	3.6	3.2	11.5	7.1
Ukraine	4.7	3.3	71.1	95.5	3.6	40.0	4.3	3.0	13.0	8.7
Uzbekistan	5.5	2.5	45.5	100	5.0	21.0	3.4	2.9	12.5	5.3
Average	**4.9**	**2.4**	**48.4**	**93.3**	**6.5**	**48.3**	**3.8**	**3.3**	**11.8**	**7.2**
Minimum	**3.3**	**0.8**	**22.1**	**63.6**	**0.1**	**6**	**2.6**	**2.2**	**9.1**	**4.3**
Maximum	**7.0**	**4.7**	**73.9**	**100**	**19.6**	**150**	**4.9**	**4.5**	**13.7**	**12.6**

CHAPTER 5 HEALTH ASPECTS OF COST-BENEFIT ANALYSIS IN WATER SUPPLY AND SANITATION

World Health Organization – Regional Office for Europe

5.1 Executive summary

In preparation of the Ministerial Conference on Financing the Urban Water Supply and Sanitation Sector in EECCA countries (Yerevan, Armenia, 18 November 2005), several assessments have been made of the total investment costs required by the EECA countries to meet the millennium development goals (MDG). Current estimates are however weakened by the omission of direct and indirect health benefits. WHO applied a cost benefit analysis applied earlier at the global level to the specific environment in the EECCA countries in an effort to provide additional information and thus contribute to making future cost-benefit analysis more realistic.

The model started from an assessment of the current disease burden, based on population data provided by the UN population division; data on access to water supply and sanitation gathered through the WHO-UNICEF Joint Monitoring Program; information on diarrhoea incidence rates by age group provided by the EIP program of WHO. Global literature reviews, complemented with detailed studies from the EECCA region, were used to assess health benefits by different interventions expressed as a reduction in diarrhoeal disease rate.

Five types of interventions were considered:

- Intervention 1: achieving the MDGs
- Intervention 2: providing access to improved water supply and improved sanitation services to the unserved population living in urban and rural areas by 2015
- Intervention 3: increasing access to improved water supply sources and improved sanitation services **and** providing water treatment at point of use to the unserved population living in urban and rural areas by 2015
- Intervention 4: Increasing access to in-house piped water and sewerage connections, with water quality monitoring and partial treatment of waste waters to the urban and rural poor by connecting those segments of the population that are not connected to centralized piped water and sewage network systems by 2015.
- Intervention 5: Improving water quality in the piped water supply network by better water treatment, regulation and monitoring so that residual chlorine can be detected at tap.

Economic benefits resulting from a reduction of diarrhoeal disease were assessed at three levels:

- Health sector benefits: direct expenditures avoided, due to reduced morbidity

- Patient benefits: direct expenditures avoided (due to less illness from diarrhoeal disease), income gained (due to reduction in days lost from work), days of school absenteeism avoided, avoidance of loss of productive days by caregivers

- Savings in convenience time: including water collection time saved, sanitation access time saved, opportunity cost of lost time.

The results of this analysis are covered in the Table 5.1 below:

Table 5.1: Economic gains from reduced morbidity due to diarrhoeal diseases (millions USD/year)

Intervention ->	**1**	**2**	**3**	**4**	**5**
Caucasus	163	325	401	797	22
Central Asia	647	1,294	1,571	2,937	63
Eastern Europe	212	424	714	2776	153
TOTAL	**1,022**	**2,043**	**2,686**	**6,510**	**238**

The table shows that the economic value of the health benefits resulting from improvements in water supply and sanitation ranges from USD 1 billion for intervention 1 to up to nearly USD 6,5 billion for intervention 4.

In assessing this information, it must be borne in mind that:

- The calculation is based only on one type of health outcome, diarrhoeal disease. Expert meetings held under the Protocol on Water and Health identified in addition the following priority diseases: cholera, shigellosis, viral hepatitis A, typhoid/paratyphoid as priority diseases to be combated by improvements in water supply and sanitation. Economic benefits from reduction in these diseases can be calculated using the same model and would lead to the expression of additional benefits.

- The model used by WHO expresses benefits on a per annum basis. Infrastructure improvements done in the lead-up to the target year of the MDGs (2015) are likely to remain operational for a significant number of years after 2015 so that cost benefit analysis should also take the disease averted during this period into account.

- The cost of achieving the MDGs in EECCA have also been assessed on an annual basis: this would require the doubling of financial flows for operation, maintenance and capital costs to about € 7 billion. Hence the annual additional costs that should be compared to the annual health benefits is about €3.5 billion, which is significantly less than the benefits that derives from controlling diarrhoeal diseases.

It is also recognized that the present study addresses only one aspect of water-related diseases. Other important water-related diseases such as hepatitis A, dysentery, cholera and typhoid have not been addressed in the present calculations. Completion of the model by including reduction of these disease burdens would further sustain the argument.

Although incomplete, the current study indicates that health benefits should be seen as an important component in any cost-benefit analysis when improvements in urban and rural water supply and sanitation are being considered. WHO is ready to work with the EECCA countries and international donors in the further development this work.

5.2 Introduction

Within the framework of the Environment for Europe process, ministers of the eastern Europe, Caucasus and central Asia (EECCA) held a major conference on urban water supply and sanitation in Almaty in 2000. The Almaty Conference led to:

- the adoption by the EECCA Ministers of economy/finance and environment of guiding principles for the reform of urban water supply and sanitation sector;
- a mandate to the EAP task force to monitor the implementation of the guiding principles, and to develop a work program to support implementation; and
- an agreement to hold a follow-up conference in 2005.

The Almaty Conference formed a lead-up to the adoption of the Millennium Development Goal 7 Target 10, later strengthened by the World Summit on Sustainable Development to:

Halve, by 2015, the proportion of people without sustainable access to safe water and sanitation.

These goals have been reinforced at the recently concluded 2005 World Summit.

At the Environment for Europe Ministerial Conference in Kiev, May 2003, the participants adopted the EECCA environment strategy. The World Health Organization's Regional Office for Europe joined this effort to facilitate the water supply and sanitation area of work under the Strategy, in particular by strengthening its cooperation with the EAP Secretariat at the OECD.

Several assessments have been made of the likely costs of meeting the Millennium Development Goals. The total MDG investment cost was estimated at around €14.6 billion for all EECCA countries for the entire MDG period (Danish Ministry of Environment DANCEE (2004). However, the model used in this estimate addresses solely expenditures, and does not balance these expenditures with the economic benefit from disease avoided and productivity gained by reducing the burden of water-related disease. The present paper discusses a methodology to address this element of cost calculation, applies the methodology in the case of diarrhoeal diseases to the EECCA countries, and indicates possible areas for refining the outcome.

5.3 Methodology

5.3.1 Geographical Focus

In order to arrive at consistency with current WHO geographic regions, the analysis focussed on three subregions:

- the Caucasus comprising Armenia, Azerbaijan and Georgia;
- the central Asian region, comprising Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan; and
- the eastern European region, comprising the Russian Federation, Belarus, the Republic of Moldova, and Ukraine.

5.3.2 Interventions

For each sub-region, a set of potential interventions improving access to safe water and sanitation service levels was assessed. The term "improved" water supply and sanitation refers initially to low technology improvements and is based on the definitions presented in the report of the WHO-UNICEF Joint Monitoring Programme (WHO and UNICEF 2000 and 2004).

- "Improved" water supply generally involves better access and protected water sources (e.g. standpost, borehole, protected spring or well, or collected rain water). Improvement does not mean that the water is necessarily safe, but rather that it meets the minimum criteria for accessibility and measures are taken to protect the water source from contamination.

- "Improved" sanitation generally involves better access and safer disposal of excreta (septic tanks, simple pit latrines, or ventilated improved pit-latrines). Isolation of excreta means less chance of contamination of human environments. However, under these options there is no (or very limited) treatment or re-use of wastewater, and sewerage either stays in the location (such as a latrine) or is discharged to the wider environment.

Further improvements that make water or sanitation services safer or more convenient include:

- Water treatment at point of use, for example using chlorine to disinfect water.

- Regulated water supply through a household connection, giving water that is safe for drinking, and connection to sewer system thereby removing contact between humans and their waste.

In this study, five different "interventions" were modelled starting from the baseline. These scenarios are described in Table 5.2 below.

Table 5.2: Intervention scenarios

Intervention	Description
Intervention 1	Achieving the MDG, which is halving the population without access to improved water supply and sanitation by 2015.
Intervention 2	Providing access to improved water supply and improved sanitation services to the unserved population living in urban and rural areas by 2015.
Intervention 3	Increasing access to improved water supply sources and improved sanitation services **and** providing water treatment at point of use to the unserved population living in urban and rural areas by 2015.
Intervention 4	Increasing access to in-house piped water and sewerage connections, with water quality monitoring and partial treatment of waste waters, to the urban and rural poor by connecting those segments of the population that are not connected to centralized piped water and sewage network systems by 2015.
Intervention 5	Improving water quality in the piped water supply network by better water treatment, regulation and monitoring so that residual chlorine can be detected at tap.

5.3.3 Estimates on Water and Sanitation Coverage

Estimates on coverage of water and water supply systems were taken from the results of the 2004 survey exercise undertaken in the framework of the WHO-UNICEF Joint Monitoring Programme (WHO and UNICEF 2000 and 2004).

The figures maintained for the present study are summarized in Table 5.3 below.

Table 5.3: Access to improved sources of water supply and sanitation in 2002

	Access to improved water supply (%)				Access to improved sanitation (%)	
	Total served	House connection	Other types of access	Not served	Total served	Not served
Armenia	92	85	7	8	84	16
Azerbaijan	77	47	30	23	55	45
Georgia	76	58	18	24	83	17
Kazakhstan	86	61	25	14	72	28
Kyrgyzstan	76	48	28	24	60	40
Tajikistan	58	40	18	42	53	47
Turkmenistan	71	52	19	29	62	38
Uzbekistan	89	53	36	11	57	43
Russian Federation	96	81	15	4	87	13
Belarus	100	62	38	0	90	10
Republic of Moldova	92	41	51	8	68	32
Ukraine	98	78	20	2	99	1

5.3.4 Assessment of Health Benefits

Infectious diarrhoea is mainly responsible for the burden caused by water-related diseases. Improving access to safe water supply and sanitation services is a preventive intervention, whose main outcome is a reduction in the number of episodes of diarrhoea and accordingly a proportionate reduction in the number of deaths. Many individual studies have reported additional results of interventions intended to reduce illness through improvements in drinking-water, sanitation facilities and hygiene practices in the developing world.

There seems to be a dearth of studies on health impact of water supply and sanitation in the European Region, an issue that will be discussed in greater detail later in the paper. Nevertheless, this analysis estimated the health benefits of improving access to safe water and sanitation in the three sub-regions based on a limited number of published reviews, surveys and multi-country studies:

- Improved water supply can reduce diarrhoea morbidity by up to 25%, if severe outcomes are included (Fewtrell et al., 2005).

- Improved sanitation reduces diarrhoea morbidity by 32% (Fewtrell et al., 2005).

- When providing both improved water supply and improved sanitation facilities, a reduction of 37.5% in diarrhoeal disease rates can be achieved (Esrey et al, 1996).

- Hygiene interventions including hygiene education and promotion of hand washing can lead to a reduction of diarrhoeal cases by up to 45% (Fewtrell et al, 2005).

- Improvements in drinking-water quality through household water treatment, such as chlorination at point of use, can lead to a reduction of diarrhoea episodes by between 35% and 39% (Fewtrell et al, 2005).

- Improving water quality in the piped water supply network by better water treatment, regulation and monitoring so that some detectable chlorine residual can be detected at the tap would lead to a 30% decrease in diarrhoeal diseases (Egorov A. et al, 2002).

- Achieving full coverage in regulated in-house piped water and sewage connection, with water quality monitoring and partial treatment of waste waters, corresponding to a situation typically occurring in developed countries, would lead to a reduction of 77% in diarrhoeal disease rates (Prüss A. et al, 2002).

The number of diarrhoea cases averted by increasing access to improved water and sanitation services would vary from one sub-region to another as they depend on the existing levels of water supply and sanitation access and the country-specific levels of morbidity and mortality due to diarrhoeal diseases. Health impacts would be greater in regions where the number of unserved is high and where the diarrhoeal disease burden is significant.

5.3.5 Health Data Inputs

To estimate health impact, a number of data inputs are required such as: population numbers by age group and by country; diarrhoea incidence rates by age group and by country; distribution of population by exposure scenario and by country; percentage reduction of diarrhoea incidence rate for each selected intervention.

Table 5.4 below shows a summary of the type of data, sources, and assumptions used in the health benefit assessment. Where possible, country-specific data were used; where such data were not available or could not be collected in a quality-satisfactory manner in the time available, regional or global averages were applied.

Table 5.4: Overview of data sources, year of collection and coverage range

Data type	Data source	Data year	Data coverage
Demographic and epidemiological			
Population size and structure	UN population division	2015	Country-by-country data
Current WS&S coverage rates	JMP report	2004	Country-by-country data
Diarrhoea incidence rates, by age group	EIP/WHO	2002	Country-by-country data
Risk reductions with improved WS&S	Literature: Prüss et al. 2002, Esrey et al., 1996, Fewtrell et al., 2005 and Egorov et al., 2002	Various	Global averages

5.3.6 Additional Benefits of Increasing Access to Safe Water Supply and Sanitation Facilities

Beyond reducing the water-borne and water-washed diseases, providing better access to improved water and sanitation confers many other diverse benefits ranging from the easily identifiable and quantifiable (costs avoided, time saved) to the more intangible and difficult to measure (convenience, well-being). As much as feasible, these must be taken into account in a cost-benefit analysis

One set of benefits related to the health impacts that are relatively easy to quantify, are the cost-offsets. These are the costs avoided due to less illness. The related benefits accrue to both the health sector

and to patients themselves. Cost savings in health care are mainly due to the reduced number of treatments of diarrhoeal cases. Also, patients will avoid costs incurred by seeking treatment, including expenditures on care, drugs and transport and the opportunity costs of time spent on seeking care.

Another set of benefits related to less illness are the **avoided days lost**, with respect to formal or informal employment, other productive activities in the household, or school attendance. They are traditionally split into two main types: gains related to **lower sickness (morbidity)** and gains related to **less death** (**mortality**). This analysis adopted the convention that time spent ill represents an opportunity cost that is valued at a rate linked to minimum wages.

Finally, one of the major benefits of improving access to water and sanitation derives from the **time saving** associated with closer location of the facilities. Time savings occur due to, for example, the relocation of a well or borehole to a site closer to user communities, the installation of piped water supply in house and closer access to latrines. They translate into increased production, higher school attendance and more leisure time. In this analysis, the value of convenience time savings was estimated by assuming a daily time saving per individual for water and sanitation facilities separately, and multiplying these by the minimum wage rate for each region.

5.3.7 Benefit Data Inputs

a) Health sector costs saved

Unit costs of health services vary by region, and data are available from each of the countries representing the regions. Unit costs available from EIP were low and high values, from which a mid value was calculated. A reasonable range was assumed around the mid value. Unit costs were assumed to include the full health care cost (consultation, medication, overheads, etc.). Values for other variables necessary to estimate cost per case are presented. The number of outpatient visits per case was assumed to average 0.3 (30% of the population will visit a health care centre with a case of diarrhoea) with a range of 0.1 to 1 used. Once hospitalised, the average length of stay was assumed to equal 3.5 days (range 2.5-4.5). In the base case 8.2% of cases were assumed to be hospitalised, and the rest ambulatory (91.8%).

b) Patient treatment cost saved

To estimate costs to the patients themselves, fees were not included in this analysis as their inclusion would double count the health sector costs, and there is a variation between countries and regions concerning the proportion of the cost usually supported by the patient. The most tangible patient cost included was the transport cost. In the base case it was assumed that 50% of patients take some form of transport at US$0.50 per return journey, excluding other direct costs associated with journey, giving an average of US$0.25 per patient visit. In the low cost scenario, 0% is assumed to pay for transport, and in the high cost scenario 100% are assumed to pay for transport (giving low and high values of US$0 and US$0.50). Other costs associated with a visit to the health facility were also assumed, and added to transport costs, giving US$0.50 per outpatient visit and US$2 per inpatient admission (including food purchased).

c) Time savings due to better Water Supply and Sanitation access

Time savings are expected for those with better access to water and sanitation facilities outside the house (for example, a new well or borehole in the village), as well as for those with a new household water connection. Table below shows the values used in the analysis. For water, the value for time savings per household should take account of the different methods of delivery and the rural/urban locations. Based on latest Demographic Health Survey data collected in Kazakhstan, it was assumed that, on average, a household gaining improved water supply saves 20 minutes per day (5 min per trip, assuming 4 trips per day), and piped water saves 80 min per household per day (20 min per trip assuming 4 trips per day). For

improved sanitation, the assumption was 15 minutes saved per person per day. Time savings for all age categories are valued at the minimum wage.

d) Reduced time lost from illness

Another saving for society arising from water and sanitation interventions is the productive days gained due to lower illness and less deaths due to diarrhoeal disease. Productive days are not restricted to the population of working age, nor to only those with formal employment. When children are ill less, they will gain school time; also, when babies are not ill, the time of the (additional) carer is released thus enabling them to engage in other activities. For those of working age, on average 2 days off work are assumed per case (1 to 4 days range), while those of school age 3 days are assumed (1 to 5 days range), and babies are assumed to be ill for 5 days (3 to 7 days range). While it is clear that the impact of a case of diarrhoea will vary from individual to individual (depending on the severity, resistance of the individual to inconvenience, nature of their work, etc.) in the absence of data it is not feasible to do a sub-group analysis, hence the use of a global average to reflect the average case. The time off work or school is valued at the minimum wage, while for babies the time of the carer is valued at 50% of the minimum wage. Table 5.5 below summarizes the data and the sources used for assessing the quantification of economic benefits.

Table 5.5: Data sources and values for economic benefits

Benefit by sector	Variable	Data source	Data values (+ range)
1. Health sector			
Direct expenditures avoided, due to less illness from diarrhoeal disease	Unit cost per treatment	WHO regional unit cost data	US$4.3-US$9.7 (cost per visit) US$16.1-US$39.7 (cost per day) *Varying by WHO region*
	Number of cases	WHO data	Variable by region
	Visits or days per case	Expert opinion	0.3 outpatient visit per case (0-1) 3.5 days for hospitalised cases (2.5-4.5)
	Hospitalisation rate	WHO data	91.8% of cases ambulatory 8.2% of cases hospitalised
2. Patients			
Direct expenditures avoided, due to less illness from diarrhoeal disease	Transport cost per visit	Assumptions	US$0.50 per visit
	% patients use transport	Assumptions	50% of patients use transport (0-100%)
	Non-health care patient costs	Assumptions	US$0.50 ambulatory (US$0.25-1.00) US$2.00 hospitalisation (US$1.0-3.0)
	Number of cases	WHO data	Variable by region
	Visits or days per case	Expert opinion	0.3 outpatient visit per case (0-1) 3.5 days for hospitalised cases (2.5-4.5)
	Hospitalisation rate	WHO data	91.8% of cases ambulatory 8.2% of cases hospitalised
Income gained, due to days lost from work avoided	Days off work/ episode	Expert opinion	2 days (1-4)
	Number of people of working age	UN population data 2015	Variable by country
	Opportunity cost of time	World Bank data	Minimum wage rate

Benefit by sector	Variable	Data source	Data values (+ range)
Days of school absenteeism avoided	Absent days / episode	Expert opinion	3 (1-5)
	Number of school age children (5-14)	UN population data 2015	Variable by country
	Opportunity cost of time	World Bank data	Minimum wage rate
Productive parent days lost avoided, due to less child illness	Days sick	Expert opinion	5 (3-7)
	Number of babies (0-4)	UN population data 2015	Variable by country
	Opportunity cost of time	World Bank data	50% minimum wage rate
3. Consumers			
'Convenience' – time savings	Water collection time saved per household per day for better external access	DHS data	5 min
	Water collection time saved per household per day for piped water	DHS data	20 min
	Sanitation access time saved per person	Expert opinion	15 min
	Average household size	WHO population data 2002	4 people
	Opportunity cost of time	World Bank data	Minimum wage rate

5.4 Results

5.4.1 Predicted Health Impact

a) Decrease in the burden of disease

Table 5.6 below presents the number of diarrhoea cases (in thousands) averted under each of the five interventions. Intervention 1 potentially prevents 3.6 million cases, increasing to 7.2 million cases prevented by intervention 2. Clean drinking-water and improved sanitation for the entire region (intervention 3) would potentially avoid 37.4 million cases annually. Intervention 4 would add a further 20 million cases, due mainly to improved sewerage.

Table 5.6: Number of diarrhoeal cases averted per year

Intervention >	1	2	3	4	5
Caucasus	592	1,191	4,465	6,535	948
Central Asia	2,400	4,799	17,163	24,991	2,827
Eastern Europe	611	1,229	15,846	25,128	7,752
TOTAL	**3,602**	**7,219**	**37,474**	**56,654**	**11,526**

b) Time gained due to disease averted

The number of days gained due to lower incidence of diarrhoea in adults, children and babies varies by sub-region and by age group. The calculations assumed that:

- - babies gain 5 days per case of diarrhoea averted;
- - school children gain an average of 3 school days per case of diarrhoea averted;
- - adults gain two work days per case of adult diarrhoea averted; and
- - adults gain time from improved access to water and sanitation even when no particular disease is averted.

The following Tables 5.7–5.11 show the time gained due to disease averted per age category.

Table 5.7: Number of baby days gained due to reduced morbidity (in million)

Intervention >	1	2	3	4	5
Caucasus	2	4	14	21	4
Central Asia	7	15	53	77	9
Eastern Europe	2	3	42	67	21
TOTAL	**11**	**22**	**109**	**164**	**33**

Table 5.8: Number of school days gained due to reduced morbidity (in million)

Intervention >	1	2	3	4	5
Caucasus	0	1	2	3	1
Central Asia	1	2	9	13	1
Eastern Europe	0	0	3	5	2
TOTAL	**2**	**3**	**14**	**21**	**4**

Table 5.9: Number of productive days gained for adults due to reduced morbidity (in million)

Intervention >	1	2	3	4	5
Caucasus	0	0	2	2	0
Central Asia	1	2	6	9	1
Eastern Europe	0	1	10	16	5
TOTAL	**1**	**3**	**18**	**27**	**6**

Table 5.10: Time gained (millions of hours per year)

Intervention >	1	2	3	4	5
Caucasus	304	608	608	1,320	0
Central Asia	1,334	2,668	2,668	5,374	0
Eastern Europe	1,012	2,024	2,024	8,301	0
TOTAL	**2,650**	**5,300**	**5,300**	**14,995**	**0**

5.4.2 Predicted Economic Impact

Following the basic information summarised above, an initial assessment was made of the economic importance of these gains. These are estimated in tables 11–16 below.

a) Health sector costs averted

Table 5.11: Health sector costs averted (in million USD/year)

Interventions >	1	2	3	4	5
Caucasus	8	16	62	90	13
Central Asia	33	67	240	349	40
Eastern Europe	9	19	243	386	119
TOTAL	**51**	**102**	**545**	**825**	**172**

b) Patient costs averted

Table 5.12: Patient costs averted (in million USD/year)

Interventions >	1	2	3	4	5
Caucasus	0	0	1	2	0
Central Asia	1	1	5	8	1
Eastern Europe	0	0	5	8	2
TOTAL	**1**	**2**	**11**	**17**	**3**

c) Baby days gained

Table 5.13: Value of baby days gained (in million US$/year)

Intervention >	1	2	3	4	5
Caucasus	3	7	26	38	7
Central Asia	12	24	88	128	15
Eastern Europe	1	2	40	64	20
TOTAL	**17**	**34**	**154**	**230**	**41**

d) School days gained

Table 5.14: Value of school days gained (in million USD/year)

Intervention >	1	2	3	4	5
Caucasus	1	2	8	12	2
Central Asia	4	8	29	42	5
Eastern Europe	0	0	6	10	3
TOTAL	**5**	**11**	**44**	**64**	**10**

e) Adult days gained

Value of productive days gained due to illness avoided in the 15–60 year age group

Table 5.15: Value of productive days gained by reduced morbidity (in million USD/year)

Interventions >	1	2	3	4	5
Caucasus	1	2	6	9	2
Central Asia	3	6	21	31	4
Eastern Europe	1	1	19	30	9
TOTAL	**4**	**8**	**46**	**69**	**14**

Value of productive time gained at minimum wage base

Table 5.16: Value of time gain at minimum wage (in million of USD/year)

Intervention >	1	2	3	4	5
Caucasus	149	298	298	646	0
Central Asia	594	1188	1188	2379	0
Eastern Europe	200	401	401	2279	0
TOTAL	**943**	**1886**	**1886**	**5303**	**0**

5.5 Summary

The following Table 5.17 summarizes the assessments of economic gains from the different interventions.

Table 5.17: Summary table on economic gains from reduced morbidity (in million USD/year)

Intervention >	1	2	3	4	5	Subregional total
Caucasus	163	325	401	797	22	1707
Central Asia	647	1294	1571	2937	63	6512
Eastern Europe	212	424	714	2776	153	4278
TOTAL	**1,022**	**2,043**	**2,685**	**6,509**	**239**	**12498**

The economic value ranges from US$ 1 billion for intervention 1, to US$ 2 billion for up to 6.5 billion for intervention 4 per year. Intervention 5 brings fewer benefits, because it does not include convenience time savings as it focuses only on the population already connected to the piped water system network.

5.6 Conclusion

The current paper relies, as disclosed, on a very restricted number of literature sources, and was forced to look at the data from other regions. Nevertheless, the calculation done clearly shows the importance of the health gains from improved water supply and sanitation in EECCA countries, and that the economic value of this health gain seems to have been underestimated in current assessments.

It is therefore hoped that the current document will form the basis for a closer cooperation between WHO and the EAP Task Force in the refining of the methodology, and the application of appropriate impact assessment studies in the EECCA region, in order to provide the correct evidence basis for the inclusion of realistic assessments of health in any financing assessments in the water supply and sanitation sector in the EECCA region.

CHAPTER 6 NGOs' POSITION ON PROGRESS IN THE WATER SUPPLY AND SANITATION SECTOR REFORM IN EECCA[99]

6.1 Water Supply and Sanitation – reform for reform or for users?

This paper was prepared based on the consultation of non-governmental organizations (NGOs) of Eastern Europe, Caucasus, and Central Asia (EECCA) to be presented at the "Almaty+5" Ministerial Conference on Financing Water Supply and Sanitation in EECCA (Yerevan, 17-18 November 2005).

The Almaty Guiding Principles serve as a good tool for reforming the water supply and sanitation (WSS) sector in EECCA. Expert workshops were held, recommendations were formulated, and pilot projects were implemented in our countries with the immediate support of the OECD/EAP Task Force, World Bank, and other international institutions in order to assist countries with the implementation of the Almaty Guiding Principles. There have been positive developments in the WSS sector of some countries of the region. However, we, the representatives of the region's NGOs, have to state that we are not satisfied with the pace or results of the sector reform.

So far, the Almaty Guiding Principles have been applied inadequately to reform the WSS in EECCA

Overall, the Almaty Guiding Principles have not been applied broadly in the countries of the region. This might be due to lack of political will of the governments, imperfect institutional and legal framework, lack of financial resources, knowledge, experience, or initiatives on the part of users and general public. Recommendations on the water sector reform formulated in the documents of the Almaty Ministerial Consultation (2000) only refer to urban water supply. However, the reform processes should cover the sector as a whole, including rural water supply issues, which are also very important, but which have not received proper attention until recently.

6.1.1 Situation in the water supply and sanitation sector has not improved over the past five years

EECCA NGOs are concerned that the overall level of the WSS services has been deteriorating in the region – drinking water quality has been declining and access of some population groups to clean drinking water is still limited. The risk of infectious diseases related to poor-quality water has been increasing. The WSS infrastructure is highly deteriorated and requires immediate reconstruction. The share of treated wastewater and treatment quality also declined; a considerable share of treatment plants broke down, others operate without taking into account growing loads. All of this has affected the condition of water ecosystems, the state of which keeps deteriorating. Especially alarming is the fact that the reform of water tariffs has been one-sided and mostly at the expense of the population, which has not yet felt any results of the reform, except constantly growing tariffs for the WSS services.

[99] EECCA NGOs wish to thank the EAP Task Force and the Ministry of Environment of Germany for support provided for organizing the consultation process

6.1.2 Government policy in the water supply and sanitation sector has not been consistent or efficient enough

Overall, there has not been consistent or elaborate government policy in the WSS in the countries of the region. Moreover, there is no proper integration of the WSS reform plans into other government documents, in particular, into poverty reduction programmes. The level of inter-agency and inter-sectoral interaction is inadequate; transparent use of financial resources in the sector or involvement of all the stakeholders is not ensured.

The current legal framework does not protect properly the users' interests against abuse of local natural monopolies. Devolution of responsibility for the WSS services to the sectoral or municipal level is done without clear delimitation of powers or responsibility or adequate support with resources, which aggravates inefficient management and – in the absence of proper state and public control – often leads to inefficient spending of budgetary funds and corruption.

Generally speaking, when reforming the WSS sector, government entities and water utilities often forget that access to drinking water is a fundamental human right to be secured by the reforms.

6.1.3 There are no efficient financial strategies to modernize and develop the water supply and sanitation sector

Government support of the WSS remains inadequate in our countries; there has also been a shortage of realistic government investment programmes supported with appropriate funding. The principle of programme co-financing whereby state and local budgets share responsibility for allocating funds for a programme is not developed. The efficiency of capital investment, in particular that aimed to enhance the efficiency of the water sector systems and to prevent accidents, is not monitored or analysed. There is no adequately developed procedure for the independent evaluation of the efficiency of the use of budgetary resources and other public funds, including environmental ones.

Tariff increases for the WSS services are not always economically justified; often they do not take into account the population's ability to pay; in a number of countries, there are no mechanisms in place – or they do not function – for public participation in decision-making regarding tariffs and screening them for reasonability.

Introduction of modern management at water utilities is a guarantee of efficient service rendering

Currently, there is no legal framework in the form of contracts in the relations between local authorities and water utilities; there is no incentive or penalty scheme; there is no transparent procedure for multi-stakeholder water use management. In today's market conditions, performance-based management and remuneration schemes for water utility employees could produce good results.

The importance of water user outreach activities has been gaining recognition in the region; but overall such activities, which would ensure the understanding of importance of the WSS reform and support for its objectives and implementation, have been at a low level. Training programmes for users in the area of rational water use have not been implemented broadly either.

6.1.4 Private sector has been inadequately involved in the water supply and sanitation reform

Private sector participation in the WSS sector reform has been insignificant so far. This is largely due to lack of a reliable legal and regulatory frameworks which would take into account the interests of all the stakeholders, minimize financial risks, and ensure a more favourable investment climate. Municipal water utilities are often privatized and private operators are involved in the management of the WSS systems

without fair and open competition. Private entities which replaced state-owned water utilities often do not have a sufficient financial base of their own and exploit obsolete and deteriorated facilities as much as possible. So far, private operators have focused on improving collection rates and proceeds rather than on necessary reconstruction and rehabilitation of water infrastructure. Although, clearly, good collection rates are a precondition for the financial sustainability of WSS utilities which creates the basis for future investment, NGOs are not yet confident that the private sector comes with a serious intent to invest in the WSS and not just to control considerable financial flows in the sector. In the current situation, all forms of private sector participation in the WSS reform require strict control on the part of the state, which must protect public interests and guarantee that the services provided meet the requirements set and that users get drinking water at affordable prices.

6.1.5 General public and non-governmental organizations have been inadequately involved in the reform process[100]

Public participation in the urban WSS reform process and implementation of the Guiding Principles has been largely symbolic. There is no legal framework or mechanisms for the participation of the general public or NGOs in making key decisions regarding water supply or wastewater collection. There is virtually no public participation or that of NGOs in making decisions regarding the WSS services. Awareness-raising campaigns are sporadic and not broad enough.

6.1.6 No synergism has been reached with other international initiatives

Opportunities offered by other international and regional co-operation processes in the field have been used inadequately to ensure maximum efficiency of the implementation of the Almaty Guiding Principles and the WSS sector reform. At the political, management, and institutional levels, no close links are ensured with arrangements reached earlier, such as the Millennium Development Goals, EECCA Environment Strategy, London Protocol on Water and Health, and EU-EECCA Water Initiative. In a number of cases, the efficiency of implementation of the arrangements themselves needs to be improved considerably.

6.1.7 Recommendations

In order to secure the right of access to safe and quality drinking water of the EECCA population, the Yerevan Conference of EECCA ministers and their partners should reassert its political will to address water supply and sanitation issues in the EECCA countries, as well as its intention to intensify efforts to implement the Almaty Guiding Principles and undertake the following:

- Pursue efficient and consistent government policy of the WSS reform, inter-related with that in other fields (fight against poverty, health care, environmental protection) in order to really secure people's right of access to clean drinking water;

- Allocate more resources and considerably intensify efforts to improve the situation in the rural water supply and sanitation;

- Create efficient mechanisms of inter-agency and inter-sectoral co-operation by designating responsible institutions at the national level;

[100] See more detailed analysis of the situation and proposals to improve it in the Report "Recommendations on Enhancing the Role of the General Public and NGOs in Addressing Urban Water Supply Issues".

- Develop national *action plans* to implement the EECCA Environment Strategy and the Almaty Guiding Principles by 2007. Identifying measures necessary to ensure integrated management of water resources based on a basin principle should become a mandatory condition when formulating such plans;

- Improve current legislation and create appropriate legal and regulatory framework and mechanisms ensuring real progress of reforms in the WSS sector;

- Introduce cost-efficient techniques for setting tariffs for the WSS services and ensure conditions in which tariffs would be raised under the control of public authorities, local governments, and the public. When establishing tariff policies, procedures should be introduced to analyze the ability to pay of the population and affordability of the WSS services for the population, and special measures should be taken to provide targeted support to low-income and vulnerable families;

- Encourage development of contractual relations between public authorities and water utilities which provide WSS services, as well as between water utilities and users;

- Facilitate the introduction of modern financial management scheme at the water utilities, which would enhance their efficiency and change their operational set-up;

- Create organizational and economic conditions promoting rational water use at all the stages – from water intake to wastewater discharge;

- Introduce national monitoring scheme at the WSS utilities with mandatory and regular reporting on their performance by water utilities on a coordinated and approved set of indicators. The set of indicators should be developed in an open manner;

- Encourage the introduction of an incentive scheme for the water utilities which tangibly improve their performance measured by established indicators;

- Start creating a system of collection, compilation, analysis, and dissemination of information on sustainable water use and water sector reform; facilitate the review and dissemination of best practices, as well as development and publication of educational materials and guidelines on the WSS reform in EECCA; and ensure access to such information by all the stakeholders;

- Ensure proper financing to support and develop outreach activities regarding water supply and sanitation issues;

- Sign and ratify the London Protocol on Water and Health;

- Have countries submit progress reports on the Almaty Guiding Principles and address the water supply and sanitation issues in EECCA at the Belgrade “Environment for Europe” Conference in 2007, and suggest that an item on the water supply and sanitation issues in EECCA be included in the Belgrade Conference agenda.

6.2 Recommendations for enhancing the role of the public and NGOs in addressing problems of urban water supply

The Almaty Guiding Principles envisage that the process of reforming the urban water sector should involve all the stakeholders, i.e. that it should be open to the public. Public involvement is not only a major democratic principle, but is a tool to enhance the effectiveness of the reforms, yet is has remained unused in the course of the preparation and implementation of the reforms in the urban water sector in the countries of Eastern Europe, Caucasus and Central Asia (EECCA).

6.2.1 Almaty 2000: A policy of involving the public and NGOs in the reforms

The Almaty 2000 Ministerial Conference was unprecedented in terms of the involvement of NGO's that had played an active role in the preparation of the Conference and participated in the debates during the Conference. The Working Group for the Environmental Action Programme for Central and Eastern Europe (EAP WG) of the European Eco-Forum (a coalition of non-governmental organizations in the region of the UN Economic Commission for Europe) had organized a discussion and three sub-regional workshops (in Yerevan, Minsk and Almaty) and a preparatory forum of NGOs from across the region on the eve of the Ministerial Conference.

The participants of the forum adopted a resolution and discussed the role and strategy of NGOs in tackling water problems and integrating the environmental and economic policies. The NGOs' position paper was among the official documents of the Ministerial Conference and presented at during plenary session.

The Almaty Guiding Principles outlined a series of activities to involve the public in decision making. In particular, it was proposed:

- to develop a legal framework enabling the public to participate in major decisions relating to water supply and sanitation;

- to ensure that local governments and water utilities provide the public with information and facilitate the public involvement in addressing water supply and sanitation issues, in particular, through meetings with the public and participation in the work of decision-making agencies in this area, as well as through contracts between local governments and water utilities, with a role for NGOs and other stakeholders.

6.2.2 What could be the NGOs' input in reforming the water sector?

Public participation in reforming the water and sanitation sector (WSS) in the EECCA countries is an important prerequisite for a more effective implementation of reforms and securing public support. Being the more alert and organized part of the public, NGOs could have a major role in awakening other interested groups. This potential of NGOs should be used to achieve effective public participation in reforming the water sector. Many NGOs have been successful in implementing education and awareness-raising activities and in mobilizing the public to resolve various problems, as well as in conducting reforms of the urban water sector. As such, they could become full partners to water utilities and local governments.

NGOs' potential is high, and they are willing to conduct an open, active and ongoing dialogue with the government, the private sector, experts and IFIs. To advance effective public participation and utilize their potential for reform, NGOs can:

- promote the EECCA countries' fulfillment of their international obligations regarding water issues (the Millennium Development Goals, the London Protocol on Water and Health) and informing and involving the public in this process (the Aarhus Convention);

- take part in developing national water policies, setting goals, identifying priorities, working out action plans to reform the WSS, and designing implementation mechanisms;

- take part in developing plans and programmes relating to the water sector reform, and monitor their implementation, participate in the development and discussion of adequate regulatory and institutional frameworks, systems of indicators and accountability, systems to monitor the quality of water/services in the course of reforms;

- contribute to a dialogue between various sectors of society and promote a joint intersectoral decision-making process on the water sector reform issues; cooperate actively with the central government authorities, local governments and water utilities based on effective partnership;

- contribute to the development of indicators reflecting the implementation of the Almaty Guiding Principles of reforms in the water supply and sanitation sector;

- promote each individual's right to access to quality drinking water in the course of the WSS reforms, and help society and decision-makers realize the importance of water metering and compulsory provision of social guarantees for the population in the course of the water sector reforms through meetings, round-table discussions, consultations, public hearings and press-conferences;

- through NGOs participating in citizens' coordination boards, promote openness and transparency in discussing topical issues pertaining to tariff-setting and affordability of the WSS services for the public, identifying sources of financing capital expenditures and operating costs in the WSS sector;

- defend citizens' environmental and consumer rights, promote further improvements of laws and regulations on sustainable water use and public health protection;

- facilitate fund raising and promote a transparent use of funds in the water and sanitation sector;

- facilitate population's self-organisation to address the WSS problems (water user associations, private initiatives, small businesses), undertake social surveys with a view to collecting and studying individual water users' suggestions and wishes for a better water supply, raise the need to seek effective solutions and funds for their implementation with the water utilities;

- run citizens' monitoring of the water and service quality in accordance with the WHO Guidelines, assist in conducting public opinion polls and assessing availability and affordability of water supply and sanitation services, undertake social surveys to study the degree of satisfaction with the water utility services, consumers' willingness to pay for the services they receive and for a better quality thereof;

- carry out educational activities among the population to raise awareness of the reforms in the water sector (disseminating information and explaining the goals, meaning and progress of the reforms and possible ways of mitigating the impact of reforms), facilitate information exchange and communication of data and knowledge to the stakeholders and water utilities;

- to promote the involvement of the media in the process of raising public awareness of the WSS sector reforms;

- to promote a culture of efficient water use in the general public.

6.2.3 From Almaty to Yerevan: has the intersectoral dialogue improved?

Five years after the adoption of the Almaty Guiding Principles, one could claim that reforms in the WSS sector in virtually all the EECCA countries have not yielded any tangible results in practical terms, and have not brought about the required involvement of all the sectors of society concerned. With rare exceptions, the WSS reforms have failed to become a national priority, nor has it found adequate understanding and support on the part of the government, either at the national or local levels.

6.2.4 NGOs' participation in implementing reforms at the national and local levels

Following the Almaty 2000 Ministerial Conference, democratic processes continued in practically all the EECCA countries, although it should be noted that they have not been evolving in a uniform way in all countries and in all sectors. This has manifested itself in the most obvious form in the area of environmental protection. Meanwhile, contrary to expectations, public involvement in the process of water sector reforms has not become widespread.

- On the one hand, there is a lack of willingness and interest on the part of the water management authorities and the private sector to involve the public in reforming the WSS. This shows itself in the fact that decision makers and local governments do not pay adequate attention to the progress of the reforms, to the need to explain the *rationale* for higher tariffs for the WSS services, and to studying the population's effective demand for the services provided by water utilities.

- On the other hand, there is an overall lack of activity on the part of the general public and NGOs, associations and consumer societies, etc.: their awareness is poor, capacity inadequate, and there is a lack of effective opportunities to play a role in the WSS reforms and maintain a focused dialogue with water utilities and local governments.

Despite this generally bleak picture, there have been examples of good practice and initiatives both on the side of the government and water utilities and on the side of the NGO community. Many NGOs realize the importance of ensuring access to safe drinking water and WSS services to raise the quality of life and improve public health. EECCA countries' experience gives positive evidence of the public participating in reforming the water sector. The following examples confirm this statement: water user associations have been set up in Armenia and Kyrgyzstan, cooperation with local governments has been started, a water network has been established in Ukraine, consumers' rights societies have emerged in Russia, Georgia, Armenia, Belarus, Kazakhstan and Moldova, citizens' expert evaluations have been undertaken, a water supply and sewage network development programme has been prepared in Moldova, NGOs have been involved in the discussion of and search for solutions to water management problems in Central Asia, a coalition of environmental NGOs has been built, and a project has been implemented to train leaders of water user associations in Uzbekistan in water management techniques and in defending users' rights.

6.2.5 Barriers to effective public involvement in reforming the water sector

The key barriers to effective public involvement in reforming the urban water and sanitation sector are given below:

- *lack of political will and effective mechanisms to ensure public participation in reforming the water sector*. So far, the committed public has not become a genuine and fully-fledged stakeholder in the decision-making process in the course of the WSS reform;

- *weak democratic tradition in society*. Often, the public and the government are not prepared to engage in a constructive dialogue, and fail to take account of the need to ensure proper representation of all the stakeholders;

- *lack of skills of communicating* with the public on the part of the government and the water utility management;

- *poor public awareness* of the reforms going on, and lack of knowledge of their own participation opportunities;

- *inadequate capacity in NGOs'* in the area of water sector reforms;

- *lack of comprehensive support for NGOs' activities* aimed at reforming the water sector and providing training, consultations, technical and financial assistance.

6.2.6 Co-operation between NGOs at the EECCA level

The Almaty 2000 Ministerial Conference and the whole process leading to it aroused a great deal of enthusiasm among NGOs and reinforced their commitment to step up their activities and make a worthy contribution to the WSS reforms. However, this process gradually faded away. Poor coordination of NGOs' activities in the region prevented cooperation, exchange of information and experience of participation in the water sector reform, something that could have provided a fresh impetus to NGOs' involvement and yielded better effects of such activities. The process of NGO cooperation in this area was confined to dissemination of information provided by the EAP Task Force, and to minor episodes of discussions about the reforms of water supply at other fora bringing together EECCA countries (such as the drafting of the EECCA Environment Strategy).

6.2.7 International and service agencies' activities in support of public involvement in conducing water reforms and implementing the Almaty Guidelines

The EAP Task Force has been a major contributor to the process of getting the public involved in resolving water supply problems and implementing the Almaty Guidelines. The tradition of collaborating with NGOs established by the EAP TF serves a good example of international organizations working with NGOs. The activity area "Public promotion of the WSS reform" has been identified as a special chapter in the EAP TF work plans. NGOs have always been invited to all TF's events. The EAP TF Secretariat has established a good partnership with the Working Group for the Environmental Action Programme of the European Eco-Forum and has been providing it with invaluable moral support and practical assistance. However, a lack of regular and proactive dissemination of EAP TF's information and experience in the water sector on the side of NGOs somewhat reduces the effects of the European Eco-Forum activities in this general area.

NGOs from EECCA participated in two regional meetings on the EU-EECCA Water Initiative in Moscow in 2003 and 2004 where they prepared presentations on the role and input of NGOs, public education and awareness raising. During the past year and a half, NGOs' involvement in the work on the EU Water Initiative and in the monitoring of its performance has been sporadic and insignificant, failing to ensure a broad participation of NGOs in the region. NGOs have prepared a number of "building blocks" for

the EU Water Initiative that have never been used. NGOs in the region today do not see the meaning or the future of this initiative.

As a rule, pilot projects by international organizations, including those undertaken in the area of water supply and sanitation, contain a mandatory component of public awareness and participation.

In addition to their immediate value, these activities promote the image of NGOs in the eyes of the EECCA officialdom, enhancing recognition of the importance of partnership with the public.

There were great expectations during the discussions before Almaty 2000 for the new Regional Environmental Centres, just as there were fears. So far, they have failed to act to involve the public in the process of public support for the WSS reforms and implementation of the Almaty Guiding Principles. EECCA NGOs on several occasions (such as the Conference on the EECCA Environment Strategy in Tbilisi) have spoken of the need to extend the dialogue with the RECs, governments and international organisations to enable the RECs to implement their primary mission of supporting public participation. We reiterate our call for this dialogue.

6.2.8 Recommendations for enhanced role of NGOs in the water sector reforms

The reform of the urban water supply and sanitation in the EECCA region is much needed, and the process of reforms needs to be accelerated considerably. The input of non-governmental organisations in improving the efficiency of this process is beyond any doubt. In view of this fact,

We call on non-governmental organisations of EECCA countries:

- to step up their activities and place assistance in resolving the problems of water supply and sanitation among their top priorities;

- to launch a dialogue with consumer societies, water user associations, the private sector, the public sector and IFIs with a view to developing mechanisms of intersectoral cooperation, which could significantly improve the efficiency of reforms in the WSS.

We call on the ministers:

- to confirm at the Conference in Yerevan their commitment to the ideas of public involvement as expressed in the Aarhus Convention and the Almaty Guiding Principles, and to follow the resolutions by the World Summit for Sustainable Development (WSSD) concerning partnerships and by the Kiev Ministerial Conference "Environment for Europe" of 2003;

- to recognize public participation as a key prerequisite for the success of the water sector reforms, and to build a mechanism of effective public participation so that the public concerned could become a genuine stakeholder in decision making and their opinions could be taken into account to the utmost in the course of the WSS reforms;

- to commit themselves to broadening awareness, consultations and effective involvement of the public in the process of reforms and to facilitating citizens' monitoring of the reforms, including:

    - establishment of inter-departmental and inter-sectoral coordinating boards to manage the reform, and ensuring equal and permanent participation of members of the public therein;

- launching awareness-raising campaigns by the ministries, institutions, local governments and water utilities, pertaining to the reforms in the urban water supply and sanitation sector, and providing funds for these campaigns, with implementation partners selected through a bidding process.

- At the Conference in Yerevan to instruct the EAP Task Force together with governmental and non-governmental organizations from EECCA countries to prepare an overview of the situation with regard to water supply in the EECCA countries, identifying constraints and developing recommendations for addressing them, improving and effectively implementing the reforms. The findings should be presented at the 2006 EAP Task Force annual meeting and then in Belgrade at the next Ministerial Conference "Environment for Europe" in 2007.

- To instruct the EAP Task Force to develop and launch a regional capacity building programme for government officials, local government representatives, water utilities in the area of public involvement in the WSS reforms. At the national level, the programme should envisage a series of training courses, preparation and publication of guidelines, study tours, exchange of experience, etc.

We call on the international organizations:

- To commit themselves to involving the public in all their plans and programmes, and to supporting these activities with the necessary resources, considering public participation as a necessary and essential component of their programmes and projects in the EECCA countries. When international funding is provided for the water sector reforms, the essential condition should be informing and involving the public in the planning and implementation of the relevant strategies and in the monitoring of their implementation.

- To establish a special fund to support NGOs' participation in addressing water supply and sanitation problems.

We call on the EAP Task Force:

- To develop and implement, in collaboration with the European Eco-Forum, a capacity building programme for NGOs in the area of effective public participation in the WSS reforms (including training courses, broad dissemination of guidelines and manuals on greater public participation, strategy and action plan development, fund raising, etc).

6.3 Annex

NGO Participation can be Successful – Examples of Good Practices from Projects Involving the General Public and NGOs in EECCA

Adoption of the Almaty Guiding Principles and reform of the water supply and sanitation (WSS) sector in EECCA coincided with the effectiveness of the Aarhus Convention (Aarhus, 1998). The Convention determined the tools and procedures for public participation in decision-making in environmental matters and three key forms of public involvement – information, public participation in decision-making, and access to justice.

NGOs can take an active position and initiate broad public participation in the water supply and sanitation sector reform in our countries. However, at present far from all public authorities of all levels realize the importance of active involvement of concerned segments of society in the implementation of the government policy of the water sector reform. The experience of EECCA countries shows that there are certain difficulties with involving the public in the implementation of reforms. The main reasons are:

- Lack of preparedness of the public authorities and the general public to conduct a meaningful dialogue or take joint action to organize awareness-raising activities and to study user needs;
- Lack of coordination among numerous citizens' organizations at the national and regional levels;
- NGOs' expertise is not always adequate to take a firm stand on the protection of user rights, to initiate public hearings or consultations on the water supply and sanitation sector reform, or to advocate user rights to water and social guarantees in the process of reforms.

Nevertheless, there have been numerous initiatives and examples of positive experience of participation of the public and NGOs in the water supply and sanitation sector reform and in addressing water issues in the EECCA countries. Democratization processes enabled the citizens' organizations, which represent the most conscientious segment of society, to take an active stand in the reform of the water supply and sanitation sector in EECCA, as well as to facilitate the protection of human rights to water and access to quality and safe drinking water.

Ukraine

Today, there are examples of active public involvement in the WSS sector reform practically in all the countries of the region. The most profound experience has been accumulated in Ukraine where numerous NGOs make great efforts to involve the public in addressing water issues, are engaged in the protection of water resources, educate and inform the population about the problems and the most efficient ways of addressing the water issues. To this end, research conferences, roundtables, and workshops are organized on the issues of real public involvement in addressing the issues of water supply and user access to safe drinking water, and pilot/demonstration projects are implemented. This has been facilitated by the adoption of the Drinking Water Law of Ukraine in 2002 and State Programme "Drinking Water of Ukraine" in 2005, development of the legislation on self-governance, adoption of the Law on Information, ratification of the Aarhus Convention, and harmonization of existing national legislation in this context, *i.e.*, creation of necessary conditions for multi-stakeholder participation in addressing drinking water and sanitation issues in the country.

The **All-Ukrainian Environmental Citizens' Organization "MAMA-86"** has a profound experience in the area because almost a decade ago it identified the issue of drinking water and public involvement in addressing it as a top priority in its activities. As early as in 1997, first water project with

broad public participation was implemented in four cities of Ukraine. It was this project which launched "Drinking Water in Ukraine" campaign aimed to improve public access to safe drinking water and sanitation. Presently, eleven regional offices of "MAMA-86" are involved in conducting the campaign in the Ukrainian cities and villages. At present, the activities of "MAMA-86" are aimed to ensure active participation in the development of the environmental policy both at the national and local levels. To this end, public consultations and hearings were held on the Drinking Water and Drinking Water Supply Law (1999-2001) and the State Programme "Drinking Water of Ukraine" (2004).

For many years "MAMA-86" has been engaged in involving citizens in decision-making related to drinking water in various regions of Ukraine. Independent drinking water quality studies, opinion polls, and expert interviews are organized. Regional offices of "MAMA-86" conducted public hearings on the protection of user rights and safe drinking water supply in Odessa, Sevastopol, and Mariupol in late 2003-early 2004 and in Feodosiya in 2004. A series of public hearings was also conducted in the Autonomous Republic of Crimea in 2004 on drinking water supply to five large cities of the Crimea, initiated by the **Crimean Republican Environmental Association "Environment and Peace"**. Regional offices of "MAMA-86" were involved in discussions and submission of recommendations for the local plans of urban water supply reform. For example, "MAMA-86-Artemovsk" coordinated the activities of the initiative citizens' group to revise the draft city programme with a view to improving drinking water quality in Artemovsk. Measures proposed by the group were incorporated into the programme and implemented at the expense of additional funds from the city budget; and in 2003 public hearings of the report and the city's water utility reform plan were organized in the city.

"MAMA-86" has been actively engaged in the outreach activities so that the population and users be aware of the importance of rational water use and saving of drinking water. Independent studies conducted by "MAMA-86-Odessa" show that real volume of water use by the population considerably exceeds necessary and established standards. This served as a basis for implementing pilot water saving projects in three large cities – Kiev, Odessa, and Kharkov. They were aimed to improve the water use culture of the population. To this end, educational campaigns were conducted for users and economic mechanisms and technical novelties – water meters – were introduced. The first project which involved the installation of water meters, implemented by "MAMA-86" in Kiev in 2001, made it possible to collect information on the legal and technical aspects of individual meter use, as well as to develop their installation procedure. This experience considerably facilitated the implementation of further projects in Odessa and Kharkov. For example, in Odessa, municipal instructions on the individual meter installation were modified, which simplified the procedure considerably and rendered it less costly for users. In the conditions of rapidly growing water charges, the number of water meters installed by residents increased sharply immediately. In one year since the adoption of new meter installation rules in Odessa the number of individual water meters went up from several hundred to 74,000, which allowed to considerably reduce water use in the city as whole. In pilot buildings where pilot projects of "MAMA-86" were implemented, water consumption reduced, at least, by 50 percent.

The organization's experts believe that addressing the issue of quality drinking water supply to the population of Ukraine presumes taking not only long-term measures, but also short- and medium-term measures or "end-of-pipe" solutions – modernization of the water treatment technologies, reconstruction and optimization of existing water supply systems, use of local advanced treatment systems, and search for new alternative water sources. For many years, "MAMA-86" has been implementing numerous demonstration projects to find technical solutions for concrete problems of drinking water supply and sanitation at the local level. For example, use of the local advanced drinking water treatment systems (LADWTS) is viewed by "MAMA-86" NGO as a measure which will help resolve the issue of clean drinking water supply to the population of Ukraine in the short run. Within the framework of the "Drinking Water of Ukraine" campaign, the organization implemented several successful projects to introduce the LADWTS in various regions of the country. The first project to install advanced drinking water treatment

device in a kindergarten was implemented in the City of Tatarbunary, Odessa Oblast. Later, based on the successful experience, a model was created to solve the issue of quality water supply to specific user groups. Later, in 2001-2004, "MAMA-86", in close co-operation with the local governments and private firms engaged in advanced water treatment issues, implemented similar projects at "Aibolit" Children's Sanatorium in Mariupol, in the Village of Piski, Lokhvitsky Region, Poltava Oblast, and the Village of Verkhnekamenka, and in the village schools of Artemovsk Region. The bulk of the financial support for the projects was provided by Novib-Oxfam and MATPA Programme of the Ministry of Foreign Affairs of the Netherlands. With the assistance of the City Council of Odessa "MAMA-86" managed to open drinking water treatment site for Luzanovka district residents.

The organization's experts believe that search for ways of supplying quality drinking water to the rural population – which amounts to approximately 11 mln people in Ukraine – should become a national priority; and there is a fairly broad range of possible solutions – from centralized water supply, using newly constructed and rehabilitated old water mains, to control over, and treatment of, existing wells and raising public culture regarding protection and use of water sources. This is why "MAMA-86" has also operated actively in the rural areas of Ukraine by addressing the issues of public access to quality drinking water. Decentralized water supply (wells 1 to 15 m deep) has been traditionally used in the country's small towns and villages; but at present ground water and sources of decentralized water supply (wells, catchment areas) in rural areas are polluted with nitrates, pesticides, microorganisms, oil products, etc. In 2000, "MAMA-86-Poltava" studied the issue of "blue babies" and examined nitrate pollution of water in the wells of Poltava Oblast, as a result of which a map of nitrate pollution of the oblast wells was created. In the most polluted areas where nitrate content in the wells exceeded the standards more than ten-fold, broad awareness-raising campaign among the population (especially women, mothers, medical staff, and children) started in 2001 about the danger of nitrate pollution and its implications for children's health. Pro-active raising of awareness of the issues of nitrate pollution and its risks for human health carried out by "MAMA-86-Poltava" in highly polluted areas of the oblast reduced the number of acute nitrate poisoning of babies in the oblast as a whole. Having found out about the issue, people started on their own testing the well water for nitrates, discussing the issue, and looking for solutions. The wells where clean water was found were recommended for residents' drinking needs. In 2002-2003, "MAMA-86-Poltava" implemented a pilot project in the Village of Piski, Lokhvitsky Region, where average nitrate content in the wells was 1,000 mg/l versus a standard of 45 mg/l. The NGO suggested to the local government that the old water main be rehabilitated, electric pumps be purchased, and access to safe drinking water be provided to the population. Then similar operations were carried out in five other villages of the oblast with the population of more than 8,000 people.

As a result of study of drinking water quality issues in the wells of Yaremcha Region, Ivano-Frankovsk Oblast, and Nezhinsky Region, Chernigov Oblast, by "MAMA-86", well fiches were prepared and the population was actively informed about the issues and water quality in the wells, possible ways of addressing the issue, and well cleaning and disinfection services were created. Pumps were purchased and installed under the projects, which were included in the balance sheets of the local utilities in order to organize cleaning of both individual and collective wells.

For the first time in Ukraine, "MAMA-86" brought up the issue of possible use of local sources of clean and quality water in various regions. Regional organization "MAMA-86-Feodosiya" initiated resumption of use of local mountain sources and construction of a new water main, which would satisfy drinking needs of the city. Then "MAMA-86" members constructed a drinking water fountain for the city residents, water to which comes from mountain sources by a surviving section of an old water main, which was given to the city as a present in the 19th century by a prominent painter and honorary citizen of the city Aivazovsky. In the City of Artemovsk, Donetsk Oblast, where there are major reserves of clean underground water, "MAMA-86", together with hydrogeologists and engineers of Tebodin firm developed

a business plan for reconstruction of the water main of Soledar, which provides for switch to the local alternative water sources.

At present, the principle of prevention of environmental pollution and, first and foremost, sources of water supply, is being implemented in the joint project of "MAMA-86" and WECF "Co-operation for Sustainable Rural Development – Water Supply, Eco-Sanitation, and Organic Agriculture". Under the project, awareness-raising activities are carried out to familiarize the population and various stakeholders with eco-sanitation and organic agriculture. For the first time in Ukraine, an eco-lavatory was built in a school in the Village of Gozhuly, Poltava Region, with a student body of 180 students. Dissemination and development of such new technologies, which build on traditional approaches and available techniques, must be supported by the stakeholders and develop in Ukraine.

"MAMA-86" is engaged in active awareness-raising activities in order to raise awareness of the population of water problems and ways of addressing them, principles and examples of sustainable water use and protection of water resources. Information materials are published; actions are held for the World Water Day, lessons, workshops, and lectures are organized for students, and roundtables are held to discuss drinking water issues with the representatives of various segments of society concerned. All of this has enhanced the water use culture and active involvement of citizens in addressing the drinking water issues and protection of the water riches of Ukraine. The experience accumulated within the framework of the water campaign of "MAMA-86" suggests that involvement of the general public and NGOs in improving access to safe drinking water and sanitation is a prerequisite for finding a socially equitable, affordable, environmentally-friendly, and efficient solution, which would develop further in a sustainable manner.

Georgia

In Georgia, the general public's right to participate in decision-making is secured by the Constitution of Georgia, Law on Environmental Protection, and Aarhus Convention. The National Poverty Reduction and Grown Programme also points out that the general public can play a major role in addressing environmental issues, which makes its participation in decision-making possible and necessary. Currently, the Parliament is reviewing a law on public involvement in the local self-governance authorities, the adoption of which would enhance the influence of the general public on environmental protection issues.

Georgian NGOs are currently actively involved in addressing issues and reforming the water sector. ***Women's non-governmental organization "Phoenix – Institute of Modern Women"***, together with other forty women's NGOs, members of the Coalition of Women's NGOs of Georgia, was involved in addressing the issue of drinking water supply and provision of sanitation services to the population of Tbilisi at affordable prices. In recent years, the water supply and sanitation system has operated in Tbilisi in an emergency mode, in essence. Clearly, it was necessary to involve a foreign investor in addressing the issue, which would undertake the reconstruction and rehabilitation of Tbilvodokanal systems. Two years ago, the World Bank disbursed USD 25.0 mln for rehabilitation of the water supply and sanitation system in the capital city of Georgia, but at the same time it recommended that only a private foreign firm should carry out the rehabilitation operations. It turned out later that French "General Deso", which won the tender, was interested in managing the country's fresh water resources with their sale abroad in the future, rather than in reconstructing the city's water supply and sanitation systems. For this reason, it was suggested that the water supply system of the city be repaired and slightly reconstructed, rather than rehabilitated – proposed replacement of just 65 km out of 3,200 km of the pipeline of the city's entire water supply system could not have improved or enhanced the reliability of the system as a whole in Tbilisi. The company's proposals relied on constant increase of consumer tariffs in the long run, which would be a burden on the shoulders of the population in the form of additional and practically non-affordable charges. As a result, access to a vital resource – drinking water – could have become limited for the bulk of the population of Tbilisi.

Researchers of the Department of Water Supply and Use of Water Resources of Georgian Technical University studied the project of the French company and submitted their findings to the local Tbilisi department and the management of Tbilvodokanal. The main idea of the comments was that the project did not provide for quality operation of the water supply system or subsequent improvement of the city's water sector. The methodology suggested by the company focused on reducing the water supply and supplying environmentally unsafe surface water to the capital city instead of high-quality underground water. Based on the findings of independent experts and researchers, women's NGO "Phoenix – Institute of Modern Women", together with other forty women's NGOs, members of the Coalition of Women's NGOs of Georgia, signed a petition to the President and Prime Minister of Georgia and the Mayor of Tbilisi. The NGOs found inadmissible lease of Tbilvodokanal to "General Deso" under the proposed contract. At the same time, meetings with the public, press-conferences, public discussions at the GTU and respective committees of the Parliament of Georgia, local Tbilisi department, and ombudsman office were organized. The firm stand of women's NGOs of the Coalition of Georgia made the government of Georgia take into account the researchers' proposals and reconsider the lease of Tbilvodokanal to a foreign company.

Discussion of the issue of setting up the International Water Corporation is an example of the exercise by the public of their rights and ability to influence decision-making in protection, use, and management of water resources. A few years ago the Government of Georgia charged the ministries of environment and natural resources, infrastructure and development, economy, industry, and trade with studying the issue of setting up the International Water Corporation and drinking water supply to Iraq by pipeline via Turkey.

The main purpose of setting up such a corporation was to intake, treat, bottle, sell, and market water from the sources of fresh underground, mineral, and surface water in Georgia, as well as to arrange and regulate all related operational issues (construction of new water mains and water supply system, rehabilitation of existing distribution lines, etc.).

Since 2003 Georgian NGOs, in particular, ***"Tbilisi" Community Alliance***, have been actively involved in discussing the outlook for setting up the International Water Corporation. Based on the numerous meetings with independent experts and decision-makers of the key ministries, the NGOs developed a negative opinion about the possibility of setting up such an international entity. "Tbilisi" Community Alliance voiced its opinion and a categorical demand not to allow setting up such a corporation both at the public authorities, which are decision-makers, and in front of journalists, at the press-conferences and numerous meetings. Main arguments "against" relied on the opinions of national experts and competent persons who underscored that

- Should it be created, the International Water Corporation will have a monopoly position, which contravenes the national anti-monopoly and competition law;

- Currently, it is inappropriate to construct and maintain an expensive transportation system, especially because the initiative to export water from the country cannot be supported in a situation where a number of regions of Georgia experience a real shortage of drinking water.

As a result of reasoned stand the public took, the issue of setting up the International Water Corporation did not develop further.

A large group of Georgian NGOs – Youth Eco-Movement of Georgia, Researchers' Association of Imereti Region "Spektr", Youth Research and Information Association ASA, etc. – has been actively involved in developing a local environmental action plan (LEAP) for the City of Kutaisi. The representatives of the aforementioned NGOs comprise a stakeholder committee and are engaged in developing a "problem tree", as per which unsatisfactory supply of quality drinking water to the city's population is identified as a key environmental problem of the city to be addressed as soon as possible.

Activities of the **"Kura-Araks" Coalition of NGOs of Southern Caucasus** led by ***Little Town-Georgia*** NGO serve as an example of active public involvement in addressing water issues. Its activities are aimed to develop regional co-operation on water issues among the countries of Southern Caucasus. The Coalition organizes regular conferences on water issues at the regional and national levels and awareness-raising actions and campaigns aimed to ensure rational water use and conservation of water resources. In 2003-2004, "Kura-Araks" Coalition represented by Little Town Georgia NGO initiated implementation of a joint project "Improvement of the Legislation of Southern Caucasus on Use, Protection, and Management of Water Resources". ***Ecolex-Azerbaijan NGO*** and ***EPAC-Armenia*** were the partners of "Kura-Araks" Coalition. The project objective was to develop uniform approaches to improvement of the water resources management in Southern Caucasus; to formulate recommendations on harmonization of the water legislation of three countries – Azerbaijan, Armenia, and Georgia – with the European legislation; and to promote regional co-operation on the issues. As a result of numerous meetings, workshops, and roundtables, recommendations were developed on the harmonization of the water legislation of Southern Caucasus, which were submitted to respective public authorities of Georgia, Azerbaijan, and Armenia.

Azerbaijan

In 2002, ***the Environmental Innovation Centre of the Republic of Azerbaijan (EIC)*** implemented project "Clean Water Supply to Two Refugee Camps, Using Treatment Plants in Saatli and Sabirabad Regions" supported by the Embassy of Japan in Azerbaijan. The areas of Azerbaijan chosen for the project are flooded each year when Kura River overflows, which broke down the settling basin near the pumping station. For this reason, settling basins could not manage the existing volume of water use, and newly-created refugee settlements were threatened by the bacteriological pollution of drinking water and lack of a water system. The EIC helped analyze alternative ways of treating the drinking water. Installation of imported equipment turned out to be costly, and the settlements did not have a budget to purchase it. In order to improve the supply of quality and safe drinking water to the refugee settlements, "STS-2" treatment plants designed by the EIC, using local sorbents, were installed under the project. Launch of twenty such plants with capacity of 1,000-3,000 l/hr made it possible to supply quality drinking water to the villages with the population of 17,400 households, or 60,890 people.

In 2003, "Eco-TES" NGO, City of Mingechaur, implemented jointly with Georgian NGOs project "Issues of the Republic's Lakes and Monitoring of Kura River". It was aimed to familiarize the population with the quality of water in the lakes and rivers of two neighbouring republics – Azerbaijan and Georgia. Pollution data was presented in the official documents, and leaflets and posters were prepared based on them, which were disseminated to the population.

In 1996, ***Humanities and Environmental Information and Analytical Agency "Sania"*** implemented project "Public Monitoring of Kura and Araz Rivers" supported by TACIS programme. The project involved young people – seniors of the secondary schools of the cities of Sabirabad, Saatly, Salyany, and Barda and it was aimed to collect background materials on the quality of water in the rivers of Kura and Araz and level of water use from the rivers by the population. Based on the materials compiled, awareness-raising meetings were held with the population where seniors explained the issues of conservation of water resources and the fundamentals of rational water use. At the same time, drawing contests with a slogan "Water We Drink" were held in the city schools. The project lasted for six months; it involved about 2,000 adults and seniors in the activities related to the protection of water resources and rational water use. Also, experts from the citizens' organizations involved in the project, in co-operation with the experts from state-owned specialized companies, executive authorities, and municipalities implemented project "Coverage of Water Use Issues in Nakhichevan AR, Agdash and Geokcha Regions" supported by the Asian Development Bank. The project covered many aspects – technical, research, financial, social, environmental, and educational, and, as a result, proposals were formulated aimed to re-organize water supply in the aforementioned regions of Azerbaijan. Activities were proposed to improve the quality of

drinking water supplied to the population, such as reconstruction of settling basins, provision of filters to rural water users, and re-calculation of water charges.

Moldova

Citizens' organizations of Moldova have experience with implementing numerous projects aimed to reform both urban and rural water supply and sanitation sector. In 2002, ***Chisinau Area Organization of the Environmental Movement of Moldova (CAO EMM)*** jointly with ***"Ecotera"*** and ***"Calitatea apei" NGOs*** conducted a public environmental review of the Programme of Development of Water Supply and Sanitation in the Localities of the Republic of Moldova until 2006. Roundtables were held in Chisinau and ten other cities of the republic; direct dialogues were organized between the Programme drafters and the population on the republic's radio and television, and opinion polls were conducted. As a result, changes and additions were introduced in the document under discussion, which were incorporated in the final version of the Programme of Development of Water Supply and Sanitation in the Localities of the Republic of Moldova until 2006 (passed by the Government of the Republic of Moldova in April 2002). In particular, as proposed by the public, a new section of the Programme was developed regarding the upgrade and construction of the rural water supply and sanitation systems. Due to developments in the social and economic situation in the country and adoption of a new Poverty Reduction and Growth Strategy, Moldovan Rural Development Programme, and other national documents, it was necessary to revise and update the Programme of Development of Water Supply and Sanitation in the Localities of the Republic of Moldova until 2015. Citizens' association CAO EMM, supported by the Regional Development Agency, organized the discussion of the updated document in September-November 2005 and prepared and submitted the findings of its public review.

In 2002-2003, citizens' organization CAO EMM studied, with the support and at the request of the World Bank, the condition of, and outlook for, water supply to the rural population. The study covered 32 villages of the republic and included interviewing 600 residents. Its findings and conclusions were submitted to the World Bank and the Government of the republic and they allowed identifying the most vulnerable areas of Moldova, acceptable and efficient ways of addressing the issue of water supply, as well a procedure and terms and conditions for providing grants for the purpose.

In 2004-2005, ***CAO EMM*** implemented "Fresh Water of Moldova" project supported by the Dutch government, aimed to conduct independent monitoring of the water quality, inform the population about the condition of water supply and sanitation and ways of addressing the issue, and ensure co-operation among all the stakeholders in reforming the sector. Water samples were examined, using "Smart-2" mobile laboratory owned by a citizens' organization; and the tests showed that there are nitrates and other chemical substances in 70 to 90 percent of the wells and springs and the concentration of hazardous substances in them exceeds hygiene standards several-fold. Low environmental and hygiene culture, passive authorities, and poor population were identified as the main causes of such a situation. And this is given that dug wells and springs are the only source of drinking water for 85 percent of rural population and 50 percent of residents of small and medium-sized cities in the Republic of Moldova.

In order to inform the population about the problems in the area of protection and use of water sources, their monitoring, detection of pollution sources and cases of irrational use of drinking water and in order to draw the attention of the local administration and specialized institutions to the need to take effective measures to improve the protection and use of water resources, the general public initiated national action "Water Caravan" in September 2004. Two hundred and thirty persons – experts of public institutions in charge of protection and use of water resources (Ministry of Ecology and Natural Resources, State Environmental Inspectorate, State Hydrometeorological Service, Centru Environmental Agency, National Preventive Medicine Research Centre, etc.), as well as academia, representatives of NGOs, business community, and press – took part in the Caravan. The action covered ten localities in various parts

of Moldova where the hygiene and environmental condition of about 250 sources of drinking water, more than 60 companies, filling stations, treatment plants, and car washes was examined and more than 130 sources of pollution of surface and ground water were detected. In each locality, meetings and discussions with the population were organized; environmental lessons were held in 25 schools, which involved about 5,000 students; sets of environmental publications were provided to the school libraries. "Smart-2" mobile analytical laboratory examined 125 samples of water from wells and springs. Nobel company offered new water filtering devices; ways of improving drinking water quality were shown and explained to the population in each locality.

Based on the action results, recommendations were issued as to how to improve the situation in the studied localities. They were submitted to the central and local governments. Also, *Drinking Water for Rural Residents* book was published under the project, which was broadly disseminated throughout the republic. It includes excerpts from the state programme on water supply and sanitation for the population and social assessment of the water supply and water quality improvement project in Moldova. It comprises information on the water composition in the wells and springs, water supply networks, rivers, lakes, and artesian wells in the Moldovan localities, as well as information and practical guidance on improvement of supply of quality water to the rural population and information on the influence of water quality on human health.

Citizens' organizations carry out an extensive awareness-raising campaign, which facilitates broad public involvement in addressing water issues. *Water Chronicle* bulletin is issued, which provides current information received from specialized institutions and organizations, local governments, and water utilities of the republic on the state of surface, ground, and artesian water, amount and quality of consumed tap water, condition of water supply and sanitation systems, projects implemented in urban and rural areas and their sources of funding, national and international water events, and solution of water issues.

The citizens' organizations of Moldova were most actively involved in the preparation and organizing of the first Water Forum of the Republic of Moldova in November 2004. It brought together 120 representatives of ministries and departments, research institutions, local governments, non-governmental organizations, state-owned and private companies, and sponsors interested in addressing water issues in Moldova. Its working sessions considered the issues of water quality monitoring, improvement of water management, tariffs for drinking water and their social implications, current condition and measures to protect the biodiversity of the water systems, and familiarization of the general public with the need to protect and manage water. Based on the discussions, the Forum issued a resolution that recommended that all the stakeholders should take action to improve water quality in the context of preparation for the Water Decade declared by UNESCO for 2005-2014.

On the initiative of the CAO EMM and with the support of the public authorities, on 12 May 2004 the President of the Republic of Moldova issued a decree on the annual national action "Clean Water Week" with a slogan "Water is a Source of Life". It will be held during the first week of June throughout the country and will include mass cleaning, improvement, new construction, and reconstruction of old wells and springs and other sources of drinking water used by the population of the republic.

Armenia

The NGOs of Armenia are actively involved in addressing water issues and those of ensuring public access to safe drinking water. For example, a Law on Drinking Water is being drafted currently, and NGOs are involved in the preparation and discussion of the new draft. A group of NGOs, mostly consumer unions, are involved in monitoring the process.

"Women of Armenia for Health and Healthy Environment" NGO declared that proactive awareness-raising campaigns among the population, aimed to address the issues of water management and to ensure water quality, and advocacy of eco-sanitation are key areas of its activities. A specific feature of water supply in the Republic of Armenia is that underground sources account for 95.5 percent of the water supply. Water supply to the localities is ensured through 867 centralized water supply systems, of which about a half operate by means of pumps. Water supply is mostly scheduled, but losses are high (on average, 65 percent) due to deteriorated water supply network. Also due to this water samples taken from the network often fail to comply with the drinking water standard in terms of their microbiological indicators. Water gets polluted on its way from the source to the user, *i.e.*, it is exposed to "secondary pollution". This is exactly why supply of quality drinking water to the population, especially rural population, is important for sustainable development of Armenian villages and helps protect human health.

At present, the organization, in cooperation with the WECF (Women of Europe for a Common Future), is implementing project "Improvement of Sanitary and Hygiene Conditions in Rural Areas of Armenia". Three villages, including the Village of Fontan, were chosen for its implementation. Due to shortage of drinking water, the village population often used water from a problem source, which led to an outbreak of tularaemia in 2003. Thereafter, search for underground sources and construction of the water supply network resumed in the village. However, demand for drinking water was not satisfied completely because the population started using the drinking water for garden plots irrigation. Having analyzed the situation, the NGO experts concluded that available water flow would be adequate if water meters are installed. Given the poverty of the village's population, the NGO established contacts with the management of Armvodokanal, water meters were purchased and provided to the population free of charge through the village administration. At present, the water meters are being installed in the households with participation of the population and Basin Department of Armvodokanal, which will allow managing the drinking water, reducing its losses, and using other sources for domestic purposes, such as watering and irrigation.

Based on the partnership principle, "Women of Armenia for Health and Healthy Environment" established an efficient dialogue with the Water Committee and Armvodokanal and reached an agreement on the participation of the NGOs, administration of the village of Aianist, and the aforementioned organizations in the rehabilitation and completion of construction of an irrigation canal in the village. At the request of our organization, Armvodokanal developed proposals on improvement of the water supply to the villages of Aianist and Dzorakhbur.

In 1999-2001, ***Eco-club "Tapan" (Ark)*** NGO was actively involved in the implementation of the Programme of the Government of the Republic of Armenia and the World Bank "Comprehensive Water Management Programme of Armenia". The organization experts reviewed the progress of the World Bank's project in creation of the water user unions, as well as the progress in implementation of requirements of the new Water Code of the Republic of Armenia to setting up the Water User Unions in the local communities and Water User Union Associations. A main conclusion was made – unions, associations, and their heads are appointed in coordination with higher authorities rather than elected by water users on site. This is the main cause which impedes the development of the water sector in the local communities.

Under "Water Permits" Project, as proposed by the NGO, information stands for the population regarding water issues are installed near entrances to the premises of the local community administrations. Such an approach helps users exercise their right to information on all the planned and carried out actions in water use in their community, as provided for by the national legislation.

"Tapan" NGO monitored the re-organization of the water infrastructure and rehabilitation of the water supply systems in Yerevan and attended formal meetings, including those regarding water and sanitation

tariffs. The NGO representatives are concerned with persistent practice of consistent and unreasonable increase of water tariffs under a pretext of high rehabilitation costs and budget needs. However, despite high tariffs, interruptions in the water supply are as long as 20-22 hours, and water supply for most users in Yerevan is scheduled and not always regular.

Tajikistan

The non-governmental organizations of Tajikistan have been actively involved in addressing the issues of supply of quality drinking water to the population and supporting the achievement of Target 7 (Goals 9 and 10) of the Millennium Development Goals. In 2004-2005, within the framework of implementation of the sustainable development initiative and with support of the Regional Environmental Centre and the Environment Committee of Dushanbe, the Environmental Management Programme of the Capital City of Dushanbe until 2015 was developed. It was drafted by the non-governmental organization "Civil Initiative Support Fund" in partnership with the administration of Dushanbe. The programme was drafted with involvement of independent experts, and the activities were coordinated by the Steering Committee endorsed by the mayor's office of Dushanbe. It comprised concerned government agencies, institutes, citizens' organizations, academia, artists, and media representatives. Heads of the Water Supply and Sanitation Department of Tajik Technical University became independent experts on the city's water issues.

Questionnaires were used during the project implementation, which suggest that more than 90 percent of the capital city residents identify "quality and supply of drinking water to the population" as a priority environmental issue for the city. Coverage of Dushanbe population with sanitation network is 75 percent at present. The number of facilities not connected to the centralized sanitation system has been growing in recent years, which leads to an increasing number of sources of pollution. Those are mostly private catering facilities and stores and new individual construction. One of the main causes of surface water pollution is incomplete treatment of wastewater and sediments leaving the wastewater treatment plants, as well as industrial effluents of Dushanbe. This leads to pollution of Kafirnigan and Dushanbinka rivers and emergence of various infectious diseases both in Dushanbe and localities downstream.

During the project implementation, four main groups of the water supply and sanitation issues of Dushanbe were distinguished:

- Poor quality of drinking water from surface sources
- City pollution with effluents;
- City pollution due to incomplete coverage of users with centralized sanitation system;
- Pollution of Kafirnigan and Dushanbinka rivers due to incomplete treatment of wastewater.

The following was recommended to improve the situation in the city's water supply and sanitation sector:

- Set up a database on unaccounted-for and unauthorized sources of pollution and connect them to the city sanitation network;
- Replace deteriorated sections of the pipeline (at least 5 km of the pipeline a year) in order to liquidate breaks in the sanitation network of the city; purchase machinery and equipment to carry out preventive operations;

- Rehabilitate treatment plants in a phased manner in Dushanbe so that mechanical wastewater treatment plants settle the water at more than 50 percent of the current indicator. Rehabilitation of the biological treatment and advanced treatment facilities will help bring the BOD to 10-15 and 3-5 mg/l of wastewater respectively; at the disinfection stage, the indicators must be as follows – amount of disinfected wastewater – 295,000 m^3/day; coli index – no more than 1,000; ammonium nitrogen – 2 mg/l of precipitation. It was recommended to bring the final output of treated precipitation to 120 t/day in the form of high-quality fertilizers with humidity of about 50-60 percent, without helminth eggs or odour;

- Improve the level of population's culture in using the sanitation network, which is an important factor of pollution of water and breakdown of the network. To this end, it is appropriate to carry out outreach activities and to revise a system of penalties for violation of the network operation rules. The process could become more efficient if an official document is developed – agreement on mutual obligations of water users and GUP "Dushanbevodokanal".

Key objectives related to reaching the goal of supplying the population of Dushanbe with water of drinking quality compliant with GOST standards are:

- Organize accounting for, and control over, water use. Number of installed water meters could become an indicator of reaching the objective;

- Zone the city's water supply systems in order to control water pressure. Indicator – water pressure in pipes, which should be at least 2-4 atmospheres;

- Replace obsolete intra-building water supply systems. Indicator – percentage of replaced obsolete pipes out of the total number of pipes;

- Rehabilitate (clean, flush, disinfect) water supply networks. Indicator – number of rehabilitated pipes a month;

- Rehabilitate in a phased manner drinking water treatment plants (pumped and gravity) with the ultimate objective of supplied drinking water compliance with existing standards (GOST-2874-86).

In order to address the water supply and sanitation issues in Dushanbe, it was proposed to introduce a system of environmental indicators used to measure and assess the implementation of planned goals and objectives. Measurability, statistical reliability, and possibility of monitoring the achievement of objectives served as criteria for choosing potential environmental indicators.

Belarus

In Belarus, **"Ecoline" NGO**, under the project on creation of local Agendas 21 in small localities of Belarus, facilitated the involvement of general public in addressing the issues of access to quality and safe drinking water in Turov, Gomel Oblast. The project was implemented in partnership with "Green Library" NGO based in Lund, Sweden. Turov, a small locality situated in the area affected by Chernobyl Nuclear Power Plant accident, has for many years suffered from high content of iron in drinking water, which has had a negative effect on human, and especially children's, health. The NGO experts together with the doctors of the local hospital, carried out explanatory activities for Turov residents. The town residents identified the issue as a priority, and it was included in the Local Agenda 21-Turov, which is being drafted. It says that all the residents have equal access to the environmentally safe foodstuffs and clean drinking water. With the NGO support an initiative group of the town residents was set up, which started a positive

dialogue with the local government. As a result of support of Turov residents' initiative by the mayor, a decision was made to construct a de-ironing plant, which was put into operation in 2002. This helped ensure public access to quality and safe drinking water.

Uzbekistan

The coalition of non-governmental organizations of Uzbekistan – **Association "For Environmentally Clean Fergana", Fergana, "Logos", Tashkent, "Union for Protection of Aral and Amudaria", Nukus, and "Zarafshan", Samarkand** – with financial support of the Regional Environmental Centre Central Asia, has been implementing Project "Development of Water Management Skills in the Leaders of Water User Associations (WUA) and Protection of Their Right to Participate in Water Apportioning at Basin Level". There are 27 WUAs in Fergana Oblast; 85 WUAs in Syrdaria Oblast (65 as of end-2004 and 20 in 2005); 54 WUAs in Tashkent Oblast (34 as of end-2004 and 20 in 2005); 13 WUAs in Samarkand Oblast in 2005; and 107 WUAs in Karakalpakstan (Nukus) as of end-2004. There are a total of 286 WUAs in Uzbekistan at present. During the work of the NGO experts with the heads of the WUAs, a number of problems was detected in their activities related to the shortage of information on the actions taken by the government and new legislative acts and regulations, inadequate competency regarding the management of intra- and inter-farm water networks, lack of awareness of their right to participate in the water apportioning at the basin level, new technologies, or planning of the WUA activities.

Uzbek "Toza-Suv" Eco-NGO, with financial support of "MilieuContact", Netherlands, implemented "Clean Drinking Water for Rural Areas" Project in the Village of Shakhimardanobod, Fergana Region, Fergana Oblast, which covered more than 4,000 people not supplied with quality drinking water compliant with statutory requirements. Under the project, the condition of the water supply network in the village was studied and the number of standpipes which needed repair was identified. Discussions on the subject "Water is Life", "Water and Us", "Compliance with Hygiene Standards", etc. were held with the residents. During the discussions, the residents' perception of water was identified, and then volunteers were selected out of them to make repairs and to protect rehabilitated standpipes and taps following the rehabilitation of the water supply network. Booklets were published and disseminated to 250 households, explaining that water and the standpipes should be treated with care. The project provided access to the village residents to quality drinking water and helped develop new perception of water and its management.

Kazakhstan

In Kazakhstan, it is planned that the public will participate in addressing the water problems under new project "Support by the Ministry of Agriculture of the RK for Creation and Development of the Water User Cooperatives", known throughout the world as water user associations. The project will be implemented under the EU TACIS Programme during 24 months. The privatization of state farms and collective farms created a vacuum in the management and operation of the irrigation and drainage systems. As a result, their condition has been constantly deteriorating. In order to address the issue, the adopted Water Code of Kazakhstan allowed the water users setting up water user cooperatives responsible for operation and management of the irrigation systems. Despite existing legislation and some support provided to Kazakhstan by the World Bank and the Asian Development Bank with setting up the water user cooperatives, they are still rudimentary and their activities have not improved water use yet; there is a number of important issues to be addressed. In this context, the project is aimed to:

- Build institutional capacity of the Ministry of Agriculture to set up and support divisions for support of the water user cooperatives at the central and local levels;

- Improve legal and regulatory framework for creation and development of the water user cooperatives;

- Build and enhance the capacity of existing water user cooperatives and those set up during the project implementation.

Positive examples of successful project implementation by the NGOs aimed to facilitate reform of the water supply and sanitation sector in EECCA and to involve all strata of the population in addressing the water sector issues suggest that both the general public and the NGOs are really involved in the reform process and in the future they could be excellent partners for public authorities, local governments, and the international institutions.

CHAPTER 7 FINANCING WATER SERVICES AND THE SOCIAL IMPLICATIONS OF TARIFF REFORM

7.1 Executive Summary

The water supply and sanitation (WSS) sector in EECCA is chronically under funded and as a result has been deteriorating for more than 20 years. If this trend is to be reversed, and the internationally-agreed targets for water supply and sanitation (Millennium Development Goal 7 target 10) achieved, appropriate policy and institutional reforms will have to be put in place to ensure the financial sustainability of the sector. Recent up-turn in GDP growth and household income in most EECCA countries provides a more favourable context, than at the time since the Almaty Meeting in 2000, to undertake such measures.

Between 50 and 90 per cent of water utility revenue is currently generated by user charges; the remainder mostly comes from public budgets. However, these funds are insufficient even to cover operational costs, let alone maintenance and capital costs. In many countries utility revenue covers only about 60 per cent of operation costs. Between USD 15 to 34 per capita per year of additional finance would be needed if present infrastructure were to be properly maintained and renewed, where this is necessary. To achieve the Millennium Development Goals (MDG) on water supply and sanitation, it has been estimated that a total of about EUR seven billion would be needed annually *i.e*. roughly double the current level of finance. Given this financial shortfall, most utilities in the region have had to decrease the levels of service that they provide in order to save on costly inputs such as electricity and chemical reagents for water treatment. In addition, utilities have been unable to carry out basic maintenance, further accelerating the deterioration of infrastructure. This has significant negative impacts on public health and the environment, as well as for economic development.

To reverse these trends, a number of prerequisites have to be met before a series of reforms can be successfully implemented. EECCA countries will have to improve the operational efficiency of water utilities, thereby reducing operational costs, combine all sources of finance to enhance synergies, avoid crowding out other sources of finance, and maximise leverage on total flows. A number of case studies in the region have shown that this is possible.

7.1.1 Major prerequisites

The scale of financing required would be significantly reduced if the operational efficiency of water utilities were improved. To save on costs, the problems of oversized infrastructures, energy intensive equipment, water leaks, and unaccounted-for water should be addressed. In many utilities, electricity costs account for 50 per cent or more of production costs (where all consumables account for less than 30 per cent of the operation costs of WSS services in France). Unaccounted-for water can be as high as 70 per cent, while international best practice suggests that it should not exceed 10 to 20 per cent.

In addition, municipalities should choose the level of service and the related technologies in accordance with the financial resources available to cover the costs. Politically difficult choices might be required to adapt service levels to available finance. For instance, a study in Georgia showed that achieving improved water services, and extending such services to achieve the Millennium Development Goals, would only be affordable if a significant share of the population was served through stand pipes rather than in-house connections.

Central governments can provide useful incentives, by developing national or regional financial strategies. All financial decisions, including investment choices and maintenance operations, should be based on medium-term financial plans, in line with water policy priorities set by competent jurisdictions. Such plans should be incorporated into wider, binding budgetary processes, such as medium-term

expenditure programmes, at both national and local levels. To induce such behaviour, central governments should allocate their financial contributions to projects and municipalities that have adopted such financial frameworks.

7.1.2 User charges are the main source of finance and should be managed as a policy instrument

User charges are, and will remain, the most important source of finance. A number of EECCA countries could still significantly increase user charges before reaching affordability limits. Sound tariff-setting rules and mechanisms should be established to promote more efficient use of water resources and to ensure transparency and predictability. Tariff levels should be economically and socially justifiable, and prevent any abuse of the monopoly position that utilities generally enjoy.

There are legitimate affordability concerns: social assessments in a number of EECCA countries show that as much as 50 per cent of the population may in some cases exceed the four per cent income threshold that is often used as a "rule-of-thumb" to determine the maximum acceptable level of spending on water; the poorest 20 per cent of the population may sometimes have to spend close to 10 per cent of their income. This issue should be addressed directly and not used to keep tariffs at levels that undermine the financial sustainability of utilities. So, on the one hand, tariffs should be set at a level that is economically justified - requiring municipal budgets to cover the difference between cost recovery and actual tariff levels has proven to be an effective incentive. On the other hand, adequate social protection mechanisms should be introduced in EECCA, in conjunction with reforming tariff systems.

Many countries have such mechanisms in place, either in the form of income support or through cross-subsidised tariffs. However, for the former, targeting could be improved by enhancing the procedures for determining and verifying household incomes, and by linking benefits more closely with real needs. If this is done, social protection measures can be an effective way to overcome social resistance to increased user charges, and help to generate significant additional revenue for water utilities.

Increasing block tariffs (where water tariffs increase step-wise as consumption levels increase, with a first subsidised block), now widely used in many OECD countries, is a powerful alternative. However, it requires that connections are metered, and therefore is not usually yet an option in most EECCA countries. This option could be considered in Armenia where a programme for addressing payment arrears has resulted in the share of metered connections in Yerevan reaching 80 per cent.

7.1.3 Public finance, including central budgets, will continue to play a crucial part in financing water systems in EECCA

Public budgets are the second largest source of finance for the water sector; their share can amount to 50 per cent in some countries or regions. Simulations using FEASIBLE[101] show that to improve and extend water services, including the achievement of the Millennium Development Goals on water supply and sanitation, the magnitude of public finance spent on water-related investment will have to increase substantially. A recent study in Georgia suggests public finance would need to double to achieve the MDGs in urban areas.

In a decentralised sector, municipalities, which usually own the assets, do not have the financial means to support these efforts themselves. In the OECD and many EECCA countries, a significant share (about 25 per cent in OECD and up to 50 per cent in EECCA) of local government budgets are provided through fiscal transfers from central budgets. Thus the question arises as to how such transfers should be

[101] FEASIBLE is a tool jointly developed by the Danish Government and the OECD to support the development and implementation of financial strategies for the water sector.

best devised, in order to meet the requirements of the water sector. Experience gained in the OECD and in CEE countries shows that two important criteria should be taken into account when organising these transfers.

First, intergovernmental transfers should generate stable revenues, which can be incorporated in the medium-term financial strategies of municipalities. Schemes in use in some countries, that allow for extensive revision of the amounts to be transferred, generate uncertainties in sub-sovereign governments' revenues, and run counter to the needs of a sector that is capital intensive and involves long-living assets.

Second, the procedure should be designed in accordance with one of two objectives:

- Either to ensure that national targets are reached, *e.g*. to ensure the efficiency of WSS operations, or to support the implementation of environmental or other standards. Funds can then be transferred on a non-permanent basis, as transfers should be stopped once the target is achieved. Earmarking can be an option, as it facilitates monitoring of the allocation of the funds;

- Or to allow municipalities to allocate funds according to their own priorities. This option is economically justified, as soon as local governments can establish that they have the capacity to elaborate sound and realistic plans, to implement them, and to be fully accountable for their implementation. Under such circumstances, general purpose grants have proved to be the most flexible and efficient means of transfer, as in the case of the "Sub-National Governments Financial Support Fund" in the Russian Federation.

When designed according to these criteria, intergovernmental transfers create incentives for improved financial sustainability and creditworthiness of local jurisdictions, thereby eventually helping to decrease demands on central budgets.

In addition, environmental administration and local governments should allocate their budget resources in a way to leverage other sources of finance. All things being equal, the aim should be to minimise the contribution of public financial resources and to maximise the contributions of alternative sources of finance. Public funds should not crowd out private financing for projects that are commercially viable. Where possible, public finance, including international financial institutions (IFI) loans, should be channelled through (or complemented by) commercial banks in order to build capacity to support investments in water supply and sanitation.

7.1.4 External finance – a minor source of finance, with important catalytic effects

Official development assistance (ODA) is another potential source of finance for the EECCA water sector, albeit a much smaller one. Flows of ODA into the EECCA water sector have been at persistently low levels since the beginning of the 1990s (EUR 50-100 million per year). International commitments taken within the framework of the Millennium Declaration and the "Monterrey Consensus" may ultimately lead to an increased availability of ODA funds for the EECCA region. Indeed, overall levels of ODA have globally increased in the last two years, though it is not yet clear what this means for the water sector in general nor for the water sector in EECCA in particular.

Financial flows from IFIs into the EECCA water sector have also represented a small share of financial flows in recent years, often concentrated in the largest cities. However, IFI projects are widely recognised as having particularly positive effects because of the demonstration of their experience, and also the catalytic effects that they often generate. Many of the obstacles lie in the unwillingness and/or inability of EECCA countries to take on external debt.

A key challenge is how to scale up and disseminate the positive experiences from donor and IFI experience. Improved coordination among donors and IFIs could help to avoid overlaps and competition. A focus on priority issues integrated into comprehensive strategies, and the systematic development of local capacity to prepare and implement projects would further increase the leverage of these resources.

As explained in another background paper (see ENV/EPOC/EAP/MIN(2005)5), the private sector is unlikely to be a major source of finance in the foreseeable future.

7.1.5 Local debt – a complementary financial instrument

Debt is a means to manage cash flow problems linked to the magnitude of up-front investment costs. However, it is not an additional source of funding: the capital and interest payments associated with debt have to be repaid through user charges, local, and/or central public budgets. Debt from IFIs can be attractive in terms of interest rates and repayment periods, but currency risks can be significant. In most market-based countries, local debt, consisting of municipal bonds and loans from commercial banks, is a normal component of financing strategies for WSS. Properly managed, this allows access to private savings and puts less strain on public budgets, at both central and local levels. In the CEE and OECD, debt contributes a significant share of capital expenditure. The average level of debt of local authorities in CEE amounted to 1.5 per cent of GDP in 2001; it was 5.6 per cent in the EU.

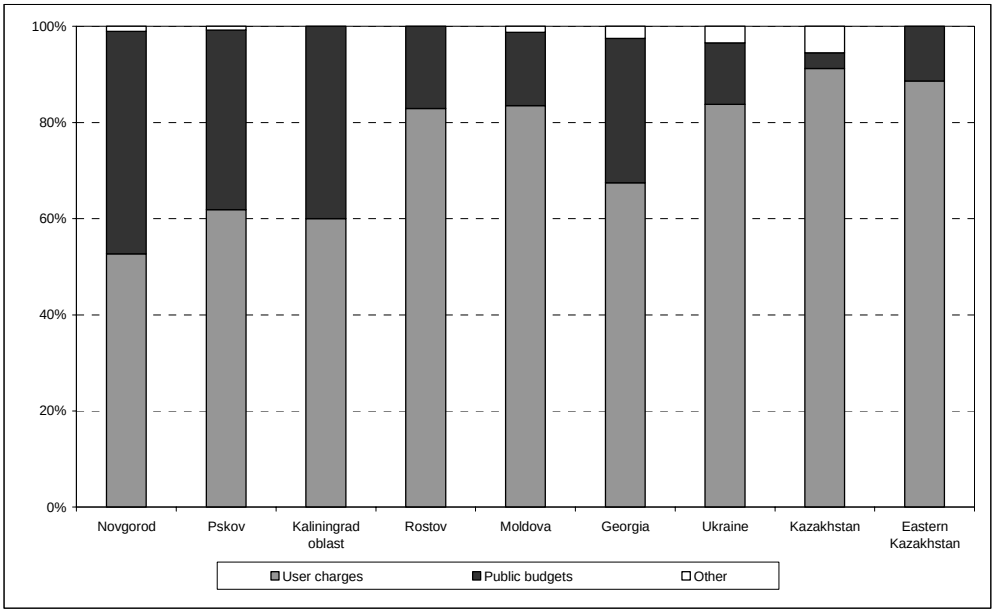
In most EECCA countries, the role of local capital and financial markets is something for the future. However, the dynamics of decentralisation, strengthened capacities at the local level and improved general economic conditions have recently revived the interest of using local debt as an instrument to finance investments for WSS in some countries. The Ukraine has specifically identified the sub-national credit market as an instrument to support urban environmental infrastructure financing (including WSS). Other countries where such markets have serious development potential are Russia and Kazakhstan.

7.2 Existing financing situation in the EECCA water sector

In EECCA, user charges are the most important source of finance for water supply and sanitation infrastructure. They account for about 50 per cent in Novgorod, Russia, and for more than 90 per cent in Kazakhstan (Figure 7.1). The remaining funds for water utilities come mostly from public budgets. The share of other resources such as bank credits, bonds, environmental funds, foreign grants, and loans is marginal compared to user charges and public funds.

This situation reflects the degree of reforms in the water and wastewater sector - in particular, the extent to which cost recovery policies have been implemented. It also shows poor access to debt financing of water and wastewater infrastructure.

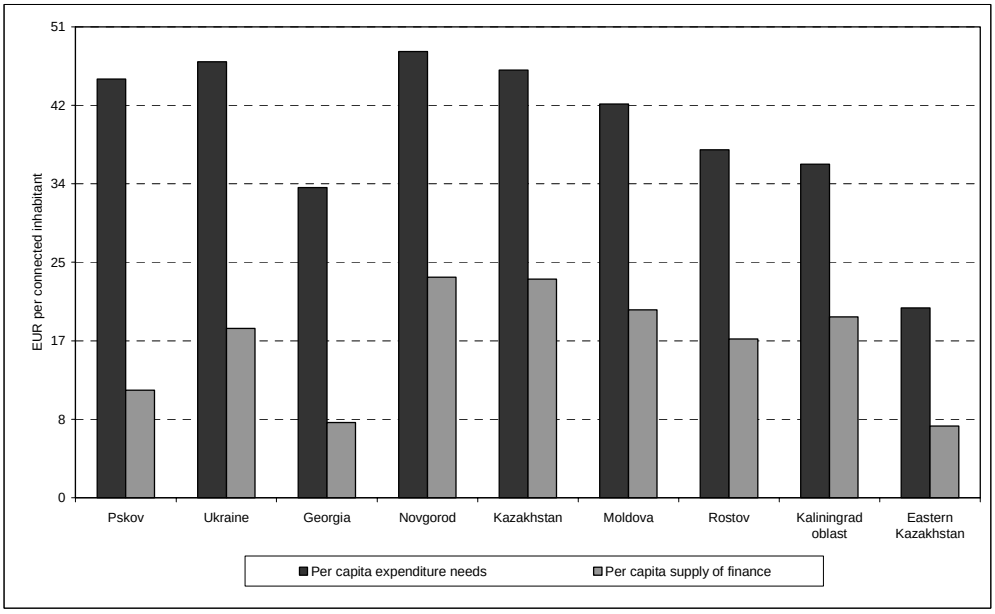
Figure 7.1: Existing sources of financing water and wastewater utilities



Source: OECD (2003a).

The environmental financing strategies (EFS) that have been carried out in a number of EECCA countries and regions have tended to show that available finance is usually insufficient to cover financial needs. In Figure 7.2 below, the expenditure and supply of finance are compared. The expenditure need was estimated in a baseline scenario, where money is spent (in operation, maintenance, and investment) so that the value of the existing assets remains constant.

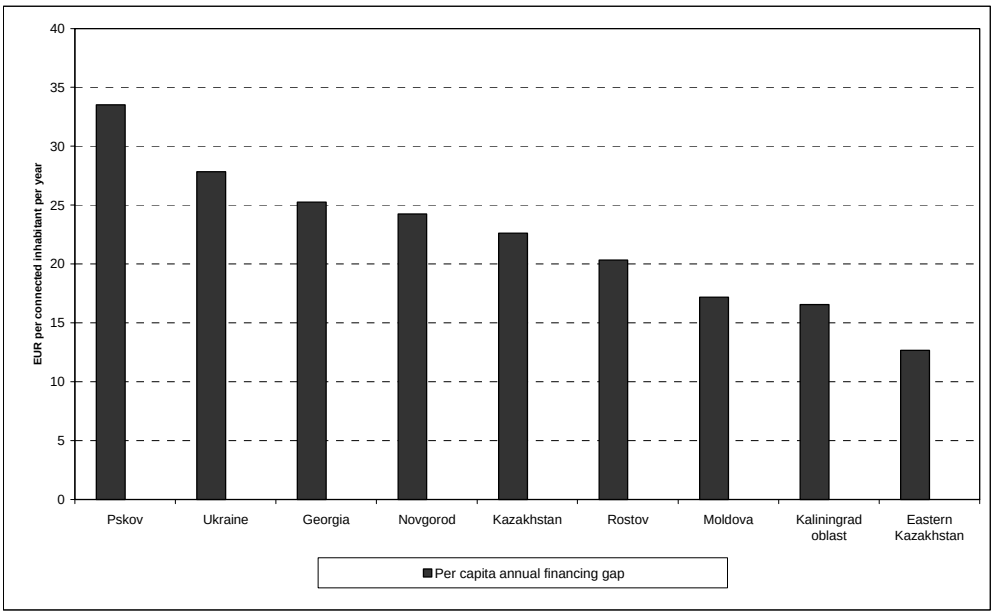
Figure 7.2: Expenditure need and supply of finance in EUR per connected inhabitant, in the first year of the baseline scenario



Source: FEASIBLE, except Kaliningrad oblast for which individual model calculations are presented.

In all countries, a significant financing gap was estimated even if no extension of infrastructure is envisaged. Only around half of the necessary funds are currently available. In per capita terms the estimated annual additional funding requirements varies among countries and regions, from EUR 34 in Pskov to around EUR 15 in eastern Kazakhstan (Figure 7.3). It is also noticeable that there is significant variation within the countries. This is demonstrated by the comparison of the individual regions in Russia and by comparing the overall estimations for Kazakhstan with the assessment for the eastern Kazakhstan region.

Figure 7.3: Financing gap per connected inhabitant on an annual basis (EUR), in the first year of the baseline scenario



Source: FEASIBLE, except Kaliningrad oblast for which individual model calculations are presented.

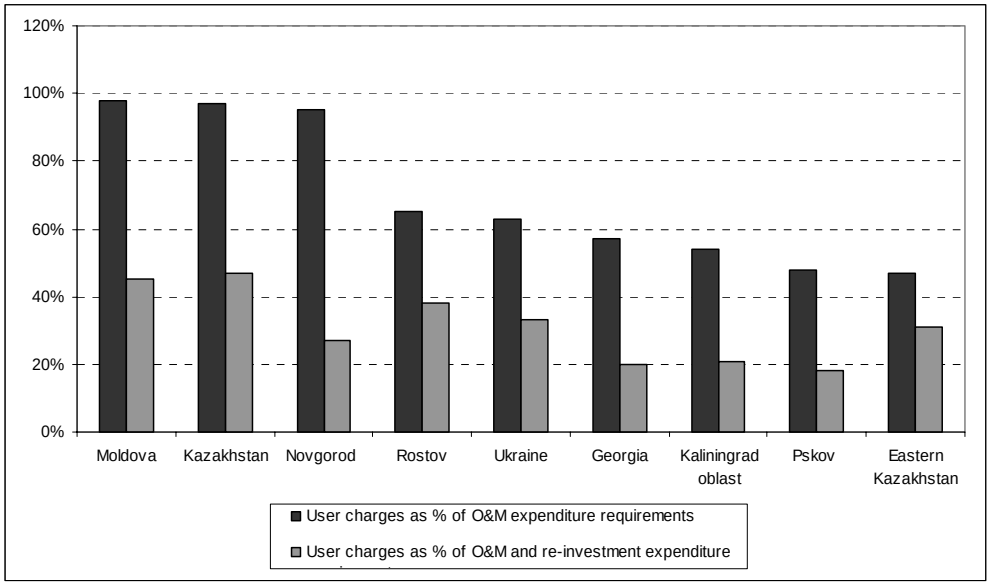
Such a financing gap is consequential as it results in a general deterioration of the infrastructure and service levels, and in allocation of finance to urgent repair, rather than on strategically designed investment plans. Capital investments have been rare and mainly made in emergencies, reflecting the focus on breakdown maintenance (as opposed to preventive maintenance). Furthermore, they have not always been allocated strategically to improve the efficiency and sustainability of services. This situation feeds a vicious circle where the cost of inaction adds to the initial burden. A few large cities have, however, embarked on more strategic capital improvement programmes, usually with foreign assistance.

To bridge the financing gap, a significant increase in the supply of finance, in parallel to implementing cost reduction measures, is therefore needed. However, this involves significant burdens on some countries in EECCA. In order to fully cover the operation and maintenance costs of the currently operating urban water infrastructure alone, Moldova would, for example, need to spend 3.2 per cent of the current GDP, Georgia, 3.0 per cent, and Kazakhstan, 1.2 per cent per year. In all cases, this would imply doubling or tripling the current level of expenditure on the water sector. The cost burden on the economy appears heavy when compared with the estimates for the EU candidate countries in CEE. For example, it was estimated that Lithuania would have to spend from 1.0 per cent of the GDP in 2005 to 2.6 per cent of the forecasted GDP in 2020 to implement the entire body of environmental directives of the European Union (DANCEE, Anderson and Semeniene, 2001). These figures include annualised investment and O&M costs for all environmental directives including the drinking water and urban wastewater directives. A similar relative cost burden has been calculated for other accession countries, such as the Czech Republic (2.5 per cent to 3.7 per cent of GDP) and Poland (1.3 per cent to 3.7 per cent of GDP).

The additional payments for operations and basic maintenance would have to come from those financing sources that are available for such expenditures, *i.e.* practically only users and taxpayers (budgets). The users' charges in particular (as shown in Figure) have no realistic alternative as a source of covering regular operation and maintenance costs.

In Soviet times, water supply and sanitation services were subsidised in many ways – directly from the budgets and indirectly, *e.g.* by providing energy below cost price. Over the last decade, the user charges have not caught up with the rapid liberalisation of input prices (*e.g.* of electricity and chemicals), and they have not made up for budget expenditure cuts. In many cities, user charges do not even cover the cost of operating the remaining, partly functioning infrastructure. Among the countries and regions studied, only Moldova and Novgorod, on average, charge users almost full operating costs, but nowhere do collected user charges cover more than half the costs of both operating and maintaining existing assets (Figure 7.4). Some variation within countries is also present. While the average for Kazakhstan demonstrates that user charges cover close to all operating costs, in eastern Kazakhstan, they are only able to provide financing for half of the total operating and basic maintenance expenditure need.

Figure 7.4: Collected user charges as a percentage of expenditure needed, in the first year of the baseline scenario, to properly operate infrastructure (only what was in use) and maintain the present service level



Source: FEASIBLE, except Kaliningrad oblast for which individual model calculations are presented.

While finding the necessary additional resources to provide adequate financing to the water supply and sanitation sector is clearly going to be challenging, it should be noted that the general economic recovery that has been taking place in the EECCA region in recent years, and the strengthening of public and household budgets that it has induced, should help to make that task easier. For instance, household income has been increasing by 10 to 30 per cent in the region over the last four years, which is helping to increase willingness-to-pay as well as affordability levels (Table7.1). Household income grew by up to 30 per cent between 1999 and 2002, and this trend has probably continued in the following years as well.

Table 7.1: Trends in GDP and household income in EECCA

	Gross domestic product, Real growth, % over the period		Household income Index 1999=100
	1997-2000	2001-2004	2002 [a]
Armenia	17.5	29.6	113.2
Azerbaijan	29.2	25.3	101.2
Belarus	18.6	19.6	130.1
Georgia	8.0	21.4	..
Kazakhstan	10.7	23.8	..
Kyrgyz Republic	11.6	11.7	104.8
Moldova	-7.8	18.4	..
Russian Federation	10.8	17.0	114.1
Tajikistan	19.0	24.8	112.7
Turkmenistan	47.3	33.6	..
Ukraine	3.6	22.6	129.7
Uzbekistan	9.3	11.6	110.7

a) Data for the Ukraine and Uzbekistan refer to 2001.

Source: IMF, Interstate Statistical Committee of the CIS.

However, there are also limitations. Clearly, in EECCA, the water supply and sanitation sector is not the only public services sector in urgent need of rehabilitation. Several infrastructure and social services sectors are competing for scarce resources both from public budgets and from households. The European Bank for Reconstruction and Development (EBRD) estimates that the proportion of household income spent on electricity in low-income households in EECCA would need to increase from the current five per cent to 11 per cent, if electricity tariffs were to reach full-cost recovery levels (EBRD 2004). Mitigating the social effects of these reforms would put additional pressure on public budgets. It is therefore not sure that the share of household and public budgets that is able, financially, to be spent on water will increase significantly, even if growth of GDP is sustained.

Another limitation relates to the limited fiscal resources in many EECCA countries. In fact a number of poor EECCA countries face unsustainable public debt levels, given their current primary budget balance and prospective aid flows. As a consequence there are now several cases where planned IFI projects in the water supply and sanitation sector have been put on hold, due to the unavailability of sovereign guarantees. Hence, even when economically sound projects are available, debt to cover the high up-front investments that are necessary is not always accessible.

7.3 Policy options to close the financing gap

Given this situation, governments in EECCA have to select realistic objectives for the rehabilitation of the WSS sector, checked against available resources. Just maintaining the present, very low level of water and wastewater services would require concerted efforts. Country case studies have shown that, in general, selected additional objectives can be met, in particular in the perspective of the Millennium Development Goals, if investments are strategically planned and resources allocated wisely.

There are essentially three options for closing the existing financing gap:

- Cost savings through efficiency improvements. Operation and maintenance costs are inflated by the current high energy consumption, large water losses in the distribution network of water utilities, and oversized infrastructures. There is room for substantial cost savings. Utilities therefore need to target scarce maintenance and re-investment funds to achieve such cost savings;

- Cost savings by adapting service levels. Technological choices, in particular in the context of network rehabilitation and extension, have to be backed by realistic assumptions on the sustainability of the operation of these technologies;

- Increased supply of finance, including user charges, public budgets and ODA. Debt should also be considered here, although it does not provide additional resources as debt has to be paid back, but it generates room for manoeuvre in financing investments.

In addition to these measures, it is crucial that existing resources are used in the most effective way, which in the past has not always been the case. EECCA governments need to develop realistic (*i.e.*affordable) infrastructure development targets and identify the projects that allow the reaching of these targets in the most cost effective way.

The sequence of project implementation matters as well, as some projects may generate additional resources, or cut excessive costs. This is the case when projects directly improve the quality of the service provided to the population, so as to increase households' willingness to pay for that service.

Various tools to support decision-making on these issues exist. One of them is FEASIBLE, which has been developed jointly by the Government of Denmark and the OECD. FEASIBLE helps policy makers to develop financing strategies for the water supply and sanitation sector. It provides a methodological framework for medium to long-term strategic balancing of environmental and infrastructure service targets with available financing. A detailed description of FEASIBLE is provided in Annex 7.5.3.

7.3.1 Saving costs

a) Through efficiency improvements

The operational efficiency of EECCA water utilities is frequently low compared to international benchmarks. For instance, leakage, which in well-run water utilities in the OECD is usually in the range of 10-20 per cent of water production, frequently exceeds 40 per cent, and sometimes reaches 70 per cent in EECCA utilities. This means that significantly more water needs to be produced and transported than finally reaches the consumer, therefore having a negative impact on investment and production costs: infrastructure is oversized and operating costs, both in absolute terms and per unit of water sold, rise.

Similarly, electricity consumption per unit of water produced is often well in excess of OECD standards and represents a significant share of production costs (in some cases as much as 50-70 per cent of total production costs). This situation is due to the poor efficiency of the water pumps that are being used in EECCA water utilities, as well as the poor design of water systems, which were designed during Soviet times when electricity was virtually free.

In many cases the operational efficiency of water utilities can be significantly improved through low-cost investment measures. For instance, Yerevan Vodokanal achieved a 50 per cent reduction in electric energy consumption through a string of measures including the redesign of the distribution system and the shutdown of excess pumping stations. Therefore, much could be achieved if utilities had sufficient cash flow available to invest in such measures, as well as the incentives to improve their efficiency. In Yerevan

Vodokanal, which involves a private operator in a management contract, performance targets linked to an incentive payment included the reduction of energy consumption and water leakage.

b) By adapting service levels

Cities in EECCA react to high operating costs and insufficient revenues by not operating the infrastructure or operating it unevenly. Water and wastewater services are often unreliable with frequent interruptions and low quality. In many cities, water is supplied only a few hours a day, and it is insufficiently treated. Most wastewater treatment plants are bypassed or provide only basic mechanical treatment, if any at all. This allows utilities to lower their operation costs to match available revenues by saving electricity for pumping and costly chemicals for water treatment.

The most serious consequences are caused by the chronic shortage of funds for proper maintenance of infrastructure, such as small repairs, replacement of worn-out parts, small capital repairs, and essential rehabilitation. This has initially implied a focus on breakdown maintenance (rather than preventive maintenance), and it has subsequently meant that the assets rapidly lose their economic value, physically fall apart and, finally, they get abandoned. In several cases, the infrastructure is so run down that there is a serious threat of complete collapse of the entire system if funds for maintenance and rehabilitation are not provided.

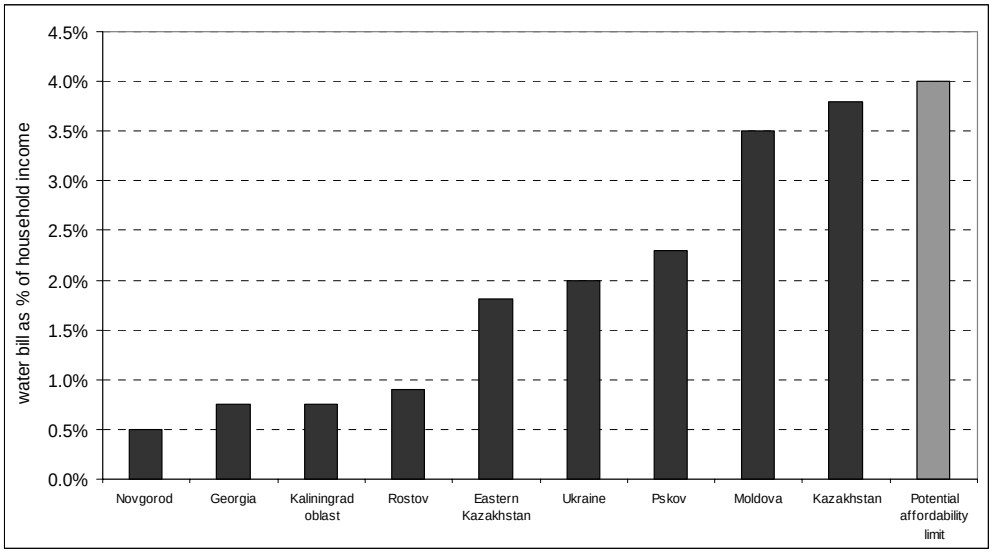
As service levels are already low in the vast majority of EECCA utilities, a further decrease of service levels is usually unrealistic, as well as being politically undesirable. This alternative may also be financially self-destructive: it would be difficult to mobilise public support for tariff increases and for major reforms, while service levels are being lowered in parallel.

Nevertheless, EECCA countries should carefully consider alternative levels of service, and related technology choices when they develop financing strategies for the water sector. In a recent analysis of financial options for urban water supply and sanitation in Georgia, it was established that stand pipes would be the financially most realistic option for extending service coverage and resuming water supply to households that do not have access to this service anymore (because of the deterioration of the infrastructure). While this option is likely to be politically difficult to implement, it appeared to be the only affordable option for Georgia (OECD 2005a).

7.3.2 Increased supply of finance: user charges

Simulations of various options to increase the supply of finance to cover the operation and maintenance gap have shown that user charges are the only realistic long-term source of finance for these expenditure categories. Most households seem to be able to pay more than they actually do. In several countries studied, the average charges paid for water and wastewater as a proportion of average household income (0.5-2.5 per cent) are well below international benchmarks for countries of similar income levels (typically 3-5 per cent). On the other hand, Kazakhstan (on the country level) and Moldova are recovering a much higher share of costs from households, with charges approaching the limits of what the households can probably afford (Figure 7.5).

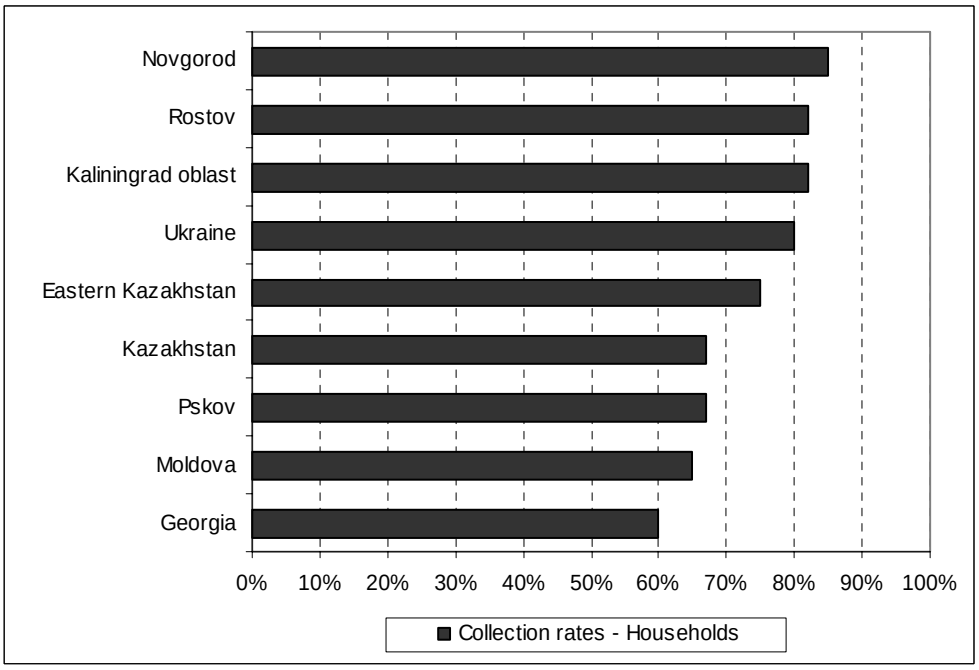
Figure 7.5: Water bill as percentage of average household income



Source: Data collected within country and regional environmental financing strategies (EFS).

Another problem is the often low level of collection of user charges from households. In several countries, average collection rates are as low as 60-70 per cent of billed amounts. In Georgia the latest figures indicate that collection has fallen as low as 34 per cent for household customers. Strengthening of the payment discipline has been shown to generate substantial additional funding in itself (Figure 7.6).

Figure 7.6: Collection of user charges from households



Source: Data collected within country and regional environmental financing strategies (EFS).

Flat tariffs based on consumption norms are the primary tariff formula for consumers in most EECCA countries. Tariffs for the population are set for an undetermined period and can be changed at any time.

This creates economic uncertainty for both utilities and consumers. At the same time, for political reasons, tariffs may remain unchanged for three years or more, despite inflation rising steeply. This has been one of the main causes of the poor financial condition of water utilities.

Since most countries have decentralised responsibility for water supply and sanitation infrastructure to the local level, municipalities have become the main regulator, including for tariff-setting. Despite the obvious lack of capacity at the local level to deal with these complex issues, only a few EECCA countries (even though the number is increasing) have developed tariff-setting rules to guide municipalities in their task. Spreading similar approaches to a greater number of countries will be an important prerequisite to using user charges more extensively to finance water services in EECCA.

Tariff-setting rules should provide for the transparency of the process of tariff-setting, ensure that the outcome of the process is sufficiently predictable (*i.e.* based on economic, not political considerations), as well as allowing for all relevant costs to be included, including regular adjustments for price inflation in main inputs (see Box 7.1 for an example). Clear institutional organisations facilitate such moves. In an attempt to obtain a five-year UAH[102] 15 million loan to finance infrastructure investment in 2004, the city of Odessa has rearranged the institutions in charge of WSS. In particular, Odessa's mayor did not appoint the utility director, an unusual political distancing between municipality and water utility in Ukraine; subsequently, the utility has put in place a tariff programme that recovers operating costs as well as debt service and a return to capital.

Box 7.1: Tariff-setting and affordability in Poznan, Poland

The tariff-setting mechanism in Poland has been established so as to minimise obstacles to raising tariffs for political reasons. Utilities are required to develop rolling, long-term development plans, which cover all aspects of their activities. Each year they must submit these plans, together with proposals for tariff adjustments, to the city council via the mayor, at least 70 days before any tariff adjustment is due to take effect. If the council accepts the utility's development plan, and if the mayor determines that the tariff adjustments have been established in accordance with national law and are necessary for achieving the planned results, then the tariff adjustments must be approved. If the council does not approve the proposed tariff adjustments within 45 days, they are approved automatically. If the council considers that there is an affordability problem, it may decide that the tariffs for all or some consumers should be increased by less than proposed. However, the resources to finance the subsidy to the designated consumers must be drawn from the city budget and transferred to the utility. More generally, support for poor households is provided through social services that are financed by the municipality. Recently the utility in Poznan set up a small fund to alleviate difficulties that poor families may encounter because of increased tariffs, which has helped support the political acceptability of tariff increases.

Source : Kayser T. (2005).

Probably the main obstacle to water pricing has been its perceived social impacts, and their political consequences. In OECD countries, taxpayers rather than consumers have financed the bulk of investments in water infrastructure. Although many OECD countries have achieved full cost recovery there are still some where user charges are below this level. Those countries that have reached full cost recovery have done it over several decades. Hence, full cost recovery is probably a distant objective for most EECCA countries. Nevertheless, there are opportunities to move progressively in this direction, while ensuring that poor and vulnerable groups have access to water services. Indeed, there is probably no alternative: governments in EECCA countries may not be able to afford to emulate the policies followed in OECD countries, where public finance (taxpayers) was the dominant source of finance.

Obstacles to this choice of direction are political opposition to raising tariffs, lack of capacity in municipalities for adequate financial planning and properly calculating tariffs accordingly, as well as

[102] Ukrainian hrivna

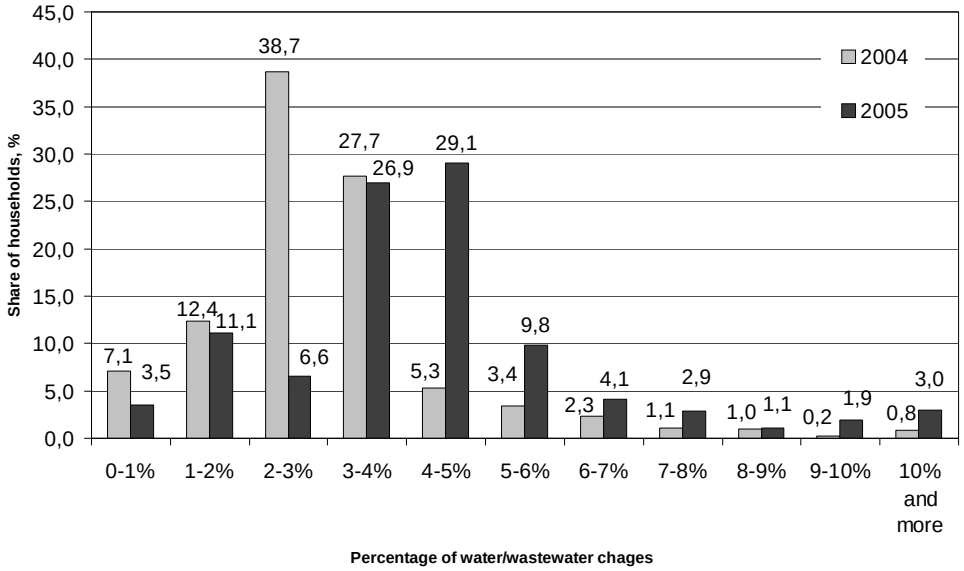
potential social resistance. The latter in combination with the political consequences has probably been the main obstacle to water pricing.

Water services often fail to reach the poor, who bear the main burden of inadequate access, service deficits, poor water quality, unreliable supplies, and unsanitary disposal of wastewater and solid waste. Subsidies are often justified in terms of keeping services affordable for poor households, but there is mounting evidence that they are often not well targeted and not very effective. Instead of benefiting the poor (who are frequently not connected to water distribution and sanitation networks), such subsidies often benefit richer people who are capable of paying the full costs of water services. The effectiveness of public spending on water infrastructure could be much increased if subsidies were restructured and better targeted.

Water charges are not a significant burden on most households in OECD countries; typically they account for less than one per cent of household income (OECD 2003c). However, in EECCA countries they may represent a more significant portion of income. International financial institutions often use a benchmark of four to five per cent of household income for water tariffs when they plan water infrastructure investment projects. However, such estimates need to be complemented by more detailed analyses of how projected tariff levels would impact different income groups. For example, projected tariffs may be less than four per cent of average household income, but for the poorest 25 per cent of the population they might represent five to 20 per cent of income. It would not be feasible to introduce such a tariff policy unless measures were taken to mitigate the impact of the increased user charges on these groups.

Social assessments of water sector reform policies in the city of Khmelnitsky, in the Ukraine have shown that if water tariffs were designed to recover operational costs, more than 40 per cent of the population would have to pay more than four per cent of their income for their water bill (OECD 2003b). Similarly, in Yerevan, Armenia, the 20 per cent of the population with the lowest income would have to pay about eight per cent of their income if water prices were increased close to levels that allow the recovery of operational and maintenance costs, and almost half of the population would have to pay more than four per cent of their income (Figure 7.7).

Figure 7.7: Distribution of Yerevan households by expenses for water/wastewater services as a percentage of household consumer expenditures, 2004 and 2005 projections (Scenario 1)



Source: OECD/EAP Task Force (2004).

In OECD countries, a variety of approaches have been developed to mitigate or offset the impacts of tariff increases on the poorer sections of the community.

- **Income support**. Measures providing income support aim to compensate poor households for tariff increases that are judged to be unacceptably burdensome. The support may be directly linked to water use. For example, support may be provided if the water bill is above a certain percentage of household income, or may be calculated to maintain an absolute level of income after the utility bill is paid. It can be paid either directly by the government to the utility or through a voucher system. This type of support represents a financial burden on the state and reduces incentives to conserve water. Alternatively, the support may not be linked to water consumption, but to income levels. The people receiving the support can choose themselves how to spend it — on water or on other goods and services. In this way, the costs fall on the state budget rather than the utility. If combined with appropriate water charges, it does not encourage over-consumption of water;

- **Tariff-related measures**. The tariff structure can be designed in such a way as to mitigate the potentially adverse impacts of tariff increases on poor households. The approach used in an increasing number of OECD countries involves a "block-tariff" structure. In this approach, the price paid is linked to the amount of water consumed, and the charge levied for each unit or "block" of water used increases with the total amount used. The initial block may be free or charged at a very low rate, assuring that poor households have access to a basic level of water services for free or at low cost. The system needs to be designed to take account of the number of people in each household in order to avoid penalizing larger families. This system can move in the direction of full cost recovery by providing a cross-subsidy from households that use lots of water to those that use little water; it can be implemented by the utility and does not draw on the central government budget; it also provides a very strong incentive to conserve water, and targets those who use little water for the subsidies rather than all water users. However, the drawback is the need for metering of water use — which can involve high upfront costs and, sometimes, social opposition;

- **Facilitating payments**. In many countries, householders are not disconnected from the water supply system even if they are unable to afford their water bills. In part this is because water is essential for life and dignity, but also because of the high reconnection costs. In such cases, utilities in many OECD countries work with consumers to make them aware of how to reduce water consumption, to manage their budgets by paying water bills at short intervals, and to provide other forms of advice and assistance to ensure that consumers have access to water services but pay their bills.

In EECCA the most widespread approaches to providing social protection to the poor are: (i) through the provision of reduced tariffs for so-called "privileged" consumers (*e.g.* war invalids and handicapped, police, judges, and firemen) (a tariff-related measure); or (ii) the provision of housing subsidies (income support).

While there are poor people among the recipients of privileges, these programmes do not specifically target them, and often are not justified economically and socially. But there is significant political and social resistance to removing them, even if public budgets find it increasingly difficult to finance such programmes. So far, only a few countries (Armenia, Kazakhstan, and Moldova) have undertaken radical steps to eliminate and transform the system of privileges, first of all occupational privileges. In other countries (*e.g.* the Russian Federation), reforms have been targeted at monetising these subsidies in order to reduce incentives for over-consumption and to include these subsidies in existing income support mechanisms.[103]

Several EECCA governments have introduced targeted income support subsidies for the poor. Armenia, Belarus, Kazakhstan, Kyrgyz Republic, Russia, and the Ukraine have established programmes of housing subsidies. Under these programmes, the central government provides compensation for housing and communal services (including water) when expenses exceed a certain level of total household income (*e.g.* households should not pay more than 20 per cent of their income in the Ukraine, 22 per cent in Russia, and 30 per cent in Kazakhstan). In 2001, in the Ukraine 11 per cent of households received the housing subsidy in summer and 17 per cent in winter - 100 USD per year on average. For single pensioners, this subsidy represented on average 49.2 per cent of their pension.

A key problem of income support measures is the targeting of these measures. In Armenia, the national family support programme, which provides means tested income support to poor families through a scoring system, the targeting was identified to be very unsatisfactory. All income groups receive some level of income support, ranging from 13 per cent in the lowest income group to 6 per cent in the highest income group (Table 7.2). It is obvious that unless targeting is improved, the family support programme will be largely ineffective in protecting the poor from losing access to water.

[103] It should be noted, that in some cases there may be a rational for continuing to operate the "privilege system" for certain categories of the population. Where a certain social or professional category provides a good proxy for targeting the poor, using the privilege system may be preferable to more sophisticated, and hence costly to administer, means testing approaches. This needs to be assessed on a case by case basis.

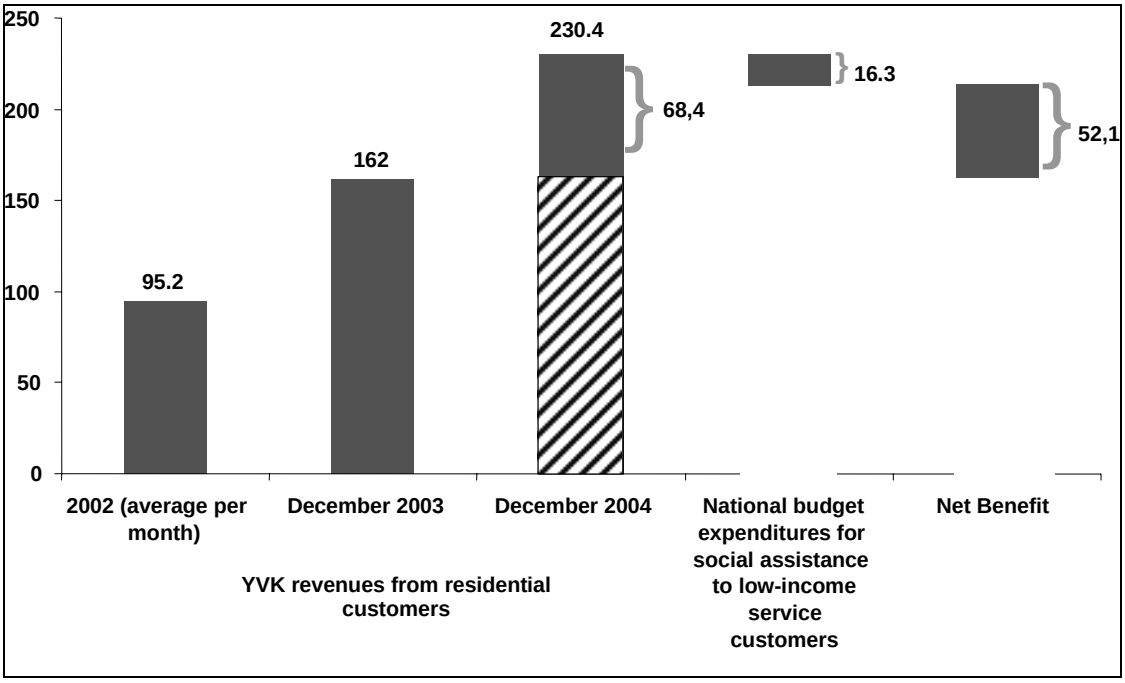
Table 7.2: Distribution of family poverty benefit recipients over income deciles, Armenia

Indicators	*Decile groups by average per capita consumer expenditures*										*Total*
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	
Households receiving family benefits	79	75	79	66	65	48	53	53	42	35	595
Share of family benefit recipients in decile, % of total recipients	13.3	12.6	13.3	11.1	10.9	8.1	8.9	8.9	7.1	5.8	100.0
Share of the amount of benefits in decile, % of total amount of benefits	15.2	13.3	14.3	11.5	9.7	7.9	9.2	8.3	5.8	4.9	100.0

Source: National Statistics Service of the Republic of Armenia.

Housing subsidies, covering communal services including water supply and sanitation and provided as a form of means-tested income support, allow for significant savings for public budgets; they help channel support to those most in need, while ensuring revenue for utilities, including from the poor. If one assumes that tariff increases will only find social acceptance if the poor are sufficiently protected, social protection can be seen as an instrument to generate additional utility revenue. An analysis carried out under a social assessment for the Armenian water sector shows that even in countries with widespread poverty (as mentioned earlier, under increased tariffs, more than 50 per cent of the population would need financial assistance to pay for the cost of water), one dollar invested into social protection can generate four dollars of additional revenue for water utilities (Figure 7.8).

Figure 7.8: Financial implications of a two-fold increase of water/wastewater tariff in Yerevan water utility from a social welfare perspective (AMD[104] million, month)



Source: National Statistics Service of the Republic of Armenia.

[104] Armenian dram

7.3.3 Increasing the supply of finance: the part of central budgets

Figure 1 above has shown that public budgets remain the second major source of finance for WSS in EECCA, after user charges. Country case studies have confirmed that this will remain so in the foreseeable future. In a decentralised industry, one would expect that local budgets are the key players. The picture however is more blurred.

Indeed, although there is diversity in the institutional arrangements across EECCA countries (see annex 7.5.1), most EECCA countries have engaged in a systematic devolution of responsibilities for the construction and maintenance of urban environmental infrastructure to sub-sovereign levels of government. As owners of the communal service infrastructure, municipalities are responsible for its rehabilitation, modernisation, and development. Armenia and Tajikistan are notable exceptions.

a) The lack of financial autonomy of local jurisdictions

Devolution of responsibilities needs to be matched by ensuring access to the resources needed to implement the new mandates devolved to local and regional jurisdictions. Most EECCA municipalities do not have sufficient funds to carry-out these responsibilities. They are neither financially autonomous nor sustainable.

Municipalities can rely on three sorts of revenues to finance their obligations in WSS:

- Revenues from user charges. The price people pay for water supply and sanitation services is a criterion that directly impacts on the creditworthiness of local authorities. Indeed, financial institutions confirm that the general attitude of a municipality towards tariffs and their reform is the most important criterion to assess the reliability of the municipality to re-pay any debt that it incurs. However, very few countries have transferred the competency of tariff-setting to municipalities. Annex 1 shows that national institutions, such as Parliaments, Central Governments, or Anti-Monopoly Agencies intervene in tariff policies;

- Local taxes. Generally, in EECCA, there is only limited scope for fiscal autonomy. This is so because few fiscal instruments are available, because local jurisdictions have little discretion to manipulate them. In the case of Kazakhstan, local jurisdictions have no right to set tax rates or to determine the tax base, with the exception of the land tax. In addition, in EECCA, local tax payers (households and business firms) are unevenly scattered across the territory. The restrictions on the fiscal autonomy of local jurisdictions in EECCA result from the concern that exploiting the local tax base may conflict with national objectives and raise serious distributive concerns. This relates to the wider agenda of fiscal reform;

- Intergovernmental transfers. The table below shows that municipalities are still largely dependant on fiscal transfers from central or regional budgets. Table 7.3 confirms that, in many EECCA countries, central governments are liable to capital and operational subsidies to WSS. These average figures should be analysed with caution, as they mask in-country discrepancies:

  - Typically, the Russian Federation has a three-tier administrative structure: transfers go from the state to the regional budgets, and from the regional to the municipal budgets; transfers from state budget amount to some 16 per cent of the revenues of regions (subjects of the Federation), but local jurisdictions receive 43 per cent of their revenues from regional budgets;

– In the Ukraine, the share of transfers in the revenues of local jurisdictions ranges from 27 to 79 per cent.

Table 7.3: Local Government Revenue: percentage share by categories

%	Taxes	Grants from general government units	Other revenues (international organisations, social contributions, others)
Armenia	29.8	41.1	29.1
Azerbaijan	41.6	50.4	8.0
Belarus	77.4	13.8	8.8
Georgia	83.8	14.5	1.7
Kazakhstan	72.8	26.0	1.2
Kyrgyz Republic	35.8	53.1	11.1
Moldova	57.7	29.8	12.5
Russian Federation	61.0	16.9	22.0
Tajikistan	71.5	24.5	4.0
Turkmenistan	na	na	na
Ukraine	62.4	29.5	8.1
Uzbekistan	na	na	na

Source: IMF(2004).

This financial situation is in line with international experience. In CEE countries, revenues of local governments depend to a large extent on transfers from central governments. Fiscal revenues of local governments in CEE (53 per cent of the total revenues of local governments) mainly stem from taxes which are shared with the central governments (income tax, VAT, essentially). Intergovernmental transfers account for a significant part of the revenues of local governments (25 per cent in CEE).

As a consequence of this situation, local jurisdictions in EECCA often have to coordinate their infrastructure development plans and capital expenditure budgets with national/regional plans and budgets. This makes the strategic planning and investments at local level dependant on the policies at the national/regional level, and generates a risk that local investment plans will not be implemented due to budgetary constraints. This is even more so when grants and transfers from central governments are not made according to procedures which meet the requirement of WSS.

b) Uncertain intergovernmental transfers

Intergovernmental transfers are means the central government can use to improve the performance and control of sub-national public expenditures, and to create incentives for better coherence between national and local public policies. EECCA countries mostly rely on such mechanisms to bridge the financial gap that arises between the costs of local policies and services and the revenues to which local authorities have access. Lessons learnt from accession countries confirm that, in the transition process, intergovernmental transfers are a key dimension of relations between levels of government and a major source of finance for local jurisdictions.

Intergovernmental transfers come in a variety of forms, with different types of conditions which respond to various policy objectives and institutional contexts. Two broad categories can be distinguished, as they have a different impact on sub-national fiscal autonomy and incentives:

- Block grants leave sub-national governments with discretion to organise local provision in the most effective way. They are often seen to be most appropriate for equity purposes, though earmarked grants often contain a redistributive element;

- Earmarked grants have been defended on the ground that they could serve to internalise externalities (e.g. directing spending on wastewater treatment in up-stream municipalities that pollute down-stream). They have been used extensively to minimise the risk of suboptimal spending in domains characterised by significant spill-over effects or to secure minimum standards for specific services. However, they may also generate excessive spending, accompanied by poor cost effectiveness; this is particularly the case when:

  - co financing rates are set above levels which effectively account for spill-over effects;

  - they provide strong incentives to spend in specific domains;

  - earmarked grants are set without reference to objective performance criteria, or when defining minimum spending levels to reach a given quality of public services is very difficult;

  - they are based on *ex post* actual costs, instead of *a priori* standard costs (as in the Czech Republic, or in Poland), dulling incentives to contain costs.

Given these problems, there has been a move in OECD countries towards general purpose (block) grants, which allow greater local autonomy and should, in principle, generate greater cost-efficiency.

The grant system has a number of roles to play, and its design is of paramount importance to avoid conflict between various objectives. The table below synthesises how grant design can match particular objectives. It is based on the lessons learnt from international experience.

Table 7.4: Principles and good practices in grant design.

Grant objective	Grant design	Practices to avoid
To bridge financial gap	Reassign responsibilities Tax abatement Tax base sharing	Deficit grants Tax by tax sharing
To reduce regional fiscal disparities	General non matching fiscal capacity equalisation transfers	General revenue sharing with multiple factors
To compensate for benefit spillovers	Open ended matching transfers with matching rate consistent with spill over of benefits	
Setting national minimum standards	Conditional non-matching block transfers with conditions on standards of service and access	Conditional transfers with conditions on spending alone Ad hoc grants
Influencing local priorities in areas of high national but low local priority	Open-ended matching transfers (with preferably matching rate to vary inversely with fiscal capacity)	Ad hoc grants
Stabilisation	Capital grants, provided maintenance is possible	Stabilisation grants with no future upkeep requirements

Source: Shah (1994, 2004).

In CEE, grants received from central governments are usually for general use, although this is not the case in the Czech Republic, Lithuania, and Latvia. In EECCA, each country has developed an array of instruments to transfer budgetary resources from central to local level (see box below).

Box 7.2: The diversity of instruments for intergovernmental transfers in selected EECCA countries

In the Russian Federation, financial aid to sub-federal governments is divided into two types - ongoing operational support and capital investments - serving different purposes; financial support from federal government is provided in the form of grants[105], subventions[106], subsidies[107] and other non-repayable transfers plus budgetary loans.

In Armenia, inter-governmental transfers include equalizing grants, general purpose and block grants (conditional and non-conditional grants), and other transfers from other sources (other communities of the Armenian Republic, international organizations, self-government bodies of foreign countries).

In the Ukraine, the system of intergovernmental transfers includes equalization grants[108], subventions (intergovernmental transfers provided for a specific purpose, under a procedure stipulated by the body, which is responsible for the decision to provide the subventions), other grants.

Source: OECD (2006).

Differences exist in the magnitude and the respective weight of each instrument, and in the modalities of their implementation. Armenia is an extreme situation, where equalization grants amount to 91 per cent of the total transfers (2003 figure); at the same time, 94 per cent of resources transferred from central budget were used to cover current expenditures. In the Ukraine, general purpose grants represent some 55 per cent of the total transfers, whereas the share of subventions was below 45 per cent in 2004. In the Russian Federation, the weight of purpose-oriented transfers (subventions and subsidies) in the local revenue structure has increased notably over the 2002-2004 period, echoing favorable changes in the federal budget policy directed at reduction of unfunded federal mandates through allocation of earmarked transfers for carrying out delegated federal mandates.

Experience shows that, in the context of EECCA countries, general purpose transfers, typically in the form of equalization schemes, can have negative economic and financial consequences. In particular, they enable local budgets to increase their expenditures without raising additional tax revenues: local governments have no incentives to expand their own tax base and, consequently, to provide a favourable environment for the development of regional economy.

[105] Grant –transfer of funds from a government of one level to a government of another level made in a non-repayable manner and on a grant basis (Russian Federation Budget Code, Article 6)

[106] Subvention - transfer of funds from a one level of government to another level of government or a legal entity made in a non-repayable manner and on a grant basis to cover target-specific costs (Russian Federation Budget Code, Article 6)

[107] Subsidy - transfer of funds from a one level of government to another level of government or a natural or legal entity subject to the *target cost sharing principle* (Russian Federation Budget Code, Article 6)

[108] Intergovernmental transfers provided for the purpose of equalizing revenue capacity of local budgets; these can be negative, when estimated revenues exceed estimated expenditures

Box 7.3: Some difficulties associated with general purpose transfers

In the Ukraine, a high degree of equalization of local budget expenditures has generated a decrease in tax collection rates in economically strong regions. The decrease of actual tax revenues gives these regions legitimate grounds to reduce the amount of funds transferred to the state budget or to receive equalization grants. This does not improve the economic situation of weaker regions either: their share in gross domestic product is decreasing.

In Kazakhstan, the mechanisms for inter-governmental budget regulation were reformed in 1999. Budget surpluses are deducted from the revenues of oblasts which perform well, and allocated in the form of subventions to oblasts which cannot cover their needs through legally assigned revenues. The calculation is based on a normative amount of expenditures, which is subtracted from the estimated revenues of the oblast. Unfortunately, revenues tend to be overestimated and expenditures underestimated; thus, the anticipated amount to be withdrawn is often inflated. Critics insist that the methodology neither draws on economically sound norms, nor stimulates efficient local spending. The sheer size of local transfers curtails incentives for local governments to enlarge budget revenues or increase collection of taxes or other payments. That this mechanism is not an incentive to perform well is confirmed by the fact that contributing and recipient oblasts are the same every year. Moreover, although based in principle on expenditure norms, this system is frequently adjusted and neither predictable nor transparent in its impact. The effect is to introduce a large element of uncertainty into the revenue side of municipal budgets.

Source: OECD (2006).

Recently, some EECCA countries have reformed the modalities of intergovernmental transfers to increase their efficiency. They have tried to improve the mechanisms of equalisation grants, and have introduced other means considered as incentives for better economic and budgetary performance. Such moves include:

- Use economic, demographic and geographic statistics (not tax revenue statistics) as the basis to estimate regional revenue capacities, expenditure liabilities, and need for equalizing transfers (the Russian Federation);

- Set priorities and stipulate the procedure for considering proposals made by the regions (see the procedure introduced in the Ukraine in 2005 to allocate funds "for socio-economic development of regions, prevention of breakdowns and man-made disasters in housing and utility sector and on other communal property assets and implementation of investment projects");

- Allocate resources between regional governments on a competitive basis. In the Russian Federation, regional governments interested in receiving a subsidy from the Regional Finance Reform Fund (RFRF) had to file a Subsidy Application containing tabulated information on the basis of which their financial management capacities, programs of regional finance reform, and subsidy use plans were evaluated;

- Introduce transfer mechanisms to allocate finance directly to investment projects (see box below).

Box 7.4: Instances of transfer mechanisms directly targeting investment projects

In the Russian Federation, the Regional Development Fund allocates earmarked resources to support investments into regional infrastructure. It provides subsidies to regional governments to co-finance investments into regionally- or municipally-owned projects, based on a list of "federal targeted regional development programs". The list has been revised in 2003 and now includes Leveling Out Differences in Social and Economic Development of Regions in the Russian Federation (2002-2010 and till 2015). Regional governments are invited to bid. The goal of such bidding is to select projects that particularly require governmental support, are well-designed, and can really help to reduce developmental differences between regions.

In the Ukraine, starting from 2003, local budgets receive subventions from the state budget to implement investment projects. The rationale is to solve socio-economic problems of regional development by financing investment projects on construction and modernization of production and non-production facilities, including in water supply and sanitation. A list of facilities is identified, based on the proposals of people's deputies of Ukraine. Priority is given to local jurisdictions whose average annual expenditure for maintenance of public assets has been below a certain standard. Since 2004, these subventions are provided on the basis of co-financing from local budgets. These subventions constitute a small share of intergovernmental transfers (1.9 per cent in 2003, 2.9 per cent in 2004), of which some 10 per cent benefited projects in WSS.

Source: OECD (2006).

The development of earmarked funds, as is illustrated by the recent reforms of intergovernmental transfers in Ukraine and the Russian Federation, illustrates the concern by the central (or sub federal) institutions to control the allocation of finance to policies and projects which serve national policies. The key issue is to design financing schemes for sub-national governments so that they are responsive to local preferences without creating efficiency concerns and compromising distributional objectives nationwide.

c) Principles for intergovernmental transfers in EECCA

Country surveys in OECD and recent experience in EECCA confirm that the impact of intergovernmental grants on efficiency, fiscal discipline, and equity, largely depends on their design. The design varies significantly from one country to another, and it should take into account at the same time policy objectives and the features of the institutional context.

Although WSS is not the only concern which presides over the design of these mechanisms, it is directly impacted by them. Considering the situation of the WSS in EECCA, intergovernmental transfer mechanisms should be compatible with the following objectives:

- Channel sufficient volumes of finance to local jurisdictions. In the context of EECCA, national public funding is expected to remain a major source of finance for the water and sanitation sector for the foreseeable future, especially for capital expenditure. This is even more so in the context of the MDGs which requires investment which cannot be financed exclusively from user charges or other sources of finance. Alternative modes of transferring central credits can be organised. For instance, in the Ukraine and Kazakhstan, central budget funds have been set in place to subsidise investment at the local level, with the objective of providing utilities and municipalities with financial support for investment, for the prevention of accidents, or to improve the efficiency of water systems. However, in both countries, the funds constitute a very small proportion of the investment needed;

- Generate stable revenues flows, which can be incorporated into comprehensive financial strategies. This requirement is even more crucial when local jurisdictions intend to incur debt, as their creditworthiness depends partly on their capacity to generate stable revenue flows (see the next section). Similarly, central governments should make efforts to honour their financial commitments vis-à-vis utilities, most notably by resuming payments of compensation for social

services provided through utilities (such as privileges that involve reduced tariffs for certain categories of the population).

- Make sure that the money will not be diverted from the initial projects, while respecting the autonomy of the local governments to allocate resources to priority investments in the WSS. A balance has to be managed, to pay due respect to the capacity of local governments to select priorities and adapt to local situations, and the need to make sure that the money transferred contributes to policies which were agreed at the national level. In a context where priorities are unstable, and where corruption cannot be ignored, this requirement explains why block grants are not systematically the most appropriate way to transfer money from central to local governments.

7.3.4 Increasing the supply of finance: official development assistance (ODA) and other sources

Except in a few very poor countries, domestic rather than external resources will be the dominant source of finance. Nevertheless, external finance, whether concessional (for example, grants or soft loans) or non-concessional (IFI loans), can play an important catalytic and demonstrative role. External finance can support financial and governance reforms in the sector, build capacities, and introduce international disciplines and good practices. It can also help to leverage finance from other sources, including from the private sector and financial markets. On the other hand, care must be taken to avoid crowding out domestic financial sources, inducing subsidy dependence, or removing incentives for essential reforms.

If the internationally agreed water targets[109] are to be achieved, official development assistance (ODA) would need to rise substantially (the Camdessus Report argued that ODA would have to at least double). The need for increased levels of ODA was recognised at the International Conference on Financing for Development, held in Monterrey, Mexico, on 18–22 March 2002.[110] The "Monterrey Consensus" established a new international partnership for achieving internationally agreed development goals, including the Millennium Development Goals. Essentially, developing countries pledged to promote sound policy reform, good governance, and increased domestic financial resource mobilization in return for increased international financial flows.

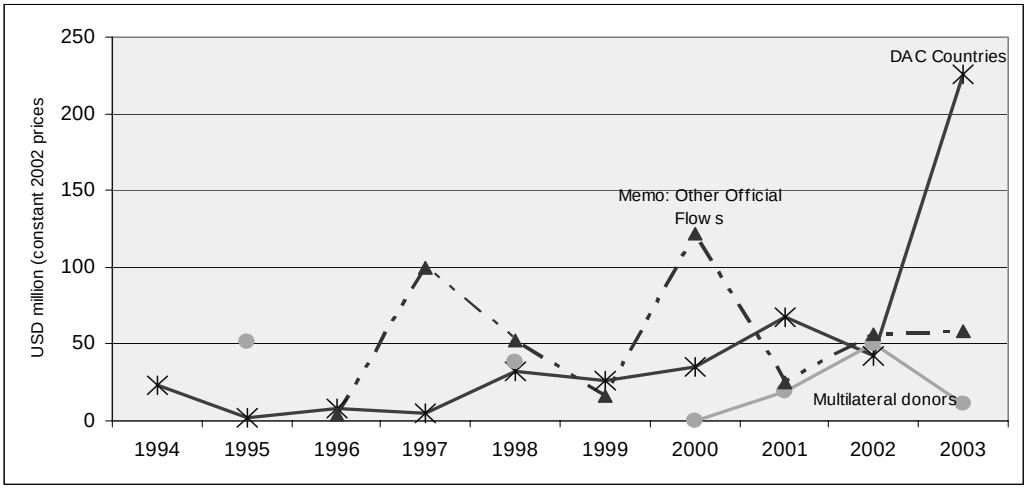
OECD data shows that flows of official development assistance for water in the EECCA region has been slightly increasing over the last 10 years (Figure7.9). Most of it (two thirds) is, however, concentrated in just three countries (Kazakhstan, Azerbaijan, and Armenia). At the same time, the absolute amount of ODA for water is at very low levels, with an average of EUR 50-100 million per year (see also Annex 7.5.1). This amount is clearly very modest when compared to the financing necessary to achieving the Millennium Development Goals on water supply and sanitation in EECCA, which have been estimated to as much as EUR seven billion per year (COWI 2004).[111] ODA is therefore going to remain a minor source of finance for the water supply and sanitation sector, even if significantly increased in the future.

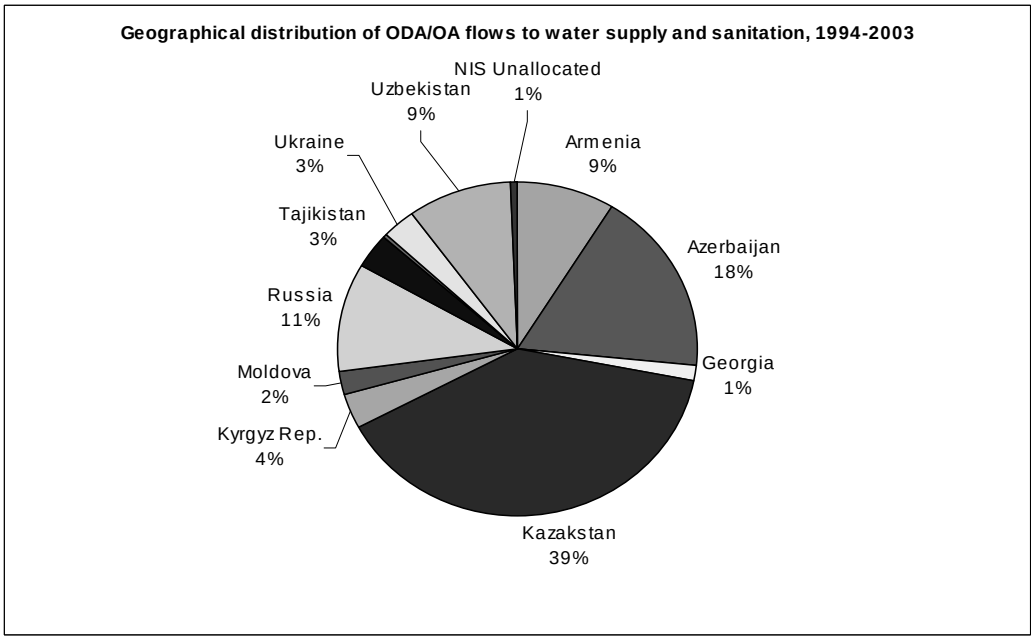
[109] Millennium Development Goal 7, target 10 stipulates to "halve by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation".

[110] See the UN Department for Economic and Social Affairs website on Financing for Development: http://www.un.org/esa/ffd.

[111] Also see background paper for Almaty+5 conference "Meeting the Millennium Development Goals drinking water and sanitation target in the EECCA region: a goal within reach?" for a discussion of the methodology in the COWI report.

Figure 7.9: Bilateral and multilateral official development assistance to water supply and sanitation in EECCA countries, annual commitments, million USD (constant 2002 prices)





Notes:
1. Other Official Flows (OOF): transactions by the official sector with countries on the List of Aid Recipients which do not meet the conditions for eligibility as Official Development Assistance or Official Aid, either because they are not primarily aimed at development, or because they have a Grant Element of less than 25 per cent.
2. The peaks in the chart are explained by three big projects: 1997 and 2000 IBRD non-export credits of 75 and 122 mln USD to Uzbekistant and Russia; 2003 a loan of 169 mnl USD of Japan JBIC to Kazakhstan for the rehabilitation of water supply and sewarage plants.

Whatever the level of ODA flow, more could be done to improve its effectiveness and to improve coordination between donors. Some donors are now moving away from financing individual water projects to establishing local, financially sustainable, financing mechanisms. Greater use is also being made of

output-based budgeting that focuses on achieving development outcomes, such as a number of increased connections, rather than focusing on inputs such as provision of pipes and pumps. Many donors are also working to strengthen the pro-poor dimension of their activities, *inter alia*, by finding ways to finance shortfalls in consumers' ability to pay when tariffs are increased.

Non-concessional loans from IFIs are important sources of long-term investment capital for developing countries, and are generally offered on terms that are more favourable than those available on local capital and financial markets (interest rates may be lower and/or the payback period longer). Substantial resources are available from the World Bank and regional development banks for loans to municipalities and water utilities, but there are a number of key bottlenecks that constrain their wider use.

For one thing, there is often a lack of bankable projects — that is projects where the IFI has sufficient confidence that the loan will be repaid. This may be because of a lack of capacity for project preparation or because the risks associated with proposed projects are unacceptably high. Projects may have to be above a threshold as high as USD 10 million to justify the transaction costs for the IFI. This obstacle can sometimes be overcome by bundling projects so that the value of the sum exceeds the threshold.

Governments may be unwilling or unable to borrow. Debts have to be repaid, typically either from public budgets or from user charges, and most IFIs require governments to provide a sovereign guarantee that this will indeed happen. Governments may be unwilling or unable to take on this additional obligation. If countries are heavily indebted and receiving support from the International Monetary Fund, the Fund may prohibit the country from taking on any additional debt. Some IFIs such as the European Bank for Reconstruction and Development are authorised to issue loans on the basis of a sub-sovereign guarantee — from a municipality, for example. While this creates more flexibility, the requirements to justify that the loan will be repaid are no less demanding than in the case of sovereign guarantees.

Loans to IFIs have to be repaid in foreign currency, such as US dollars. However, the revenues to repay the loan are generated in local currency. When the local currency devalues against the currency in which the loan must be repaid, this can result in a sudden and substantial increase in the schedule for repayments, placing an unforeseen burden on public resources, which may already be stretched. Guarantees can help to offset currency risks, but they are not cost free. Following the advice of the Camdessus Report, IFIs have taken a number of measures to enhance the use of guarantee instruments (see Winpenny, 2004). The EBRD has now started lending in local currency in the Russian Federation.

Donors work with IFIs to make loans more accessible to developing countries. Usually this takes the form of providing grant support to help prepare bankable projects, to soften the terms of the loan, or to build capacities that are needed to implement the loan. One mechanism that was established specifically for this purpose is the Project Preparation Committee (PPC), a network of donors and IFIs that work together to accelerate the development and implementation of IFI loans through the provision of grant support (PPC website).

7.4 Local debt as the additional component of financial strategies

In OECD economies, the financial sector (which consists of banks, the corporate debt market, and the equity market) provides the bulk of the investment finance for WSS. In the CEE, local authorities incur debt: the average level of debt amounted to 1.5 per cent of GDP in 2001; it was 5.6 per cent in the EU. During the last 10 years of transition to market economy, none of the EECCA countries have been able to develop their financial markets to the level that would provide access to long-term debt to finance investment in the WSS at an affordable cost.

As part of the process of fiscal decentralization, the policy and institutional obstacles that prevent the financial sector from playing a greater role in financing environmental projects should be removed. In particular, local authorities should have the right to incur debt, the development of carriers of long-term savings (insurance companies, banks) should be supported, and the portfolio of these institutions (and the share that they are allowed to invest in local jurisdictions) should be regulated. Experience from other regions could be applied in EECCA countries to enable local capital and financial markets to play a greater role in financing environmentally-related infrastructure.

Empirical evidence suggests that high interest rates are not the major factor limiting the access to debt finance for environmental investments in EECCA. There are opportunities beyond the public sector for financing water and other environmental infrastructure. Specifically, opportunities for accessing savings through private financial and capital markets have been examined. Country case studies on Kazakhstan, the Russian Federation, and the Ukraine have helped identify bottlenecks to the development of local financial markets for environment infrastructure, and shape policy recommendations to tackle them.

7.4.1 Local debt as a needed financial instrument in EECCA

This section is founded on the premise that increased use of market-oriented credit is both necessary and desirable in the financing of local environmental infrastructure. If investment levels are to increase, it will be critical to tap the private savings market to help in investment financing. Some of this financing will come in the form of direct private investment in municipal environmental facilities like water distribution systems or wastewater treatment plants. However, the recent record of private investment in the water supply and sanitation sector in EECCA has been disappointing. Therefore, the most important mechanism for accessing private savings is likely to be borrowing by public authorities or utilities, either directly from the capital market or through intermediary financing institutions like banks or special infrastructure funds.

Following decentralisation, the principal investment burden has been shifted from the State budget to local budgets. The credit systems required to finance urban environmental investment will therefore be local credit markets, in which the borrowers are sub-national governmental units or municipal utilities. The task of a well-functioning local credit market is to access domestic (and, sometimes, international) savings on a sustainable basis, then lend these funds to creditworthy local institutions to invest in urban environmental infrastructure. Given that many urban environmental services, like wastewater treatment or water supply, are highly capital intensive and involve long-living assets, the ability to generate longer-term credit is one requirement of a successful local credit market.

Borrowing by local governments, municipal utilities, or private operators is, of course, not an end in itself. The IMF among other international organizations has repeatedly warned against excessive sub-national borrowing as having a potentially de-stabilizing influence on fiscal management (IMF 2003). Most EECCA countries experienced sub-national debt crises in the 1990s, resulting, *inter alia*, from excessive, unregulated local borrowing, done frequently to cover current account deficits unrelated to capital spending. The debt crises serve as potent reminders that the purpose of a local credit system is to generate financing for capital investment that can prudently be repaid from recurring revenues.

Local debt is all the more relevant as a renewed context (economic growth, sophistication of some national financial systems, enhancement of the creditworthiness of selected municipalities) has generated new opportunities to consider the development of local capital and financial markets in EECCA countries.

In the 1990s, the mismanagement of debt by local authorities, and its consequences for the national economies in EECCA seemed to have disqualified the issue of sub-sovereign debt. As a consequence,

central authorities in most EECCA countries have banned sub-sovereign debt, or put a heavy administrative burden on it, so as to discourage potential borrowers.

The slow recovery of the financial sector - impaired by modest bank restructuring, limited sophistication in local credit markets, and a lack of municipal credit infrastructure - has failed to provide new opportunities, until recently. The situation is even more acute in rural areas, plagued with the difficulty to raise users finance, with the financial/fiscal weakness of municipalities, and with relatively higher transaction costs.

In recent years, the ban on municipal debt seems to have been relaxed. Local credit markets were recently revitalised in the Ukraine and in the Russian Federation. The situation of the financial sector has evolved, with the recent growth in bank assets, the expansion of accumulators of long-term savings, and the increasing orientation of banks towards servicing business. The Russian Federation is a clear illustration of these trends (see box below).

Box 7.5: Renewed sophistication of the Russian financial system

Russia's financial sector has recovered fully from the 1998 financial crisis[112]. Commercial bank liquidity has improved, and domestic bank financing has expanded rapidly. A well-functioning bond market has emerged, in which municipalities and regional authorities play a significant role. In 2003, sub-national governments accounted for 11 per cent of outstanding bonds in the Russian market. The largest cities (Moscow and St. Petersburg) are regular issuers in the domestic bond market. A January 2005 bond issue by the City of Moscow raised the equivalent of US$170 million, for a seven-year bond, at an average yield of 7.3 per cent, indicating the quality of access to the capital market that large, well-financed cities with transparent accounting enjoy (The Banker, 2005). Moscow's State Debt Committee has announced plans to lengthen bond maturities by issuing 15-year bonds in the autumn of 2005. In all, some 30 *oblasts* have received authority from the Russian Ministry of Finance to issue bonds; approximately half currently have bonds outstanding. Outside of Moscow and St. Petersburg, few cities tap the bond market for significant financing.

Source: OECD (2005b).

7.4.2 Support to the supply of finance

Once local debt has been acknowledged as a necessary financial tool to finance investment in WSS, local capital and financial markets have to be stimulated. The Ukraine has specifically identified the sub-national credit market as an instrument it intends to develop to assist in urban environmental infrastructure financing (including WSS). The steps towards the development of such a market show the needed combination of a number of institutions, at international, national, and local levels.

In late 2003 an inter-agency working group was established, representing the government as well as international donor agencies and international financing institutions, to provide guidance on development of a prudent local borrowing market that would not require sovereign guarantees. A draft national programme emphasised the role of local credit, both in financing environmental infrastructure investment and in enhancing the efficient use of energy and other resources (OECD 2005b). Together with the Ukrainian Government, the World Bank has supported the creation of the Municipal Development Loan Fund that provides commercial banks with access to long-term lines of credit, for on-lending at commercial rates to local authorities (municipalities or utilities) in order to finance infrastructure projects, with commercial banks performing credit analysis and assuming credit risk. The objective of this programme is to introduce banks to municipal infrastructure finance as a regular line of business, and to gradually extend loan maturities. USAID is supporting a complementary programme to further develop the local bond market as an instrument for environmental infrastructure finance.

[112] Unfortunately, it is difficult to quantify how much credit financing is being generated to support local environmental infrastructure investment.

In addition, local capital and financial markets require an adequate legal framework and mechanisms to reduce risks to lenders, consistent with the broader context of public finance.

a) A supportive legal framework

This framework should clearly state the following points:

Who can borrow

In those EECCA countries under review (Kazakhstan, Russia, and the Ukraine), municipalities generally own the assets that utilities operate, and are in charge of the bulk of investment finance; and utilities - municipal or private - are in charge of the operation of the service. The financial relations among these institutions, and between them and national oversight institutions, typically are subject to several ambiguities which can weaken the creditworthiness of both borrowers. Sources of dispute are manifold:

- Utilities are allowed to write assets on their balance sheet, and to borrow to finance capital investments (mostly capital repairs, or, under certain circumstances, new investments presented as capital repair);

- One issue that commonly arises is: "Who owns the utility property that is financed by municipal borrowing?" When important income-generating property is transferred without compensation to a utility, this may weaken a municipality's own finances, as the municipality remains responsible for the debt liability but has no corresponding asset on its balance sheet;

- The weak financial condition of municipal environmental utilities raises the question: "Who bears contingent liability for debt service in the event that the utilities cannot repay borrowing on their own?"

This poses fundamental obstacles to credit market development. It raises both practical and legal questions as to whether the borrower has the power to generate revenue sufficient to cover debt service, and, if not, which party, if any, bears contingent liability. The difficulty of identifying a clear chain of responsibility for debt service makes lenders less willing to lend for environmental investments.

The World Bank's Atyrau Pilot Water Supply and Sanitation Project in Kazakhstan illustrates the magnitude of potential municipal liability (see the "Implementation completion report", Number 29705, World Bank, 2005). The project financed the rehabilitation and replacement of water mains and sewer pipelines. The loan was to be repaid by the Vodokanal from tariffs that would be adjusted to recover operating costs and debt service costs. However, as the evaluation report states, "the lack of management and financial autonomy on the part of the vodokanal" made it impossible to implement the planned cost recovery. Tariff decisions were "highly political." The national Anti-Monopoly Agency, in fact, did not approve any tariff adjustments over the lifetime of the project (2000-2004), necessitating large transfers from the Atyrau *oblast* to cover operating expenses. Debt service on the US$12.0 million loan did not become effective until February 2005. These costs will have to be absorbed by the *oblast*, as well.

The ambiguities of implicit guarantees and contingent liabilities can be addressed in either or both of two ways. One option involves preparing a mutually consistent set of laws that more clearly defines the financial and legal interrelationships between institutions, and either expressly identifies or prohibits what are now implicit liabilities subject to different interpretations. Russia, through a series of laws, has moved in this direction, as has the Ukraine, which for the past two years has been drafting and exposing for comment a broad legal framework that will establish clearer rules for borrowing and institutional relationships. Meanwhile, in the absence of a revamped comprehensive framework, a practical option is to

incorporate in individual loan contracts, or bond covenants, explicit statements regarding the income streams, collateral, and guarantees that protect a credit, while also making explicit that no other back-up guarantees of any kind, not expressly identified, are available to the lender. Recent country case studies in the Ukraine, the Russian federation and Kazakhstan (OECD 2005b) show that these countries have made clear that there are no implicit guarantees on the part of national government. Parallel clarity regarding implicit guarantees from municipalities and other levels of government is conspicuously lacking.

For what purpose

Long-term debt should be made available for investment only (and not current account deficit). In Lithuania and the Slovak Republic, debt can only be incurred to finance capital expenditure. A special survey carried out as part of the Ukraine case study found that 20 per cent of municipal environmental utilities in *oblast* capitals had used bank financing to finance capital investment, and that such loans often extended to three-year maturities. As the case study points out, some investment opportunities - especially in energy saving or repairs to reduce distribution losses - have high rates of return, which make it possible to obtain investment paybacks in short periods. Under these conditions, even relatively short-term borrowing can be a realistic component of investment financing.

What collateral can be pledged by the local borrowers

In building a local credit market for environmental infrastructure investment, the initial foundation block is the revenue stream that a municipal utility generates from user charges or tariffs. It is well recognised that, with a few conspicuous exceptions, the revenue streams of municipal environmental utilities currently are insufficient to support intermediate or longer-term loans on their own. Local credit market development for the urban environmental sector therefore requires a twofold strategy:

- Strengthening tariff flows and making the improved revenue streams available as pledged security for borrowing; while also

- Identifying ways within the current legal and regulatory structure to support borrowing by supplementing tariff revenues with specified budgetary transfers or back-up collateral that reduces lender risk.

Some progress is being made on both fronts.

Subject to what limitations

The current set of national controls contains a mix of provisions designed to serve one or the other of the twin objectives of control and market-building. On balance, however, they are weighted toward control - often to an extent that discourages responsible growth of the sub-national credit market. There has been some movement away from a strict control orientation recently, as the sub-national governments debt crises recede in memory, and as local governments and municipal utilities build a more stable track record of loan repayments. Still, the combination of debt limit rules and procedural requirements for local borrowing approval remain an impediment to responsible market expansion. In contrast, the framework elements that would encourage prudent development of the local credit market have been slow to be put in place.

Mechanisms to mitigate risks

This legal framework has to be supplemented by mechanisms that reduce risk to lenders. Such mechanisms rely on:

- Strengthened operation and maintenance capacity at utility levels;
- Project preparation facilities to develop projects on a financially viable basis;
- Guarantees, reserve accounts (which may be partially funded by donors);
- Ring-fencing revenue flows to ensure pay back;
- Establishing municipal banks and municipal development funds;
- Pooling debt of smaller municipalities;
- Secondary markets (securing local loans, re-selling municipal bonds).

7.4.3 The broader context of public finance

The strategy regarding the development of local capital and financial markets has to be considered in the context of a global policy package, which should be compatible with the existing system on which other sources of finance are based, in particular intergovernmental transfers and fiscal autonomy.

The objective should be to diminish uncertainties about the resources available to sub-sovereign governments, to generate stable streams of revenues for these jurisdictions, and to allow these governments to adapt their revenues to their needs and financing strategies. This would significantly strengthen the creditworthiness of local governments, be they borrowers or providers of guarantees to other borrowers. The box below illustrates this point.

Box 7.6: Uncertain revenues and the limitations of the creditworthiness of Kazakh municipalities

In Kazakhstan, local credit financing for urban environmental investment has been sparse, consisting largely of international donor-financed loans that have been on-lent to the local level. Commercial banks routinely lend to municipal utilities in the water and wastewater sector, but much of this lending is used to finance short-term operating needs. Two principal obstacles have been identified as hindering greater use of sub-national credit in general and for the urban environmental sector in particular.

First, Kazakhstan has an intergovernmental finance system that captures "excess" funds from surplus municipalities for re-distribution to other locations. Although based in principle on expenditure norms, this system is frequently adjusted and neither predictable nor transparent in its impact. The effect is to introduce a large element of uncertainty into the revenue side of municipal budgets, as well as to reduce incentives for local revenue collection, since local "surpluses" are captured by the national government for re-distribution and lower local "deficits" reduce local governments' eligibility to receive re-distributive transfers. Both the uncertainty of their revenue streams and the disincentives for own-source revenue collection weaken local governments' creditworthiness as borrowers.

Second, Kazakhstan lacks a stable, predictable, and commercial tariff regime for local utilities. Formally, according to the current regulation in Kazakhstan, the tariff covers all operating costs and provides return on capital. Now, because of problems related to collection efficiency, actual consumption (versus norms), and methods of cost calculation, local environmental utilities are unable to recover full operating costs, much less capital costs, from user charges; cannot enter into longer-term agreements with municipal governments defining how future costs of service delivery and debt service will be shared between municipality and utility; and cannot identify for lenders the revenue streams that will be used to pay debt service. The inability to adjust tariffs autonomously at the local level, coupled with the unpredictability of municipalities' general revenues, has caused the EBRD to cancel all three of its municipal-level environmental financing projects in Kazakhstan as financially unviable. Domestic banks, however, have been active lenders to water and wastewater utilities under arrangements whereby the general *oblast* government supplements tariff-based revenue flows.

Source: EBRD (2004).

Other features of the financial context relate to the way governments, including environment administrations, mobilise public funds and related means of intervention to stimulate commercial banks' involvement in environmental finance.

Central budget funds can be mobilised in a way that will facilitate local governments' access to local financial markets in order to finance investment in environmental infrastructure. For instance, if the lack of access by banks to medium and long-term capital is the binding constraint to financing of investments, public funds could be best used by providing banks with medium-long term liquidity (*e.g*. master loans, deposits), earmarked for environmental, commercially-viable projects.

In addition, environmental administrations should carefully review the way they use public money to finance environmental investments in order to phase out practices and financing instruments that discourage banks from financing environmental projects. Indeed, public funds have sometimes been used to finance projects that could have been commercially viable. When financing environmental investments from the budget or extra-budgetary funds, administration at the national or regional levels usually preferred to offer grants covering 100 per cent of project costs or direct loans, rather than using banks as co-financiers or intermediaries. None of the public environmental funds in the region has been encouraged or required to co-finance projects with commercial banks (*e.g*. by matching grants) or to lend through them in order to increase the leverage effect of public money.

7.5 Annex:

7.5.1 Table of EBRD municipal water projects in EECCA

Op ID	Op Name		EBRD Signed	Finance	Operating Assets
TAJIKISTAN					
34583	Khujand Water Supply Improvement Project	Water and Sewage	0,9		0,0
			0,9		**0,0**
UZBEKISTAN					
29167	Tashkent Water Supply Improvement Project	Water and Sewage	7,7		0,1
			27,7		**1,1**
RUSSIAN FEDERATION					
1913	St Petersburg Water & Environmental Services Improv. Programme	Water and Sewage	6,8		6,8
3717	Kaliningrad Water and Environmental Services Project	Water and Sewage	13,7		1,6
13383	Yaroslavl Municipal Water Services Development Programme	Water and Sewage	13,5		1,4
17523	Surgut Municipal Services Development Programme	Municipal Services	37,3		14,3
19105	St Petersburg South-West Waste Water Treatment Plant	Water and Sewage	35,5		22,2
20699	Archangelsk Municipal Water Services Development	Water and Sewage	9,5		0,0
21962	St Petersburg Northern Waste Water Treatment Plant Incinerat	Water and Sewage	23,8		0,0
22163	Komi Municipal Water Services - Syktyvkar	Water and Sewage	9,6		0,0
			149,7		**46,3**
AZERBAIJAN					
1859	Baku Water Rehabilitation Project	Water and Sewage	8,7		8,7
			8,7		**8,7**
MOLDOVA					
2831	Chisinau Water Services Rehabilitation Project	Water and Sewage	12,2		12,2
			15,6		**15,6**
UKRAINE					
Direct					
2857	Zaporizhzhia - Water Utility Development & Investment Progr.	Water and Sewage	19,3		12,6
			19,3		**12,6**
Total			**221,9**		**84,4**

7.5.2 Institutional devolution of water in EECCA

	Governance	Ownership of the fixed assets	Tariff setting/approval	Investment planning	Capital and operational subsidies	Private sector involvement
Azerbaijan	Gosstroy (State committee for construction)	Municipalities?	Central gov. unified tariff for the country	Azersu	Central government?	
Armenia	State Committee of Water Economy (SCWE), Regulator of Public services, MoFE (MTEF), Water utilities (vodocanals) – joint stock companies (JSC)	Central government (100% shares in Yerevan and Armenina vodocanals), 3 JSC with regional participation (49%) in Armavir, Lori, Shirak	Regulator at country level, wholesale tariffs for JSC Armvodocanal, Tariffs for JSCs	Invest. plans are developed by SCWE and WU, approved by the central government in MTEF process	Central government	Private operators at Yerevan (Management contract then lease) and Armenian vodocanals, JSCs (central gov. 51% + regional gov. 49%) in 3 regions
Belarus		Municipalities (prevail)				
Georgia	Dept. of Infrastructure at the MoED	Municipalities	Municipalities	Municipalities	Municipalities	
Kazakhstan	Anti-Monopoly Agency (AMA), MoE and MoF	Municipalities (prevail), regions	Municipalities after review and approval by territorial bodies of the AMA	Municipalities and regions	Operation: –mun., reg., Capital : central, reg., mun	Many domestic operators (foreign operator withdrew from Almaty)
Kyrgyzstan		Municipalities	Municipalities		Municipalities	No
Moldova	Dept. of Construction and Territory Development	Municipalities	Municipalities after review by DCTD	Municipalities and central government		Few private investors and operators in rural WSS
Russia	(Recently dissolved) Dept. of Construction and Housing and Communal services at the Ministry of Reg. development	Municipalities (prevail), regions	Municipalities (prevail), regions (for private operator and for the WU owned by regions)	Municipalities and regions	Operation: mun., reg. Capital: reg., mun., (rare) Central	3 BOT projects in Moscow, private operators serve some 11% of urban population
Tajikistan	Municipalities TajikKommunServis	TajikKommunServis Dushanbe Municipality (for the city)	Municipalities and Anti-Monopoly Committee	Municipalities, central government	Central government	International operator in Dushanbe
Turkmenistan			Central gov. unified tariff for the country		Central government	
Uzbekistan						Domestic private sector in Khozerm region, foreign operators in Bukhara and Samarkand (service contracts)
Ukraine	State Committee of Housing and Communal services	Municipalities (prevail), regions	Municipalities and regions	Municipalities and regions	Municipalities and regions	Odessa City (lease), JSC in Kiev (but 100% owned by Mun.)

7.5.3 Environmental Financing Strategies and the FEASIBLE Model

a) The Concept

The environmental financing strategy methodology was developed in response to the limitations of national environmental strategies and action plans to adequately address associated financial issues. Environmental financing strategies aim to organise information in a form that facilitates decision making, whether in setting policies and targets, creating or strengthening institutions, or mobilising sources of financing. The key (and this was the major limitation of NEAPs) is to impart realism, and promote the concepts of affordability and cost-effectiveness in the implementation of environmental programmes.

An environmental financing strategy is a methodological framework for medium- to long-term strategic balancing of environmental and infrastructure service targets with available financing. It is applicable in the environmental sectors that require investment-heavy environmental infrastructure.[113]

The basic idea behind the environmental financing strategy concept is quite simple. There should always be a balance between the money needed to meet the target and the money available to do so. Applying this concept yields a number of benefits, which can most easily be explained through a stylised example as included in the Box 7.7 below.

[113] The methodology as implemented in the FEASIBLE model was developed by the OECD EAP Task Force. The model itself was developed by the Danish consulting company COWI in close co-operation with the OECD and with financial support by DANCEE.

Box 7.7: Financing strategies - an illustrative stylised example

Assume that the target in a country is to have mechanical and biological treatment of all municipal wastewater. Developing a financial strategy for the water and wastewater sectors would imply a need to estimate the costs of this target and establish a coherent strategy for its financing. The costs include not only the investment in new treatment plants in the towns which do not currently have such plants, but also, and equally important, the operation and maintenance costs of the existing and new facilities.

Assessing all these costs and subsequently comparing them with the available supply of finance may reveal that significant additional financial resources will be required to achieve the target. A financing strategy aims to close the gap between the financial requirements and the supply of finance currently available. That can happen through a combination of three types of measures:

- Cost reduction related to efficiency improvement.
- Increased supply of finance.
- Reduction of the target service level.

Through the analytical process, it may become clear that cost reduction through re-investments aiming at energy savings combined with the maximum affordable user charges will not be sufficient to close the financing gap. In that case, the conclusion may be that the target cannot be achieved or the time schedule for implementing the target has to be extended. In our example, it might be necessary to postpone the deadline for achieving wastewater treatment in the small and medium-sised towns.

Having this kind of formalised financial strategy will be very useful for stakeholders. For the authority that distributes investment resources, the result of the financing strategy gives an important input to the overall prioritisation of the investment funds. If no formalised financing strategy exists, there is a risk of ad hoc prioritisation and resulting non-optimal distribution of the investment funds. In such case investment in infrastructure may end up being wasted if there is, subsequently, no money for proper operation and maintenance.

In this way, the financing strategy can be used by many stakeholders to identify what they need to contribute in order to achieve a given service level. In our example, the municipalities may have to contribute through subsidies and/or by allowing user charges to increase to full cost recovery level or to the highest affordable level.

The process of preparing the financing strategy is as important as the technical calculation. By engaging all relevant authorities responsible for finance, economy, construction, environment – it promotes dialogue and eventually consensus on the specific actions that each should take. Thus the process of developing government programmes of action, if well organised, builds a bridge to effective implementation.

b) Application

The development of an environmental financing strategy aims to verify the realism and affordability of the general long-term objectives of sector policies and programmes. The strategy provides a long-term predictable framework for preparing mid-term investment programmes and for project pipelines in the public sector at different levels of government. It helps streamline the annual budget process and the preparation of individual capital investment projects.

Historically, environmental action plans have often been prepared without proper regard to how the identified activities should be financed and whether people could afford them. These issues have been particularly difficult to analyse realistically for large-scale environmental programmes that require heavy capital investments in public infrastructure and have a long time span. As a result, the subsequent implementation has often been impeded by resource constraints and characterised by interruptions, delays, cost overruns, conflicts over resource allocation, and ad hoc spending decisions. An environmental financing strategy assists in determining realistic and affordable service levels and in demonstrating the roles that different sources can play in financing the required expenditure. Thus, a well prepared environmental financing strategy increases the chances of successful implementation.

In most countries, if there is not enough money to reach policy objectives, policy makers try either to mobilise more money or to revise the objectives. In the EU candidate countries and EU member states, the targets of environmental and infrastructure development programmes are, to a large extent, externally determined by the EU laws. Under these circumstances, the purpose of the environmental financing strategy is to identify, in quantitative terms, the measures that would ensure an adequate supply of finance in the right places and times. This can help EU accession countries to design feasible implementation programmes for complying with EU directives.

An environmental financing strategy provides a framework for systematic costing of environmental targets in line with the best international standards and for assessing the implications of aggregated costs on liquidity and household affordability. It develops scenarios that show where the bottlenecks lie, and what kind of funding and other intervention may be needed. It offers a commonly understood language of communication among all relevant stakeholders involved in the development of the environmental and municipal infrastructure sectors, especially among environmental, technical and financial stakeholders.

The financing strategy methodology presented here is a strategic planning tool designed for governments operating in market economies, i.e. governments that are policy makers and regulators of economic activity, rather than the central planners and owners of all assets and projects. Developing financing strategies by the government does not imply that the government should finance all or most expenditure, or own all projects. In fact, relying on the public budget to finance e.g. operational and maintenance costs of collective infrastructure is not a sustainable solution. Users, financial markets, capital markets and local budgets all need to complement each other in effective financial packages. Governments, however, create the legal and regulatory framework in which private financial institutions operate. Governments have several instruments to stimulate or hinder their willingness to provide finance for public environmental infrastructure. Hence, the financing strategy framework is not only needed to plan the government budget, but also to plan and reform those government policy instruments that affect the capacities and decisions of other public and private financial agents.

Environmental financing strategies can be used by transition and developing countries as well as western market economies:

- To assess total investment needs of alternative policy targets.
- To bring about practical implementation programmes taking into considerations what the economy and households can afford.
- To identify investment projects and build short- to medium-term project pipelines.
- To identify the policies and measures which are necessary to ensure effective financing of the project pipelines.
- To support claims of environment and other ministries responsible for municipal services on the public budget.
- To support transition country requests for donor and IFI financing.
- To measure and report on the progress in the implementation of programmes and policies.
- Environmental financing strategies are also used by donor countries and IFIs:
- To check if local co-financing commitments are realistic.
- To co-ordinate different donor and IFI programmes.
- To identify country pipelines of supported investment projects.

- To provide an additional dimension (bigger picture) for appraisal of the financial viability of individual investment projects.

An illustrative example of several of these points is provided in Box 7.8 below, which summarises the role of the environmental financing strategy for Georgia in linking feasibility studies and macro-level planning.

Box 7.8: Environmental financing strategies - linking feasibility studies and macro-level planning

Environmental financing strategies can help link feasibility studies at the project level with macro-economic and budget planning, a linkage that is often not examined. Although both municipalities and IFIs analyse the affordability and liquidity related to individual investment projects, environmental financing strategies provide a framework for systematic aggregation of these and other projects at regional and national levels in order to assess their joint implications for domestic policies and budgets.

This value added was clearly demonstrated in Georgia, where the World Bank was developing a project for rehabilitation of the water and sanitation system in Tbilisi, while the European Commission was encouraging rehabilitation of the wastewater treatment plants along the Black Sea coast. Each party was making independent assumptions about the availability of co-financing from the central budget of Georgia, without full information of the aggregated claims on the consolidated budget. Merging these two ambitious investment programmes, as well as other programmes related to water services in other parts of Georgia, into the framework of an environmental financing strategy helped identify, in quantitative terms, the difficult trade-offs that the Georgian budget planners would face if they wanted to fulfil all these commitments.

c) Implementation to Date

To date, about a dozen environmental financing strategies have been developed in EECCA countries and regions covering water supply, wastewater treatment and municipal solid waste. An overview of these strategies is provided in Table 7.5.

Table 7.5: Overview of environmental financing strategies in CEE and EECCA countries

Country	Region	Sectors covered	Finalised
EECCA			
Georgia	National	WS & WW	2001, 2005
Moldova	National	WS & WW	2000
Russia	Kaliningrad	WS & WW	2002
	Novgorod	WS & WW	2000
		MSW	2002
	Pskov	WS & WW	2001
	Rostov on Don	WS & WW	2003
	Rostov on Don	MSW	2003
	Yaroslavl	MSW	2003
Kazakhstan	National	WS & WW	2001
	Eastern Kazakhstan Oblast	WS & WW	2003
Ukraine	National	WS & WW	2003
Armenia	National	WW	2003
CEE			
Lithuania	National	WS, WW & MSW	2001
Latvia	Riga	MSW	2002
Other Transition and Developing Countries			
China	Sichuan Province	WW	2003

Note: WS (Water supply), WW (Wastewater treatment), MSW (Municipal Solid Waste).

d) Applied methodology

Most of the financing strategies have been developed using the modelling-based FEASIBLE methodology. However, the financing strategies for Kaliningrad and Lithuania have been developed without the use of FEASIBLE using a more project based approach.

While the project based approach can achieve a higher degree of accuracy, its need for project level data limits its applicability to smaller countries/regions and centrally-planned, sectors and makes it more

difficult to do the "what-if" scenario analysis, which has proved to be useful for policy development and implementation when applying FEASIBLE.

e) The FEASIBLE Model

A major challenge when developing environmental financing strategies in EECCA is the lack of available data on investment and rehabilitation needs at the individual facility level. In order to overcome this challenge and enable successive iterations of alternative policy combinations in an environment where detailed and credible data is scarce, a software tool was created to enable realistic estimation of total financing needs by aggregation of individual needs.

FEASIBLE is a software tool developed to support the preparation of environmental financing strategies for water, wastewater and municipal solid waste services. The first version of FEASIBLE, a spreadsheet based version for water and wastewater, was released in 2001. FEASIBLE Version 2 is a stand alone application based on a database.[114]

The present chapter provides a brief description of FEASIBLE, its main functions, what it can and cannot do. A detailed description of the model is available in "The FEASIBLE Model, Version 2, User Manual & Documentation, 2003".

Using FEASIBLE

FEASIBLE can be used to facilitate the iterative process of balancing the required finance with the available finance. It provides a systematic, consistent and quantitative framework for analysing feasibility of financing environmental targets. A computerised model, FEASIBLE may be used to analyse "what if" scenarios that simulate what would happen if some present policies were changed. FEASIBLE presents the financial impacts of these changes in a systematic and transparent manner.

FEASIBLE requires specific, technical city-by-city data on the present size and state of infrastructure. It also requires that policy makers specify their objectives in terms of specific, measurable and time-bound targets. FEASIBLE calculates the investment, maintenance and operational expenditure that would be required to reach specific targets determined by local policy makers. Targets and objectives are not entered directly, but expressed in terms of selected technical measures. The translation from objectives and targets to technical measures is done as a pre-modelling exercise by the user. FEASIBLE calculates expenditure needs under different assumptions concerning input data and parameters related to:

- Objectives and targets.
- Technical measures.
- Macro-economic projection.
- Technical and price correction coefficients.

The expenditure requirements are subsequently compared with forecasted levels and sources of finance. All sources of finance (public, private, domestic, foreign, etc.) and all financial products can be simulated.

FEASIBLE compares the expenditure needs with the supply of finance on a year-by-year basis and computes cash flow forecast, i.e. financing deficits or surpluses, both annual and accumulated. Not only the magnitude of total cash flow deficits/surpluses is presented. The structure of the financing gaps is also shown, e.g. coverage of capital investment expenditure by various funding sources that can be used to

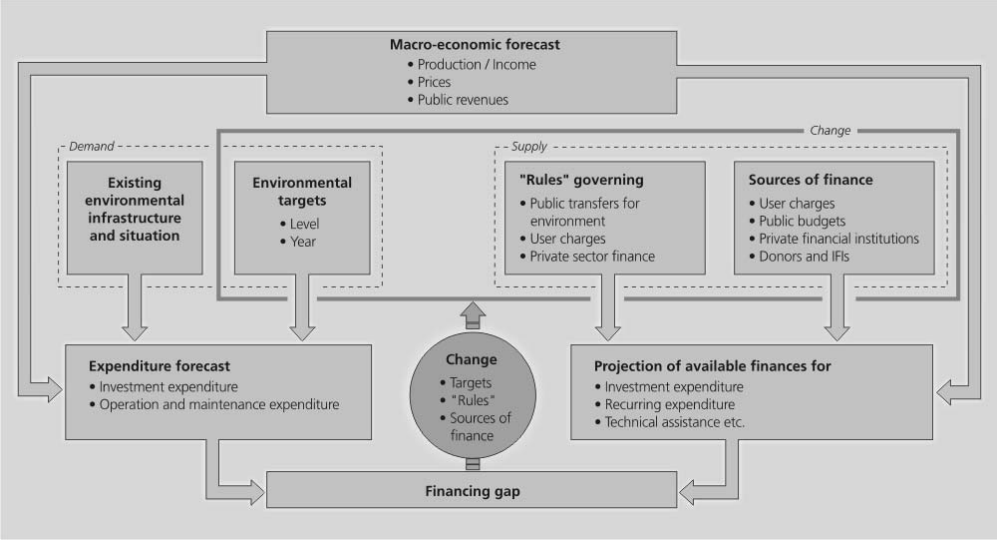
[114] The FEASIBLE model is freeware and can be obtained through the web pages of the OECD, DEPA, and COWI.

finance fixed assets, operation and maintenance costs, etc. These results help policy makers understand where the main bottlenecks are, as well as where, when and what additional policy interventions are needed to facilitate effective financing of infrastructure development programmes.

An environmental financing strategy can be developed through series of iterative runs of FEASIBLE with different assumptions describing targets and measures to mobilise additional finance or to re-allocate available funds. This process engages many policy makers and local experts who should reach a consensus, first on targets and then on the most realistic package of specific measures that can mobilise sufficient financial resources to meet the desired targets. The use of FEASIBLE introduces an additional layer of realism into this multi-stakeholders dialogue. In FEASIBLE, any increase in supply of finance is compared with what the national economy, public budgets[115] and households[116] could potentially afford. This comparison serves as a test of whether suggested policy options are realistic. If affordable measures to mobilise additional finance cannot be found, FEASIBLE allows environmental or service level targets to be changed in order to simulate the effect of decreasing the demand for financing.

The chart below provides a schematic overview of the iterative process of the FEASIBLE methodology.

Figure 7.10: Overview of the FEASIBLE environmental financing strategy methodology



This iterative process informs decision makers how to use the limited funds of the public sector to achieve the biggest effect, and what needs to be done to mobilise sufficient financing from private and foreign sources. In several countries, it has proven to be a useful tool in the dialogue between the authorities responsible for infrastructure and environment, on the one hand, and authorities responsible for

[115] Additional public expenditure are assessed on the basis of detailed analysis and forecast of macroeconomic developments, examination of historical budget execution records, review of relevant expenditure patterns and trends in comparable countries, as well as extensive discussions of the medium and long-term budgeting and investment planning with national, regional, and local authorities.

[116] Households' capacities to sustain increased user charges are assessed against internationally adopted benchmarks for countries of similar income levels. In most of the environmental financing strategies covered by this review, the benchmark level for household water bills is established at 4 per cent of average household income, under different assumptions on rates of future income growth.

finance and economy, on the other. It has also been used to support negotiations on priority investment projects financed by IFI loans or through bilateral co-operation programmes.

Box 7.9: FEASIBLE - data need

The FEASIBLE model requires the user to collect and enter basic city-by-city and global data on the present infrastructure in the sectors covered by the financing strategy, including:

Basic demographic data (population, income, local price levels).

Existing service level (coverage, quality, capacity, technologies).

Existing supply of finance (user charges, public budgets, international sources of finance).

Environmental and service targets.

Although the model is able to run with a limited input and will propose default levels for some parameters, the value of the output increases with the accuracy of the data input

The FEASIBLE methodology is quite specialised, and thus cannot serve all purposes. For example, it cannot optimise the selection of technical measures in terms of cost-benefit ratio or cost effectiveness. Box 7.10 below highlights the limitations of FEASIBLE.

Box 7.10: FEASIBLE - what the model cannot do

The FEASIBLE model cannot:
Substitute for feasibility studies.
Substitute for cost-effectiveness optimisation.
Substitute for priority setting and cost-benefit analysis.
Substitute for good policy making and effective implementation.
Substitute for willingness-to-pay analysis

It should, furthermore, be noted that proper use of FEASIBLE and interpretation of model results require extensive knowledge of the technical and financial aspects of the sectors analysed, as well as familiarity with computers. Hence, in some countries, local consultants and staff of beneficiary ministries will need to be trained in the use of FEASIBLE in order to be able to apply it appropriately.

Structure and Main Functions of FEASIBLE

FEASIBLE Version 2 enables analysis of the following sectors:

- Water supply and treatment.
- Wastewater collection and treatment.
- Municipal solid waste management.

Each module can be run independently of the others.

FEASIBLE is structured into four main components:

- **General information,** which contains the definition of the geographic area covered, subdivided into regions, municipalities and groups of municipalities, local cost correction coefficients, and the basic macro-economic and financial data underlying all model scenarios.

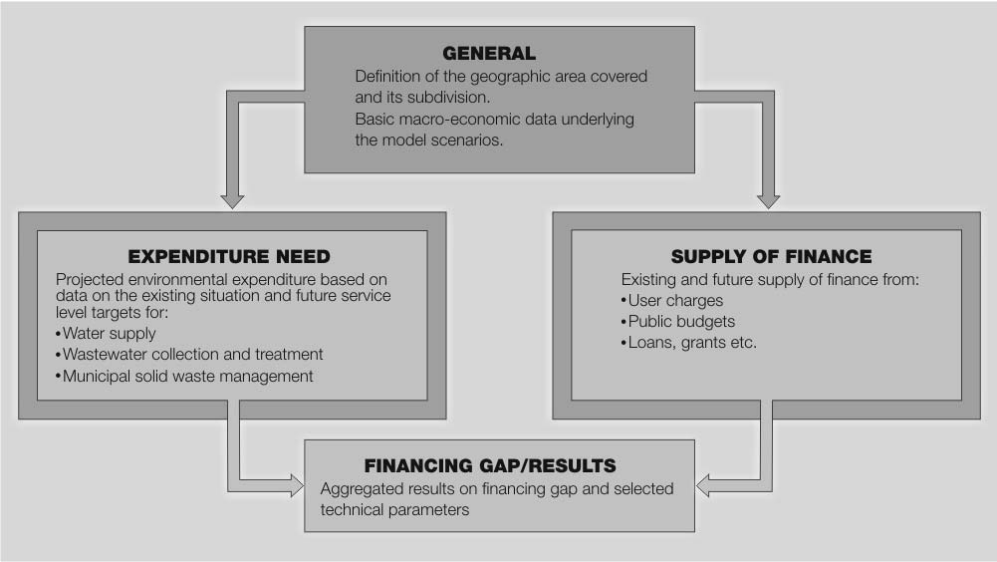
- **Expenditure need**, which calculates the projected environmental expenditure (for operation and maintenance, re-investment, renovation and new investments in environmental infrastructure), based on data on the existing situation, service level targets entered by the user and cost correction coefficients.

- **Supply of finance and affordability**, which describes the existing and future supply of finance from various sources and in various forms, for example, user charges, public budgets, loans, grants, etc. It also allows the user to define an affordability limit to which the potential increase in the corresponding source, for example user charges, will be constrained.

- **Financing gap/results**, in which aggregated results on financing gap and selected technical parameters are calculated and displayed in tabular and graphical format.

These components are composed as illustrated in Figure 7.11 below.

Figure 7.11: Structure of FEASIBLE



Water supply

The key parameters available to describe the service level and set targets for the water supply system are:

- Type of water intake and treatment technology.
- Volume of water production.
- Coverage of water supply (percentage of the population covered by central or local water supply).
- Renovation of intake, treatment and transmission system, as well as distribution network and service connections.

The water supply technologies available in the model are:

Urban	**Rural**
• Groundwater intake, no treatment. • Groundwater intake with normal treatment (chlorination, coagulation, sedimentation and filtration). • Surface water intake with normal treatment (chlorination, coagulation, sedimentation and filtration). • Surface water intake with advanced treatment (normal treatment + ozonation and filtration in a granular activated carbon filter).	• Hand pumps, groundwater. • Electrical pumps, no treatment, groundwater. • Electrical pumps, treatment, groundwater.

Wastewater treatment

The key parameters available to describe the service level and set targets for the wastewater treatment system include:

- Type of wastewater treatment technology.
- Wastewater collection rate (percentage of the population connected to sewer system).
- The share of the population connected to a wastewater treatment plant.
- Renovation and upgrading of pumping stations (increasing energy efficiency).

Table 7.6: Wastewater treatment technologies available in FEASIBLE

Urban	Rural
• Mechanical. • Chemical (phosphorous removal). • Biological. • Nitrification. • Denitrification. • Nitrogen removal.	• Septic tanks. • Reed bed. • Biological sand filters. • Stabilisation ponds.

Municipal solid waste

The key parameters available to describe the service level and set targets for the collection municipal solid waste are:

- Coverage of collection system (per cent of population).
- Type of collection system implemented.

For treatment/recovery, FEASIBLE offers different types of treatment or recovery facilities, and the user is required to distribute collected waste to these facilities.

Table 7.7: Municipal solid waste collection and treatment/recovery technologies available in FEASIBLE

Waste collection	Treatment/recovery
For households: • Kerbside, ordinary collection. • Kerbside, dual collection. • Drop-off, recycling station. • Drop-off, take back. • Drop-off, decentral. bring banks. • Kerbside, recyclables collection. For commerce, industry and C&D: • Container ordinary collection. • Container recyclables collection.	• MRF - Mixed waste. • MRF - Recyclables. - Mixed recyclables. - Source separated recyclables. • MRF - WEEE. • Composting plant. - Windrow (garden waste). - In-vessel composting (food waste). • Bio gasification plant. • Landfill. - EU. - Controlled landfill. - Dump. • Incineration plant. - New - heat/electricity. - New - heat. - Old. • HHW treatment facility. • C&D recycling facility.

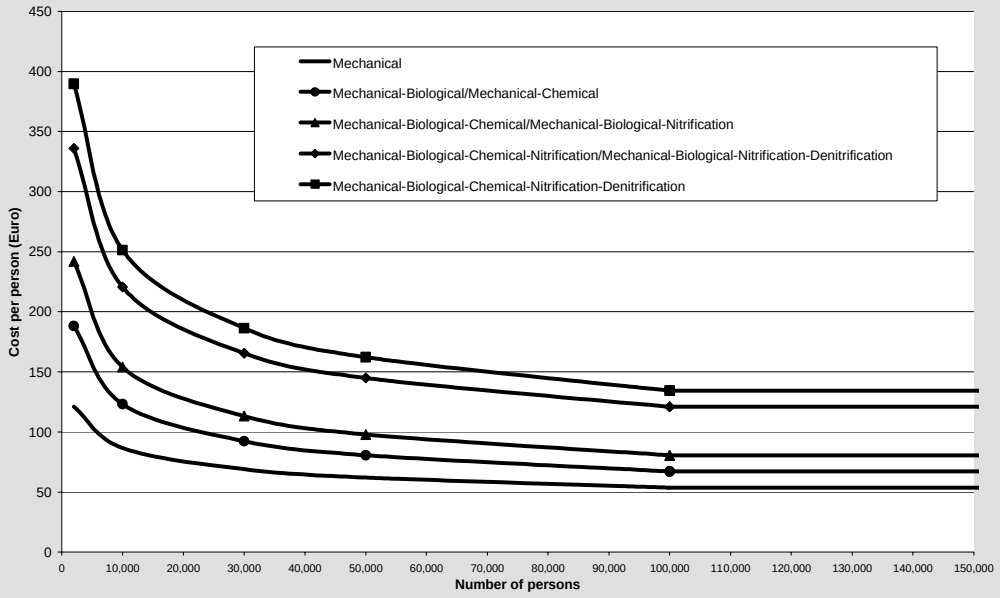
Generic expenditure functions

The calculation of the expenditure need is based on a number of generic expenditure functions that are incorporated into FEASIBLE. These expenditure functions allow easy estimation of the costs of alternative service and environmental targets with a limited data collection effort. They cover a number of technical measures within each sector.

Box 7.11: FEASIBLE - generic cost functions and local cost correction

FEASIBLE calculates the cost of specific technologies based on generic cost functions and local cost correction.

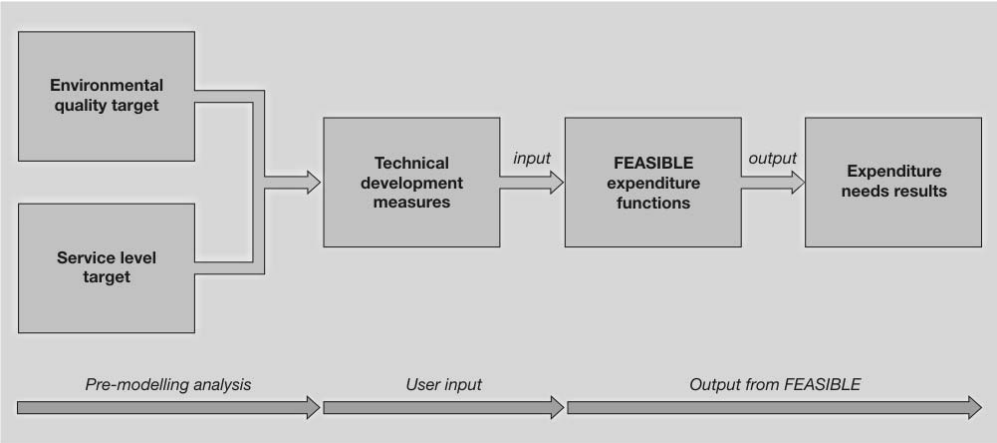
The generic cost functions estimate unit cost as a function of the type and the capacity of a facility. These functional relationships were derived from a number of stylised feasibility studies and are expressed at the international price level. The graph below shows just one example of such cost functions where the unit investment expenditure for alternative wastewater treatment technologies are shown as a function of the number of persons connected to the treatment facility. These expenditure functions are expressed in international prices and reflect the typical distribution on main cost components (equipment, materials, design, labour, energy, land, etc.) in European utilities. Each cost component has its own cost correction coefficient which can be used to adjust the international cost levels to local cost levels.



This means that the existing situation and the target situation are mimicked in the model through the selection of specific technical measures which would lead to the fulfilment of a given target.

A very important pre-modelling exercise therefore consists in translating environmental quality or service level targets to technical measures as illustrated in Figure 7.12 below.

Figure 7.12: Phases in the use of FEASIBLE



Hence, when modelling the existing situation in FEASIBLE, the user should select technical measures that are as close as possible to those actually applied in the relevant areas (regions, municipalities or groups of municipalities). Likewise, when modelling a target, the user should select technical measures that would lead to the achievement of the target according to the pre-model analysis.

The expenditure needs are calculated in international prices by the model, and a set of price correction coefficients is used by FEASIBLE to convert results from international prices to local prices. The user is, therefore, required to enter data concerning the local cost of key cost components, such as land, power, fuel, labour, equipment, building materials, etc.

In the supply of finance component, the user is required to specify data on the existing financing situation, as well as the future supply of finance. The forecast of the future supply of finance is done by the user as a pre-model exercise. The supply of finance is specified on a year-by-year cash-flow basis.

FEASIBLE distinguishes between the following sources and instruments of financing:

- User charges (from households, industry or other consumers).
- Public budget.
- Grants (from several sources).
- Loans (from IFIs or commercial banks).
- Other.

The financing gap/results component provides aggregated results on the financing gap, expenditure needs, supply of finance and selected technical parameters. The user may choose to see the gap for specific expenditure types and sources of supply of finance. Box 7.12 below shows some examples of types of financing gaps that may be analysed.

Box 7.12: FEASIBLE results - Examples of types of financing gaps

Total financing deficit/surplus Comparing the total expenditure need with the total supply of financing reflects the balance (or lack of balance) between the service level ambitions and the available financing. Cost recovery deficit/surplus Comparing the O&M expenditure need with the supply of finance from user charges reflects the extent to which tariff payments by direct users are sufficient to cover the necessary operation and maintenance of the infrastructure. Comparing the O&M and re-investment expenditure need with the supply of finance from user charges reflects the extent to which tariff payments provide a contribution to operation and renewal of fixed assets in the infrastructure. Re-investment deficit/surplus Comparing the O&M and re-investment expenditure need with the total supply of finance reflects the extent to which the total available financing is sufficient to cover the necessary operation, maintenance and re-investment. If an accumulated gap (backlog) appears, the implication is that the infrastructure will deteriorate compared to the base year. Investment expenditure deficit/surplus Comparing the expenditure need for renovation, upgrading and extension of the service level with the supply of finance targeted at capital expenditure reflects the balance between needed investments and financing available to finance such investments

Due care should, however, be taken when interpreting the aggregated financing gap in a country or large region with numerous independent utilities in the environmental sector covered by the financing strategy, as user charges typically are not transferable across administrative jurisdictions. Hence, an aggregated balance may well reflect local imbalances. For this purpose, FEASIBLE allows analysis of financial surpluses/deficits at more disaggregated levels (groups of municipalities or individual cities).

Further reading

Readers who are interested in more detailed background material on environmental financing strategies and their practical application or on the computerised decision support tool FEASIBLE should refer, in particular, to the following publications:

- The FEASIBLE Model, Version 2, User Manual and Documentation, 2003.

- Financing Strategies for the Urban Water Sector in the NIS: Overview, Fifth Meeting of the NIS Environmental Finance Network, 21-23 May, 2001, OECD EAP Task Force.

CHAPTER 8 REFORM OF WATER SUPPLY AND SANITATION IN EECCA AT THE MUNICIPAL LEVEL

8.1 Executive summary

In Almaty in 2000, economy/finance and environment ministers of EECCA called for the development of a new institutional framework for the water sector in their countries. *Decentralisation* was acknowledged as an important means for fostering improved performance in the provision of water and sanitation in EECCA. This entailed devolving responsibility for water service provision from national to local level and strengthening the related capacity of local authorities - in particular locally-elected governments - in order to assume their new responsibilities. While responsibilities for the sector now have been devolved to municipalities in most EECCA countries, this has still not generated the expected benefits for the population.

This paper identifies some of the reasons why this is the case and proposes remedies for addressing this situation. Specifically, it stresses that *decentralisation is a process*, and that transition involves a number of dimensions that have to be carefully coordinated. Central governments, local authorities, and utilities would benefit from adopting more comprehensive and coherent strategies that address the sequencing of actions.

Decentralisation should be organized on an appropriate scale, in order to capture the potential efficiency gain associated with it, while avoiding the consequences of excessive fragmentation. When local jurisdictions are too small to properly operate the water supply or a sanitation infrastructure, incentives should be provided to either amalgamate municipalities into larger units or to develop inter-municipal co-operation. This might be appropriate to remedy the recent, and not necessarily effective, dynamics towards smaller jurisdictions in Russia, and the existence of poor rural areas in the region.

Municipalities must develop a greater sense of ownership of the policies they implement at their level. This is a key condition for the success of reform, and relates to the broader issue of governance of the water supply and sanitation sector, in particular public control. In many cases, overlapping objectives and unrealistic plans have weakened local authorities. Good planning is a key factor – but planning that emphasizes the achievement of results rather than the long, unstructured, and volatile wish-lists that characterize planning in many EECCA municipalities today.

Effective planning is particularly important for water supply and sanitation (WSS) reform as it entails infrastructure development, heavy investment costs, a long payback and low return on equity. Accordingly, local authorities in EECCA should commit to, and receive support in order to:

- Set consistent, long-lasting objectives for WSS (demand management, quality of service, infrastructure rehabilitation and development), which should form part of a city or regional master plan. This would benefit from a dialogue with the public;

- Elaborate realistic financing strategies over the medium term. Such strategies should rely on a thorough analysis of expenditures (based on a reliable estimate of the state of the infrastructure), and an in-depth analysis of various sources of finance (tariff levels and collection rates, intergovernmental transfers, debt). Such an endeavour would benefit from the methodological and practical experience of financial strategies carried out at national or regional levels of government. The work of the EAP Task Force to support various EECCA countries and regions has generated important lessons in this regard (these issues are discussed further in document ENV/EPOC/EAP/MIN(2005)6);

- Articulate these strategies to medium-term investment planning, conceived as a tool to anticipate treasury gaps, and to inform the eventual revision of action plans. In EECCA, very few local governments plan their budget and investments over more than one year, while doing so would help them to take action on an informed basis and to attract more finance.

Again, smaller municipalities, particularly in rural areas, will find each of these steps more difficult due to the specific capacity constraints that they face and the more serious deterioration of infrastructure (these issues are discussed further in document ENV/EPOC/EAP/MIN(2005)4), but the questions that need to be answered remain the same: what kind of infrastructure? How to finance it and to attract resources?

The relationship between local authorities and utilities in charge of the provision of the WSS services should be built on a structure of incentives that reward good performance. A performance-based contract between municipalities and the utilities is a potentially important tool in this perspective. However, performance contracts are still rare in EECCA, and only a few municipalities have implemented such contracts, mostly in the framework of arrangements with private sector participation. While the intention with these contracts is positive, many of them contain important deficiencies. These include a lack of definition of the scope of the contract, of investment and financing plans, targets for service provision, or clear performance targets. The EAP Task Force has elaborated and started to disseminate "Guidelines for performance-based contracts between municipalities and utilities", which could provide guidance on this issue (see Annex 8.6.2).

Utilities should strengthen their efficiency by building and bringing in management expertise, including, as appropriate, from the private sector. Expectations were very high that utilities would be agents of change. In particular, in 2000, it was anticipated that private service providers would invest their own money, and disseminate modern forms of management of water and sanitation services. These expectations have not been realized. Experience shows that private investment is not a serious option in EECCA, apart from in selected capitals and big cities. International firms have proved to be more risk averse than in the past and have applied particular caution in the EECCA region. Most private operators now favour management contracts as a first step in potentially greater involvement in the EECCA water sector, rather than more ambitious contractual arrangements where their risk would be greater (*e.g.*leasing and concession contracts).

The Russian Federation and Kazakhstan are exceptions with regard to private sector participation. In Kazakhstan, there is significant domestic private sector participation in the water utilities serving small and medium-sized towns. Nearly 40 per cent of water utilities serving such towns are privately operated. Most of these arrangements involve the full transfer of physical assets into private ownership. Usually, private investors are local entrepreneurs. In Russia, following political signals that private sector participation in the communal services sector was welcome, domestic companies established contracts in more than 20 large cities, representing about eleven per cent of the urban population. However, most of these contracts are short-term leases and it is uncertain how many of them will be converted into longer term arrangements. If domestic private sector operators manage to stay on the market and to deliver improved water services to the population, they could be considered as an appropriate alternative to existing arrangements.

The involvement of the private sector is just one among several options to help improve the efficiency of water utility operations. Alternatively, utilities could seek to improve their staffing by hiring managers from other sectors, or they could seek to build capacity into their own staff, *e.g*. through twinning arrangements with well-managed utilities in OECD countries that would provide the necessary experience.

In conclusion, decentralisation must be a balanced process, where the three main types of institutions involved (the central government, municipalities, and utilities) develop complementary capacities in a coordinated manner. The quality of the relationships between the state and the municipalities, on the one hand, and between the municipalities and utilities on the other hand, is a condition for successful decentralisation. This is a process that will take many years, if not decades, in EECCA countries.

8.2 Introduction

The Almaty Guiding Principles suggested that responsibility for providing water supply and sanitation services should be transferred to municipalities. They also recommended that the roles of local governments and water utilities be clarified, and that utilities be established as autonomous, commercially-run entities.

The joint conclusions of the Almaty Ministerial Consultation, in October 2000, stated that the reform of the water supply and sanitation sector should include:

- Decentralising responsibility for water service provision from national to local level, and strengthening the related capacity of local authorities, in particular locally-elected governments;
- Transforming water utilities into autonomous, commercially-run institutions under strict supervision of public authorities;
- Promoting a more balanced development of urban waste water treatment relative to water supply, particularly in small and medium-sized towns;
- Engaging the public directly in the reform process and making adequate provision for consumer protection;
- Establishing the sector on a financially sustainable basis, while addressing the needs of poor and vulnerable households;
- Creating incentive to substantially increase efficiency in the use of water by consumers and in the operation of *vodokanals*;
- Creating conditions for private sector participation within an appropriate regulatory framework.

While most EECCA countries devolved responsibilities for water supply and sanitation services and infrastructure to municipalities early on in the reform process, this was frequently done without appropriate changes to the institutional set-up, organisational structure, and management of the sector.

This paper focuses on this aspect of the reform of WSS in EECCA at the municipal level. It makes the case for a renewed and optimised dialogue between the municipality and the utility, informed by adequate data and supported by appropriate tools. The rationale for this dialogue is as follows:

- Municipalities have to make choices as to what level of service they want to deliver to their citizens. This requires strategic and financial planning, which is best obtained by setting clear responsibilities, having an understanding of the needs of the beneficiaries, reliable data on the state of the infrastructure, and sound assessment of the financial resources available (section 2);
- The relationship between the municipality and the service provider should be organised in a way that promotes performance and the efficient use of available resources. Conditions of access to assets, and the responsibilities for investment should also be clear (section 3);
- This in turn requires that the utility improves its capacity to enter into a constructive dialogue with the municipality and strengthens its management skills (section 4). Private sector participation might be considered in this perspective.

This paper is based on a thorough understanding of the reforms implemented and of the current state of the institutional, contractual, and managerial dimensions of the sector. While it acknowledges positive dynamics and progress, it highlights key problems and suggests ways and tools to tackle them.

8.3 Water supply and sanitation as a municipal policy

The first consequence of the devolution of responsibility for WSS to subnational levels of government is that municipalities have to make choices about the level of service to deliver to citizens. This requires informed decision-making based on:

- An appropriate understanding of the needs of and demand for service by the population;
- A reliable evaluation of the current quality of the service and of the state of the infrastructure;
- A realistic assessment of what can be achieved, in a given time horizon, based on available resources.

The policy dimension of WSS at the local level includes the establishment of minimum standards regarding the quality of services, and establishing who gets access to the services and under what conditions. A key issue should be that moves towards cost recovery do not unduly penalise the poor.

Strategic and financial planning is a way to articulate this information into a coherent decision-making process.

8.3.1 The need for strategic planning

In most EECCA countries, the level of service does not meet the needs of the population. Existing infrastructure is inefficient, non-optimal, and often oversized. The reasons for this are mostly historical (see Box 8.1).

Box 8.1: Historical reasons for oversized and inefficient infrastructure in EECCA

1. Mistakes in forecasts produced by Soviet central planning bodies and systemic weaknesses of soviet master planning

Many City Master Plans approved in Soviet time were based on a quick growth of demand for water and other communal services from the economic agents and a growing population. While the infrastructure (or some parts of it) was built to meet anticipated future demand, the population did not meet the forecasted level. Examples of such failure to anticipate demand for services are numerous.

In Surgut City, Russia, some parts of the water and sanitation infrastructure were built anticipating population growth to above 500 000 people by 2005, while in fact the population of the city is only around 282 000;

In Armenia, the wastewater collector on the Sevan lake shore and the wastewater treatment plant (WWTP) at Kahsi village were built anticipating a boom of tourism and recreation business in the area that has never materialised. The WWTP was found to be oversized by factor 3-4.

In some territories, the structural change induced by the transition to market economies has resulted in major geographical shifts of economic activity and population. Some cities, which grew fast over the 1960-1980 period, stopped growing or even lost a substantial portion of their population (e.g. cities built around large defence industry enterprises), while the municipal infrastructure that they inherited was designed on the basis that the original trend would continue.

Many cities that emerged following fast industrial growth in 1950-1980 were developed under the supervision of several central ministries (so called, vedomstvennoye zhilje). Also, different parts of cities and their infrastructure were built and operated without any city master plan or even proper co-ordination between the organisations involved in the city development (so called, vedomstvennaya razobschennost'). Infrastructure was often operated by different entities, and in the 1990s, when those infrastructures were transferred to municipalities, the new owners found that the infrastructures were inefficient.

- Again, **Surgut City** illustrates this situation. The city was developed by almost 80 ministries and agencies; some of them had built inefficient boilers, burning crude oil, which had to be closed down by the municipality as soon as it became the owner of the infrastructure.

2. Forecasts of demand based on inflated consumption norms

Consumption norms often were at 300-600 litres per consumer per day (lcd), that is at least twice the actual consumption in the EU. The rise in tariffs and the development of metering contributed to a decrease in actual consumption, which was not reflected in the forecasted demand for water and sanitation when the systems were designed.

3. Poor construction standards

Poor design, based on inefficient technical solutions that generate high unit energy consumption, short lifetime of the assets, high labour intensity, and high maintenance cost, resulted in inefficient and inappropriate infrastructure. Again, in many countries, the energy crisis in the 1990s that followed the collapse of the Soviet Union, revealed the impossibility of sustaining operations of the inefficient infrastructure.

4. Rigid environmental standards

Environmental standards were (and often still are) excessively stringent compared to international standards. They added to the cost of investment and operation.

The cost of operating and maintaining the existing (and often oversized) infrastructure is very high, and can not be met by local and regional budgets, nor by the resources of the utilities. Moreover, merely replacing outdated, inefficient equipment (*e.g.* pumps, boilers) will not necessarily support efficiency.

Optimising and rehabilitating the infrastructure requires a huge amount of resources, which should be used most effectively and cost efficiently. Strategic and financial planning is required:

- For infrastructure optimisation (integrating different parts into a unified system and re-designing the system; adjusting the present oversized infrastructure to actual demand for service), modernisation (improving the technical status, energy and labour efficiency, hydraulic regulation; reducing leaks and losses), and development (increasing coverage to meet social targets, including the Millennium development goals, the MDGs);

- To integrate capital investment plans into the short and medium-term public budget, in line with public finance reform; and to switch from a single-year budget to a medium-term expenditure framework (MTEF) programme, and result-oriented budgeting.

8.3.2 Perspective for strategic planning for the WSS in EECCA

a) Status of, and obstacles to strategic planning in EECCA

Recent studies show that the state of strategic planning in EECCA countries is far from ideal.

Only a few municipalities in EECCA have updated existing (from the Soviet era), or have developed new city master plans, including infrastructure development. Few cities have either set goals for the quantity and quality of communal services that they want to attain, or have developed a demand management plan. This situation results from the following:

- Lack of reliable data on the state of infrastructure, due to weaknesses in the information management, reporting, and monitoring systems. Water, energy, and technical audits are undertaken irregularly and seldom, if at all. The old data (from the Soviet past) is often misleading, as the infrastructure substantially deteriorated over the 1990s due to lack of financing for maintenance, repair, or replacement of worn-out assets. Some assets registered in accounting books are not operational or even do not exist any more;

- Lack of reliable forecasts for demand for water and sanitation, due to lacking or inaccurate demographic and socio-economic forecasts. International migrations (*e.g.* from Armenia, Azerbaijan, Moldova, Tadzhikistan, and the Ukraine to Russia) and migrations from rural to urban areas (*e.g.* to Almaty, Astana, Usk-Kamenogorsk, and oil provinces in Kazakhstan to Bishkek City in the Kyrgyz Republic, etc.) are not properly accounted for in city master plans. In addition, EECCA municipalities are seldom informed about strategic plans of private businesses (*e.g*. plans of industrial companies to build new/extend existing facilities, which could attract labour and generate additional demand for water and sanitation);

- Lack of planning capacity.

b) Articulating planning and public finance

Strategic investment plans have to be translated into local budgets. This requires both an adequate accounting system in municipalities, and a capacity to plan investment over a period of three to five years.

Some EECCA countries still apply a post-Soviet system of costing investment projects on the basis of base year 1984 prices, applying superficial indices reflecting inflation accumulated since 1991. This often results in highly inflated estimates that do not reflect market prices for construction. This costing method is a serious obstacle for effective and cost-efficient use of public funds for infrastructure development.

To date, the budget preparation and monitoring system is neither task nor result-oriented; rather, it is focused on spending money in accordance with specified budget lines.

In addition, the current accounting system offers weak incentives to sub-national levels of government for responsible, long-term management of financial resources. All revenues and expenditures are allocated annually. Neither a long-term vision of investment needs, nor a forecast of the municipality's future financial situation exist. Investment planning for municipal infrastructure is discretionary, and focused not only on short-term outputs, but also on priorities that are often too numerous and too volatile. There are no clear and transparent criteria for appraising and prioritising investment projects that will be financed from municipal budgets.

There is also a need to develop capacity in the use of local expenditure management and investment planning tools, such as mid-term budget framework (three to five years) for preparing transparent and task-oriented annual budgets and capital improvement plans. EAP Task Force experience confirms that very few municipalities in EECCA currently use multi-year investment planning.

The advantages of multi-year investment planning are manifold:

- It helps to ensure that investment plans are supported by the appropriate financial resources, thus providing for a realistic programme;

- It strengthens consistency in yearly budgetary decision-making;

- It helps attract additional finance (both domestic and donors funding), and leverage domestic and foreign finance to municipal investments.

The EAP Task Force has developed a tool to support such an endeavour (see Annex 1). The tool was pilot tested in municipalities in the Russian Federation and the Ukraine, and adapted to local institutional and accounting standards. Over 40 experts have been trained in using this tool, in coordination with international financial institutions (IFIs), with a view to disseminate it over the region. Additional effort is needed in this dissemination process.

Note that, in EECCA, municipalities are still largely dependent on fiscal transfers from central or regional budgets to finance investment in WSS. They often have to co-ordinate their infrastructure development plans and capital expenditure budgets with national/regional plans and budgets. This makes the strategic planning and investments at local level dependent on the politics at the national/regional level, and generates a risk that local investment plans will not be implemented due to budget constraints. This requires that transfers between levels of government are designed in such a way that they do not impair the municipalities' capacity to implement the plans that were negotiated with the national/regional authorities. This issue are discussed further in document ENV/EPOC/EAP/MIN(2005)6.

8.4 Defining the roles of local governments and water utilities through performance contracts

The relationship between the municipality and the service provider is the second dimension of the reform of the WSS sector that is addressed in this paper. Compared to central governments, local authorities are, in principle, better attuned to local demand and better placed to identify local solutions and to organize their implementation. As a result, they have generally developed close working relations with utilities.

In some countries water utilities are part of local government. However, the close linkages between local authorities and utilities can involve conflicts of interest, blur responsibilities, and impede the effective delivery of water services. For example, local politicians in EECCA are often reluctant to raise tariffs to levels that would guarantee the financial autonomy of utilities, as this might erode their electoral support. Also, municipal authorities are often concerned about the new constraints and the loss of discretion that more transparency in their relationship with utilities would bring about. Blockages of this type undermine the operational autonomy of utilities and create confusion over the roles that local government and utilities should play.

8.4.1 Contracting to manage performance

It is now widely recognized that a fundamental element of a viable water governance system is to clarify the relative roles and responsibilities of central and local governments as well as utilities. More specifically, as derives from above, local governments should be responsible for planning, as well as for many aspects of policy and regulation, including the involvement of the public. Utilities should have sufficient operational autonomy and resources to deliver agreed services on a sustainable basis. They should also be held strictly accountable for how they exercise their discretion and for how they have used their resources. In an increasing number of countries, the relative roles and responsibilities between local governments and utilities is being clarified through "performance contracts". Ultimately, performance-based contracts, if developed properly, can help to lay the basis for the long-term sustainability of water utilities, increasing efficiency, and creating conditions where investment capital can be attracted.

This is also the case in EECCA, even though the number of cases is still very small compared to the total number of water utilities in the region – Russia alone has more than 6 000 utilities, but only about twenty municipalities have chosen to develop contracts with their water utilities. Many of these contracts have been developed in the framework of private sector participation projects. While these efforts are a step in the right direction, they have suffered from a lack of experience of those involved in developing such contracts.

An analysis of contracts in the Russian Federation and the Ukraine revealed a number of important weaknesses in these contracts, including:

- Contracts do not provide a description of the properties transferred from the municipality to the operator;
- Contracts do not provide technical parameters for service provision;
- Contracts do not have investment and financing plans for the operation and maintenance costs;
- Contracts do not give deadlines for performance targets to be achieved by the operator;
- Municipalities do not fully exercise their responsibility to control and assess the quality of the operation and maintenance of utilities.

8.4.2 Guidelines for Performance-based Contracts

To support local authorities that are willing to contractualise their relationship with their water utility, the EAP Task Force has developed "Guidelines for performance-based contracts" between municipalities and water utilities, which address and analyse the key elements that need to be considered in connection with the preparation, negotiation, implementation, and periodic revision of a successful performance-based contracting mechanism. Some of these key elements are described in annex 2.

The requirements for performance-based contracts, as contemplated in these Guidelines, are provided as a starting point for the development of improved contractual arrangements in the water sector in EECCA. These Guidelines are relevant for municipalities wishing to establish a contractual relationship with a public or a private utility.

It is important to remember that drafting contracts is not an exact science and needs to be adapted in light of the specific local circumstances. This usually requires the assistance of experienced and qualified professionals in the water sector who can draw from international best practices in the process of contract development. There is therefore an important need for the provision of technical assistance and capacity strengthening from donors and IFIs in this area.

8.5 Improving the managerial capacity of service providers

After nearly fifteen years of low investment and poor maintenance, the condition of the municipal water and sanitation sector in the EECCA region has become critical, with most water utilities working under emergency conditions. While the acuteness of the crisis is recognised by the majority of EECCA governments, the reform process remains slow, and financial and operational sustainability of water utilities, key to the rehabilitation of water supply and sanitation infrastructure, is still far from being achieved.

This is due to a number of reasons:

- Water utilities tend not to properly estimate their needs in terms of capital expenditures or maintenance, let alone on a multi-annual basis;
- Investments, if any, are usually decided upon and financed by local authorities: (a) with water utilities conducting prioritisation analysis only in a limited number of cases and conducting no cost/benefit analysis; and (b) with little consideration given to tariff level implications, thereby leading to an inefficient use of scarce resources;

- Central or local authorities tend to set tariffs irrespective of the planned level of O&M costs and capital investments, and usually revise them at irregular intervals;

- Water utility staff lack both financial planning tools and training to generate and analyse relevant information that could feed and help rationalize the decision-making process at the municipality level; as a result, water utilities are not in a position to exert influence over their future development;

- This situation derives from, and is fuelled by, weak management capacities in many utilities in the region.

In light of the above, it is useful to try and identify some tools or contractual arrangements that could be put in place to contribute to the improvement of management of the water and sanitation sector. This paper focuses on selected issues:

- Financial planning at the utility level; this goes hand in hand with planning in the municipalities. Financial planning should inform the dialogue between the municipality and the utility, and is likely to help substantially improve the performance of the service provider;

- Management capacity building. This can be done in a number of ways. Consideration is given to private sector participation (PSP), as a means towards this end. Whether or not private operators invest their own money in the infrastructure, they are likely to bring in expertise in the management of the service and the relationship with the beneficiaries.

8.5.1 Financial planning at the utility level

One of the main obstacles to the financial and operational sustainability of the sector in EECCA is the absence of proper financial planning by water utilities.

Water utilities have to control costs and generate revenues in order to provide services in a sustainable manner. Accurate financial planning and forecasting form an integral part of effective management of utilities' finances. Such an issue can in fact be remedied: a financial model, linked to engineering and cost estimates, is usually considered as the preferred tool for analysis and decision making (see Annex 3). If properly used, it can have far reaching implications, by providing water utilities with a financial planning methodology that helps them rationalise their capital investment decision-making process, monitor their overall performance, and enhances both communication level and quality with the municipality, especially as far as tariff levels, capital investments, and financing needs are concerned.

Financial planning, if implemented, gives utilities the opportunity:

- To rationalise the way their capital expenditure programme is established;

- To determine the conditions for the balancing of their sources and uses of funds;

- To improve the monitoring of their overall performance by analysing performance indicators produced by the tool; and

- In the long run, to eventually raise finance on their own books.

While requiring some efforts from the part of the utility when initially put in place, and training of utility and local authority staff in order for both entities to make the best use of them, financial planning tools

could significantly contribute to breaking the vicious circle prevailing in the EECCA water and sanitation sector and to paving the way for its financial sustainability.

8.5.2 Managerial capacity building in water utilities

Currently many EECCA water utilities suffer from weak management and therefore the resulting inefficient operational performance. It is now widely recognised that the corporatisation of utility management (along with granting utilities more independence in their decision making) is a key step in overcoming this weakness.

Corporatisation involves performance-oriented management on the basis of financial and technical indicators and the translation of these objectives into the organisation through staff performance objectives and performance-oriented remuneration. Corporatisation also involves a stronger focus on client and supplier relationships.

To implement such changes, EECCA utilities will need to bring in and draw upon external management capacity. They can either hire business managers from other sectors or seek to build capacity in their own staff using technical assistance, *i.e*. through twinning arrangements with well-managed OECD utilities.

Another option is to involve the private sector in the management and operation of utilities. This issue was a subject of intensive discussion at the ministers' conference in Almaty in 2000, generating a lot of hopes, but also a lot of scepticism. The prospects for PSP in the EECCA water sector are analysed below.

8.5.3 PSP as a means to improve performance of utilities in EECCA

At their consultations in Almaty in 2000, ministers recommended that municipalities and utilities should consider inviting private operators to participate in the provision of water supply and sanitation services when they develop their strategy for water sector reform. Similarly, the Camdessus report emphasizes the relevance of private sector participation as an important source of finance for the development of water supply and sanitation services to achieve the internationally agreed water targets. However, for various reasons, the involvement of the private sector in EECCA has remained at very low levels and hopes that the private sector would play an important role in supporting the reform process have not been fulfilled so far.

a) Current PSP in EECCA, including obstacles and bottlenecks

Various PSP forms co-exist in the water supply and sanitation sector, depending on the level of responsibility entrusted by the public sector, be it a government or more often a local authority, to the private party. But in all PSP forms, the authorities retain a supervisory role and see to it that customers are satisfied. A wide range of approaches for involving the private sector in improving the performance of water and sanitation systems exists (Table 9.1). Some options keep the operations (and ownership) in public hands, but involve the private sector in the design and construction of the infrastructure. Other options involve private actors in the management, operation, and/or the financing of assets. Hence, they involve different degrees of private and public sector responsibilities for service delivery.

Private sector participation, both with international and domestic operators, remains at very low levels in the EECCA region, both in terms of the number of municipalities concerned by such arrangements, and by their level of ambition (focusing on inputs of know-how rather than private finance). The Russian Federation and Kazakhstan are exceptions where domestic private operators are now playing an increasingly important role.

In Russia, domestic private operators have been taking increasing market share over the last 18 months. They are currently serving about eleven per cent of the urban population, which will possibly increase to 16 per cent in a few years time. The trend was initiated by a political statement from the President

welcoming PSP in the communal and housing sector. Whether this trend is sustainable in the long term remains to be seen, since most contracts are 11-month leases and it is hard to foresee how many of them are going to be converted into longer-term contracts.

In Kazakhstan, there is significant domestic private sector participation in the water utilities serving small and medium towns. Nearly 40 per cent of water utilities serving such towns are privately operated. Most of these arrangements involve the full transfer of physical assets into private ownership, although there is also one leasing contract. Usually, private investors are local entrepreneurs. Many privatisations arose in connection with – or to forestall – insolvency proceedings, where an important goal was to wipe out the large debts to tax authorities. The prices paid for the assets were frequently very low. Due to the difficult financial situation that most water utilities in Kazakhstan are facing, some disengagement of the private sector has been observed recently, and it remains to be seen whether this trend will continue.

Experience accumulated so far suggests that domestic and international operators are encountering very similar obstacles and limitations to their activities in the water supply and sanitation sector in EECCA. Regulatory and legal uncertainty, lack of rules of the game, limited capacity in domestic private operators, and lack of capacity at the municipal and utility level are only some of the issues that were raised by participants to a series of private sector roundtables that the EAP Task Force and the World Bank co-organised[117]. When private sector operators engage in partnership arrangements despite these risks, as has happened in a few large EECCA cities, contract negotiations are often excessively long, with direct impact on the transaction cost, while the data underlying the negotiation often turns out to be unreliable. In some cases that involved mostly domestic private operators, contracts were often very incomplete and competitive procedures for the selection of the operator not applied.

To overcome these obstacles and problems, several approaches that could be used by stakeholders have been suggested:

- The systematic usage of performance contracts, allocated in the framework of competitive tenders, could help to dissipate public mistrust of PSP and to force municipalities and utilities to agree upon objectives and means to achieve them;

- Concession and lease contracts could be preceded by management contracts so as to reveal the true state and extent of the infrastructure and reduce the risk of conflict when concession and lease contracts are implemented;

- IFIs and donors could play a more active role in mediating between parties when conflict arises;

- Tariff-setting needs to become more transparent and predictable, which involves shielding of the tariff-setting process from excessive political interference;

- The use of franchising or other forms of business-to-business co-operation to combine the strengths of domestic operators (local knowledge) with the strengths of international operators (operational know-how).

b) Future prospects of PSP in the EECCA water sector

While there are numerous obstacles and risks that explain the modest levels of private sector involvement in the region, there are also a number of changes to business strategies that help to explain this situation.

[117] See proceedeings at www.oecd.org/env/water

The international private sector is currently attempting to restructure, shed global portfolios, and reduce project debt, in response to the growing risk aversion of their shareholders following 9/11, the Argentina crises, and corporate bankruptcies. However, the question of how revenue cycles are to be closed has not been answered so far.

Furthermore, the "easy" investment opportunities are already being supported, and the private sector seems to be running out of markets with a tolerable level of risk. During the past few years, the market has focused on the large cities. Private investors consider smaller cities and rural areas less attractive for investment; and are instead focusing on operations, while depending on donors and IFIs to provide financing. However, only limited funding for developing the sector is available from the World Bank (USD 960 million over in the next three years from IBRD[118] and IDA[119]) and other donors. This will require a much more selective and stringent targeting of the funding, and far better co-ordination between the major donors and IFIs.

The private sector considers concessions in EECCA highly unlikely, and there is a very limited appetite even for lease *(Affermage)* contracts. In its 2003 annual report, Véolia Water is one of the rare private operators to mention leases as the privileged contractual arrangement in Eastern Europe. Management contracts are now considered the safest way of entering into new markets.

Service and management contracts, whereby a private company operates assets on behalf of the local authority that owns them, range from the treatment and distribution of water to the planning and rehabilitation of assets and services to customers. The private sector therefore takes full responsibility - under a short-term agreement - for a specific task, for instance installing meters, repairing pipes, or collecting bills for a fixed or per unit fee. Service contracts involve no risk sharing between the private and the public sectors, even if the private sector remuneration can be performance-based.

This form of PSP seems particularly well-suited in cases where the private sector does not intend to take any risk and tariffs do not cover operations and maintenance costs, as the private sector remuneration is precisely disconnected from tariffs. Local authorities benefit from the technical and operational expertise of the private sector without having to engage in a long-term relationship or giving away the ownership of the assets.

[118] International Bank for Reconstruction and Development (IBRD)

[119] International Development Association (IDA).

8.6 Annex

8.6.1 Multi-Year Investment Planning (MYIP), a Tool Designed for Municipalities

Multi-year investment plans for municipal infrastructure are designed to enhance the financial strength and creditworthiness of municipalities by more rational and long-term management of local capital and operational budgets. The experience and know-how gained from the pilot projects conducted within the 2001-2003 EAP Task Force Programme in Municipal Finance with the support of Denmark, the UK, and Norway, are now being disseminated throughout Russia and the Ukraine, using local experts and consulting institutes.

MYIP is a rational, rule-based approach to investment planning by local governments, supported by financial planning software and integrated into national budget codes.

Based on the results of these demonstration projects, a toolkit has been developed for multi-year investment planning in municipalities, which consists of guidelines, instructions, software applications, model documents, and administrative procedures. Through the dissemination activities, the know-how has been transferred to a broader audience in Russia and the Ukraine, where regional and local governments are interested in sound management and investment planning for better services, including water and environmental infrastructure.

Broader dissemination of the tools, including a MIP (Multi-year Investment Plan) model will help regional governments to manage intergovernmental transfers needed for capital investment, operation and maintenance, as well as for environmental protection purposes.

In overview, the typical training programme includes focused presentations and discussions on a multi-year investment plan conceptual model and methodology, reasons for its introduction, benefits from introduction, and examples from the Russian Federation, the Ukraine, Poland, and the United States.

8.6.2 Guidelines to establish performance-based contracts

a) Project scope

- Definition of clear contractual objectives and responsibilities following and pursuant to: (i) a dialogue process to be put in place between the contractor and the contracting authority; and (ii) the conduct of an appropriate and adequate due diligence process, so as to allow the parties to be aware of any detail or information that might influence or affect the efficient development of the water utility; clear identification of the service area to be covered by the contractor in order to strike an appropriate balance between the revenues of the contractor and the overall quality of the services provided to the population within such a service area;

- The duration of a performance-based contract shall not be considered as a strict condition thereof but rather as a result of the objectives of the contractual arrangement to be entered into; and

- Early termination provisions are to be included in a performance-based contract in order to ensure the timely and efficient development of the utility.

b) Legal and institutional framework

- Examination of the legal framework currently in place with regard to the operation of a water utility in order to implement a contractual mechanism that is appropriate in relation therewith or, alternatively, proceed to the modification of such a legal framework in order to allow for the implementation of the desired contractual mechanism; and

- Analysis and possible modification of the institutional framework as the role of the contracting authority will no longer be one of a direct service provider but rather one of a monitoring entity for which sufficient and efficient regulating and monitoring capabilities will need to be set forth.

c) Performance indicators

- Performance indicators to take account of the current condition of the water utility in order to set performance levels that are feasible, and performance indicators that focus on the aspects that are the most essential to the utility's development and improvement;

- Other elements to be considered in connection with performance indicators, such as the importance of an appropriate and efficient monitoring system, the inclusion of a revision mechanism in relation with such performance indicators, and the modification or suspension of the required levels of performance.

d) Tariffs and financial obligations of the contracting authority

- The tariff-setting mechanism should be established with great care as, in the vast majority of cases, tariffs constitute the most important source of revenue for the water utility. Tariff setting is a delicate and complicated operation due to the fact that several issues are to be considered, such as the financial viability of the utility, social objectives of the utility, and economic efficiency, that have to be balanced against the fact that tariffs to be received by the contractor should at least cover all operational and maintenance costs of the utility in order to ensure that services are efficiently and adequately provided and that the value of fixed assets of the infrastructure is preserved;

- With regard to water utilities for which tariff systems are based on a cross-subsidy mechanism (allowing certain customers to pay well below the average tariff while other consumers pay above this average tariff in order to balance the total tariffs to be perceived by the utility), it will prove fundamental to consider such a mechanism when negotiating and establishing a performance-based contractual arrangement;

- The party bearing the risk of tariff collection should be allowed to adopt appropriate measures in order to obtain payment from consumers;

- As for the performance levels to be achieved by the contractor, the contractual provisions of a performance-based contract that relate to tariffs should be subject to a revision mechanism in order to ensure that the utility at all times benefits from a level of tariffs that permits its adequate development; and

- The contracting authority is sometimes responsible for the whole or part of the financing of capital investments relating to a water utility, and clear contractual provisions should establish the contracting authority's obligations in relation therewith.

e) Financial penalties, bonuses and incentives

- Financial penalties in a performance-based agreement constitute an insurance policy regarding the satisfaction of the level of services to be achieved by the contractor, but should be prudently used in connection with an agreement entered into in connection with an EECCA country water utility, since such penalties risk directly affecting the general financial condition of the utility, and consequently the operational conditions thereof, which are most probably already in a precarious state;

- Bonuses and incentives in a performance-based contract are complementary to penalties as they also aim to influence the performance of the contractor. However, one should be very careful when setting forth bonuses and incentives as, if the utility is operated by a publicly-owned contractor, such financial incentives should only be tied to the performance of the individuals exercising the management and operation of the utility.

f) Monitoring

- Monitoring is an essential element of performance-based contracting as it will allow the parties to determine whether their respective obligations are fulfilled and evaluate their performance in achieving such obligations, allowing the parties to establish whether or not the performance-based contractual arrangement benefits to both of them as well as to the development of the utility.

g) Contract enforcement/conflict resolution mechanisms

- Dispute resolution procedures should be included in the contractual arrangement as they entail a more efficient and cost effective determination of contractual disputes as an alternative to legal procedures. Whichever mechanism is chosen by the parties in order to resolve potential conflicts, such a mechanism should always aim at resolving any conflict promptly, efficiently, and impartially so as to create minimal interference with the operations of the utility, which needs to carry on ensuring the provision of water supply to the population;

- The Guidelines discuss the judicial, quasi-judicial or administrative, arbitral, and non-binding dispute settlement mechanisms available to the parties of a performance-based contract for dispute settlement.

h) Risks

- Risk allocation is a major component of any contract in the water sector: who will assume risks in the delivery of the service or in the construction/rehabilitation, and operation and maintenance of water facilities is often a central question in a performance-based contract in the water sector, especially where the contracting authority is a public entity and thus subject to public scrutiny;

- The Guidelines analyse the following main risks to be considered in regard to performance-based contracts: operation and maintenance risks, political risks, regulatory risks, and revenue risks;

- Logically, as the level of risk that is transferred from the contracting authority to the contractor increases, the more financial reward the contractor will demand.

i) Costs

- During the negotiation and drafting stage, the parties should always consider the actual and potential costs inherently and indirectly associated to performance contracting in the water sector as such costs are often unavoidable and various;

- A government considering the reform of a water utility and wishing to implement performance-based contracting as a means of achieving an improved and more efficient water network should consider hiring qualified technical, financial, and legal consultants in order to conduct a thorough analysis of the network to reduce future costs, and carefully assess costs and risks.

8.6.3 Financial Planning Tool for Water Utilities (FPTWU) and decision-making in water utilities

The FPTWU's purpose is to have water utilities adopt a financial planning methodology that should accelerate the pace of their progress towards operational and financial sustainability, helping them rationalise their capital investment decision-making process, monitor their overall performance, and enhance both communication level and quality with the municipality, especially as far as tariff level, capital investments, and financing needs are concerned.

The rationale for the use of such a tool can be summarised as follows:

- In the EECCA countries, water utilities tend not to properly estimate their needs in terms of capital expenditures or maintenance, let alone on a multi-annual basis;

- Investments, if any, are usually decided upon and financed by local authorities: (i) with water utilities conducting prioritisation analysis only in a limited number of cases and conducting no cost/benefit analysis; and (ii) with little consideration given to tariff level implications, thereby leading to an inefficient use of scarce resources;

- Central or local authorities in the region tend to set tariffs irrespective of the planned level of O&M costs and capital investments, and usually revise them at irregular intervals;

- Water utility staff lack both financial planning tools and training to generate and analyse relevant information that could feed and help rationalize the decision-making process at the municipality level; as a result, water utilities are not in a position to exert influence over their future development;

- In this context, the operational and financial sustainability of water utilities in the EECCA countries cannot be ensured, and water infrastructure continues to deteriorate badly with potentially massive environmental, health, and welfare consequences.

The FPTWU Project, part of the Urban Water Sector Reform component of the EAP Task Force Programme of Work, will contribute to "improving the management of municipal water supply and sanitation infrastructure" and to "ensuring the financial viability of utilities", in accordance with the objectives defined in the Environment Strategy for EECCA countries during the fifth "Environment for Europe" Ministerial Conference that took place in Kiev in 2003.

a) Overall goal and specific objectives

The ultimate goal of the FPTWU is to help water utilities in the EECCA region reach operational and financial sustainability, by providing them with the opportunity: (i) to rationalise the way their capital expenditure programme is established; (ii) to determine the conditions for the balancing of their sources and uses of funds; (iii) to improve the monitoring of their overall performance by analysing performance

indicators output produced by the tool; and (iv) in the long run, eventually raise finance on their own books.

The FPTWU Project's specific objectives are listed below:

- Assist water utilities in improving their financial status through the implementation of sound medium-term financial planning;

- Improve their investment decision-making process by enabling them to assess the relative merits of each proposed investment or project using a number of criteria (operational, financial, environmental, social, level of customer service, etc.);

- Contribute to the improvement of their operational performance through: (i) a systematic tracking down of potential sources of savings (for instance more energy efficient equipment); (ii) a more realistic assessment of the water demand (anticipated growth of the customer base, water consumption forecast based on the number of meters in operation, leak reduction target through planned investments/repairs, etc.); and (iii) a better understanding of collection rate levels;

- Enhance - and contribute to a more systematized - communication between water utilities and municipalities through the use of the tool's outputs to help establish: (i) medium-term capital expenditure and maintenance and repair programmes, most often to be financed by the municipality; (ii) tariff levels over a short to medium-term period; (iii) the level of operational subsidies (aimed for instance at compensating water utilities for financially adverse decisions imposed by municipalities); and (iv) the amount of finance to be raised from municipalities based on the capital expenditure programme under discussion.

The FPTWU, which is currently being pilot tested at the Bishkek Vodokanal will, once developed, be public domain, *i.e.* freely available to EECCA municipalities and donor agencies.

CHAPTER 9 POSITION PAPER BY THE INTERNATIONAL PRIVATE SECTOR ON ITS ROLE IN THE REFORM OF WATER AND WASTEWATER UTILITIES IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

PUBLIC-PRIVATE PARTNERSHIPS IN THE WATER SECTOR OF THE EECCA REGION: UPDATE AND RECOMMENDATIONS FOR THE IMPROVEMENT OF SERVICE DELIVERY

Lloyd Martin, Severn Trent Water International

9.1 Executive summary

It is now widely recognised that achieving the water-related Millennium Development Goals will require not only significant reform within the water sector but also the mobilisation of significant inputs from private companies, both in terms of finance and know-how. However, Public-Private Partnerships (PPPs) in EECCA remain at a low level, both in terms of numbers and in terms of the level of involvement and responsibility being taken by the private sector. Currently there are about 10 PPP projects involving international partners in the EECCA region, most of which involve an international private company as an operator. Although the climate for PPP in the two most populated EECCA countries has recently improved, mainly due to the development of a strong domestic private sector (Russia) and a marked political swing to the West (Ukraine), this has yet to manifest itself in significant additional levels of international PPP.

Networked water supply and wastewater systems have extremely high capital costs, well in excess of other infrastructure services. These are mostly financed with debt, for as long term as is commercially available. Given the high initial costs, extremely long pay-back periods are necessary, and it is essential that revenue streams are as secure as possible. Urban water services are also a business with relatively low rates of return on investment. Due to these sectoral specificities, private operators are particularly sensitive to the quality of the investment climate and the level of risk, which is an important obstacle to PPP in many regions of the world. In EECCA countries, both the investment climate and the scale/predictability of revenue streams are usually at a low level.

This paper seeks to identify, from a private sector point of view, the key measures that EECCA governments, IFIs, donors and the private sector would need to undertake to overcome the barriers to PPP and scale-up private sector inputs to the reform of water supply and sanitation in the region. A few highlights are given below:

- Political commitment to PPP, at all relevant government levels, is key to their success. While this takes time, management contracts may be used as a first step in building trust on all sides, and leading to more ambitious forms of PPP at a later stage.

- The private sector will also look for strong, independent utility regulation as evidence of government commitment towards PPP. Currently, utilities often remain highly-politicised in the EECCA region.

- There is a need to establish realistic tariff levels that will enable full cost-recovery, with the elimination of cross-subsidies between industry and domestic customers. Central governments have a role to play in helping to overcome such blockages, which usually occur at the local level.

- Due to affordability constraints in EECCA households, it may also be necessary at present to consider 'hybrid' funding arrangements, where capital investment may be financed from public budgets, while customers' tariffs cover only operation and maintenance costs.

- Further assistance in the reform process can be provided if the public sector makes every effort to ensure transparent tendering of PPP projects. One of the reasons cited by the private sector for the lack of attractiveness of many EECCCA markets has been widely-held concerns over tendering transparency.

- Although PPP contracts provide the private sector with rights, these rights cannot be enforced effectively if local authorities do not recognise them. IFIs and other donors could reduce country risk by providing guarantees that would compensate the private sector for any breaches of contract that arise under such circumstances.

- In many cases, ongoing PPP projects have suffered from a lack of reliable data upon which both the contract and PPP project are founded, leading to the need to reassess and adjust performance-based payments as the project has developed. The public sector should ensure whenever possible that such data is representative of the actual situation, and if this is not possible, it should accept the need to re-evaluate such data after the contract has begun.

9.2 Why are Water Sector policy makers interested in Public-Private Partnerships?

Improving the delivery of urban water and waste water services is a critical need for most developing countries and economies in transition. In OECD countries investment needs also will increase substantially over the next years requiring greater efficiency through better management and the use of new sources for investments. For instance, in the European Union about USD 75bn per year are currently spent, and capital investment is predicted to increase by 7% a year (Owen, David Lloyd, 2002). The report of the Camdessus Group to the Third World Water Forum in Kyoto, 2003, suggests that in developing countries, current spending on water of USD 75bn a year needs to be increased to about USD 180bn if the Millennium Development Goals on water and sanitation are to be met (World Panel on Financing Water Infrastructure (2003). For the EECCA[120] region, a report by the Government of Denmark identifies the annual finance needed for operation, maintenance, and investment at about EUR 7bn per year. However, this target will be difficult to meet with public funds alone as both government budgets and ODA will only provide limited funds. Governments are therefore increasingly looking to a range of private sector partners to provide access to two key resources: (1) improved water management systems and technical options, and (2) private investment funds to cover their burgeoning long-term capital needs.

[120] EECCA stands for Eastern Europe, Caucasus and Central Asia. It comprises the following twelve countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

9.3 What is PPP?

Public-Private Partnerships refer to any form of agreement (partnership) between public and private parties established for the provision of urban and/or utility services. PPPs should not be misunderstood as privatisation (i.e. asset divestiture), where the ownership, as well as the management, of the water infrastructure is transferred, in whole or in part, to the private sector.

A wide range of approaches for involving the private sector in improving the performance of water and sanitation systems exists. Some options keep the operations (and ownership) in public hands, but involve the private sector in the design and construction of the infrastructure. Other options involve private actors in the management, operation and/or the financing of assets. Hence, they involve different degrees of private and public sector responsibilities for service delivery. There thus exists a spectrum of PPPs, and different levels can be appropriate for any given public-private situation (see Figure 9.1). In every case, however, a prime objective is to improve the performance of that service delivery.

In all of these options, however, a public authority remains responsible for overseeing the activity and for ultimately ensuring that public service needs are met. Governments (national or local) retain final responsibility for setting and enforcing performance standards. The fact that the water sector is one of local natural monopolies requires a strong regulatory role to ensure that performance standards are met and the interests of consumers protected.

Figure 9.1: Allocation of Public/Private Responsibilities across Different Forms of Private Involvement in Water Services

	Setting Performance Standards	Asset Ownership	Capital Investment	Design & Build	Operation	User Fee Collection	Oversight of Performance and Fees
Fully Public Provision							
Passive Private Investment							
Design and Construct Contracts							
Service Contracts							
Joint Ventures							
Build, Operate, Transfer							
Concession Contracts							
Passive Public Investment							
Fully Private Provision							

Key: Dark grey = public responsibility

Light grey = shared public/private responsibility

White = private responsibility

Source: Yale-UNDP Partnerships Program 1998

Source: OECD, (2000).

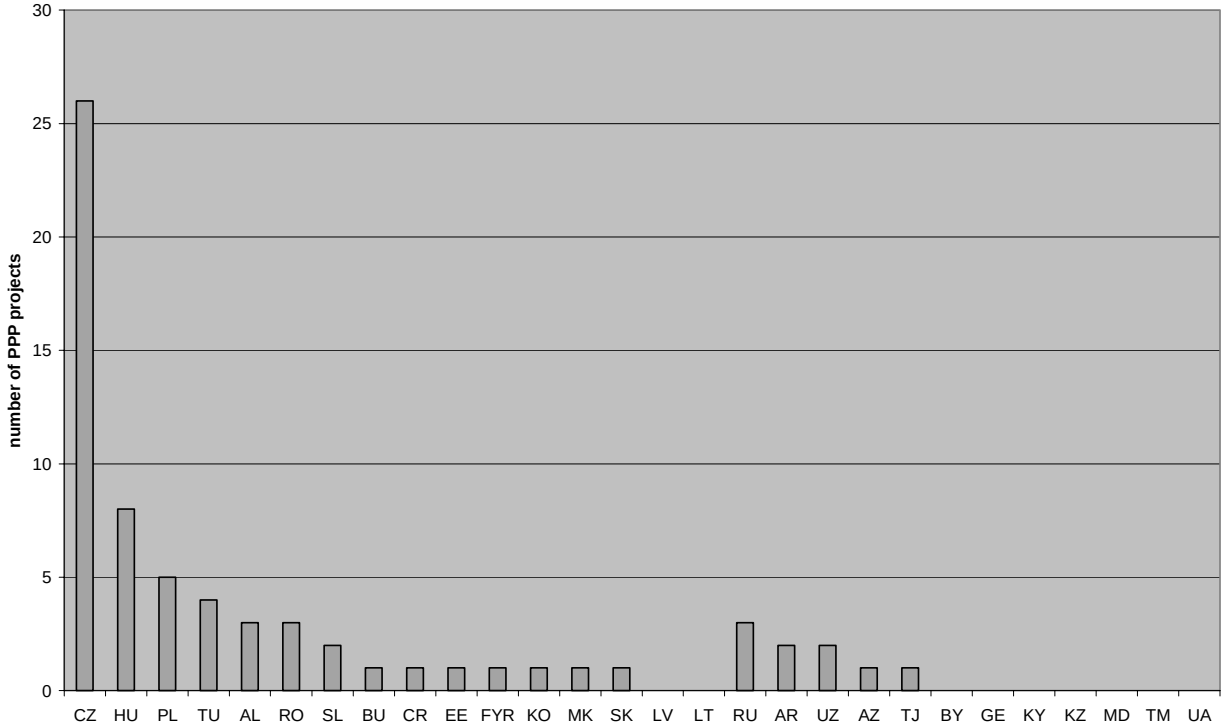
9.4 Current state of PPP in the EECCA water sector

Public-Private Partnerships in EECCA remain at a low level, both in terms of numbers as in terms of the level of involvement and responsibility taken by the private sector. Currently there are about 10 PPP projects involving international partners in the EECCA region, most of which involve an international private company as an operator. This constitutes roughly a doubling of the number of such projects since the time of the Almaty conference, five years ago (see Annex for a current list of major PPP projects in EECCA).

For comparison, in Central Europe, and in the Balkans, with a much smaller population than EECCA, about 58 Public Private Partnerships in the water supply and sanitation sector have been reported (see Figure 9.2).

A survey conducted in 2002, involving major private sector actors active in the EECCA and Central European regions, revealed that most EECCA countries received very low ratings in terms of their attractiveness for PPP (see Table 9.1). Russia, Kazakhstan and Ukraine, mainly due to their market size, were perceived as being more attractive than other EECCA countries, achieving similar ratings as countries in South-East Europe (e.g. Albania, Macedonia, FYR and Bosnia & Herzegovina).

Figure 9.2: Number of PPP projects involving international partners in Europe and Central Asia[121]



Source: OECD/World Bank (2003).

[121] Europe and Central Asia (ECA) comprises: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia FYR, Poland, Romania, Slovak Republic, Slovenia, Serbia and Montenegro + EECCA countries + Turkey)

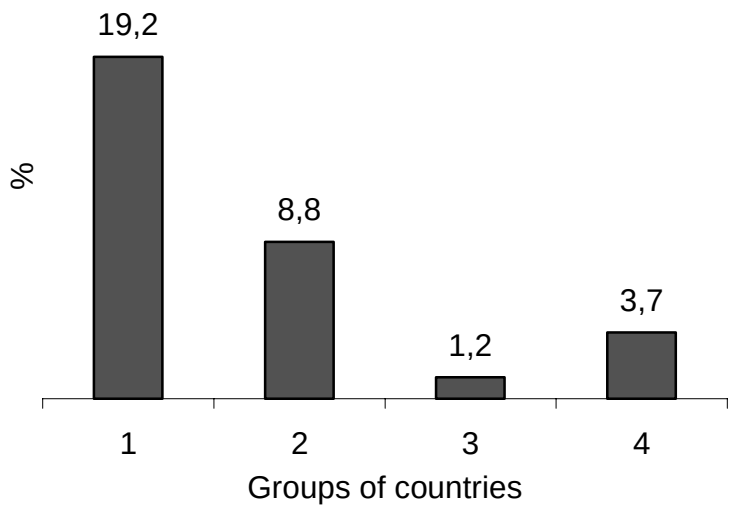
Table 9.1: Division of the countries of the ECA[122] region into groups according to the attractiveness of PPP in 2002

Group1	Group 2	Group 3	Group 4
PPP is attractive?			***PPP is not attractive?***
• Czech Republic • Hungary • Poland • Slovakia • Slovenia	• Romania • Bulgaria • Croatia • Turkey • Estonia • Latvia • Lithuania	• ***Russia*** • ***Ukraine*** • ***Kazakhstan*** • Albania • Bosnia& Herzegovina • Yugoslavia • Macedonia	• ***Belarus*** • ***Moldova*** • ***Armenia*** • ***Azerbaijan*** • ***Georgia*** • ***Kyrgyz Republic*** • ***Tajikistan*** • ***Turkmenistan*** • ***Uzbekistan***

Source: OECD/World Bank (2003).

As a result, most PPP projects have been developed in the countries in groups 1 and 2, representing 80% of the total. Group 1 therefore has by far the highest proportion of its population served by PPPs, with 19.2% while this drops to 1.2 and 3.7% in groups 3 and 4 respectively (Figure 9.3).

Figure 9.3: Percentage of population in the ECA region served by PPPs



Source: OECD/World Bank (2003).

Reviewing the situation for the Almaty+5 Conference in 2005, an evolving situation emerges. In 2002, the subset of EECCA countries within the ECA region was located well towards the 'not attractive' end of the PPP-attractiveness spectrum, with all EECCA territories being classified as either Group 3 or Group 4. Now, in 2005, the climate for PPP in some EECCA countries has improved, with many private

[122] ibid.

sector players considering the Russian Federation and Ukraine as being within Group 2, predominantly because of their market size (in both countries) plus the development of a strong local private sector (in the case of Russia)[123] and the marked political swing towards the West (in the case of the Ukraine). At present, however, this increased attractiveness has yet to manifest itself in significant additional levels of international PPP in either country. There is, therefore a paradox: for despite the more attractive environment, there is probably a decline in the interest of the international private sector towards PPP in EECCA.

One consequence of the generally low attractiveness of the EECCA region and the lack of interest on the part of the international private sector is that the type of private sector involvement is usually less ambitious than elsewhere in ECA, or other regions. While in the Balkans and Central Europe, there is a prevalence of concession-, lease- and BOT-based contracts, most PPPs in EECCA have tended to be management contracts, where the private operator has a very limited responsibility as well as low levels of risk. The implication is that very little, if any private investment into the water sector has been generated in EECCA to date. Where the private sector is present in EECCA, its contribution to the reform of the water sector has mostly focused on the provision of technical and management know-how.

It should be noted that this overview has concentrated on the situation with PPP involving international participants. In the Russian Federation and Kazakhstan, many PPPs involving domestic private operators have been emerging of late. In the Russian Federation the local private sector claims to operate water systems in about 20 large cities representing approximately **11%** of the urban population. In Kazakhstan, nearly 40% of water utilities serving small and medium sized towns are privately operated. A separate paper discussing the situation in the Russian Federation has been developed as part of the Almaty+5 Conference documentation.

9.5 Reasons for EECCA's low attractiveness to, and the low interest of, the international private sector

Networked water supply and wastewater systems have extremely high capital costs, well in excess of other infrastructure services. These are mostly financed with debt, for as long term as is commercially available. Given the high initial costs, extremely long pay-back periods are necessary, and it is essential that revenue streams are as secure as possible. Urban water services are also a business with relatively low rates of return on investment. Due to these sectoral specificities, private operators are particularly sensitive to the quality of the investment climate and the level of risk, which is an important obstacle to PPP in many regions of the world. In EECCA countries, both the investment climate and the scale/predictability of revenue streams are usually at a low level.

The importance of the risk dimension has been gaining additional weight recently, due to the growing risk-aversion of most international operator/investors. This has been in part a reaction to sector-specific shocks such as the monetary crises in Argentina, South East Asia and Russia in the mid/late 1990s and their repercussions on USD revenues of water operators, and a more general rise in risk-aversion in international business, following September 11, 2001. One immediate reaction of international private operators in the EECCA water sector has been to favour management contracts rather than riskier options such as leases and concessions, and to focus their financing strategies on leveraging IFI and donor funds rather than tapping into equity or private financial markets.

Operators have been demanding that donors and IFIs take over all risks not directly related to operations, including commercial risk, regulatory risk, sub-sovereign risk and affordability risk. Donors and IFIs have been reactive and developed several innovative mechanisms to address these concerns (e.g.,

[123] The impact of the local Russian private sector is discussed in more detail below.

Private Investment Development Group's (PIDG) Guarantco, providing guarantees as credit enhancement of local currency debt). Whether these approaches are successful still remains to be seen however, as many of these schemes have only been set-up recently.

Besides the risk premiums that private investors require to operate in regions with higher levels of political and economic risks, and which can prevent many projects from materializing, several other reasons for the slow expansion of PPP in EECCA have been identified in a series of OECD/World Bank conferences. Some key ones are highlighted below:

- The private sector is working already in the most commercially viable cities and seems to be running out of markets and/or projects with sufficient levels of profitability. In EECCA many large or capital cities, which usually offer the best opportunities for the private sector, have either been covered already, or they cannot or do not want to engage into PPP schemes.

- Private investors rightly consider smaller cities and rural areas to be less attractive opportunities for investment. Attempts to agglomerate smaller cities or regional bodies into larger, potentially more attractively-sized projects have met with countless difficulties, frequently stemming from the unwillingness of most municipal authorities to give up their individual utility power bases.

- Regulatory frameworks in host countries are frequently insufficient and unstable. This is often exacerbated by politicians interfering with the management of water utilities, and weak levels of contract enforcement. In conjunction, this generates significant uncertainty about future cash flows for the private operator, since essential cost elements (e.g., wastewater treatment requirements), as well as revenues (e.g. tariffs) can not be anticipated. It is one of the key reasons that private operators put forward to explain the lack of attractiveness of EECCA countries.

- Progress in reforming the legal and institutional set-up of the water sector has been very slow in EECCA. The EBRD's Transition Report identifies EECCA countries as having the lowest transition indicators for their water and wastewater infrastructure (EBRD (2004). Technical assistance from donors can help to remove many of these obstacles by providing support for capacity building and institutional reform. Private operators have also been calling on IFIs and donors to play a more active role when conflicts occur in PPP projects, to help avoid escalation.

- Revenue streams in EECCA water projects are poor compared to other parts of the world. Not only are tariffs low across the region, overall demand (especially industrial demand) has fallen markedly since the break up of the former Soviet Union. In some areas of EECCA, the current level of water demand is less than half that of the early 1990s. There is a lack of customer metering, other than at block-meter level, and also a prevalence of communal Housing Associations (known as zheks, in Russian) which act as intermediaries, collecting payments for utility services. In some areas even these associations have been abolished without creating any new organisational forms or mechanisms to manage the newly privatised apartment houses including all the maintenance of the internal piping systems. As a consequence, both billing and collection improvements to increase the revenue stream are fraught with difficulties.

- Municipalities have not set tariffs at full cost-recovery levels, and usually such tariffs do not even meet operational costs. Hence, the technical ageing of the water network systems and waterworks is often outstripping the investment rate, and this tendency will rapidly grow in the next years.Where the involvement of the private sector operator/investors is seen by municipalities as a mechanism for improving infrastructure investment, the consequences of the private operator setting realistic tariffs to achieve full cost-recovery will require significant tariff

increases, which are likely to be politically unacceptable to municipal authorities and unpopular with customers.

- Intensive competition for the best deals in the EECCA water sector has tended to lower private sector's profit margins. To be cost competitive, private operators have to devolve a great amount of work to the local sub-contractors, whose capacity constraints may lead to additional project risk through exposure to under performance.

9.6 What can the public sector do to overcome the barriers to PPP in EECCA?

Political commitment to Public-Private Partnerships, at all relevant government levels, is key to their success, since water is perceived by consumers and many politicians as not only an economic good, but also as fulfilling vital social and ecological functions. This has sometimes been overlooked, leading to the rapid loss of political backing as soon as projects encountered the first difficulties. Building strong political commitment for PPP requires time to organize the necessary stakeholder consultations, to build capacity, and to develop studies that help to identify the advantages and disadvantages of different options both within and besides PPP. Management contracts can be used as a first step in building trust on all sides, and leading to more ambitious forms of PPP at a later stage.

The private sector will also look for strong, independent utility regulation as evidence of government commitment toward PPP. The private sector welcomes robust regulatory regimes as a prerequisite for viable partnerships, but such levels of water regulation have not to date been common in the EECCA region.

There is a need to establish realistic tariff levels that will enable full cost-recovery (of both operational and capital investment costs), with the elimination of cross-subsidies between industry and domestic customers. These will improve the level and reliability of the revenue streams in PPP projects. However, whilst governments claim that such changes are imminent, these are frequently stalled at either municipal or sub-national level. There is a need for central government to ensure that these improvements are enforced from above in such circumstances.

Further assistance in the reform process can be provided if the public sector makes every effort to ensure transparent tendering of PPP projects. One of the reasons cited by the private sector for the lack of attractiveness of many EECCCA markets has been widely-held concern over tendering transparency. To alter this perception will take time, but any improvements can only be beneficial for the attractiveness of these markets.

Finally, the public sector can work to improve the private sector's antipathy regarding country risk, once projects are underway. The vagaries of local legislation, accounting and taxation policies, plus difficulties of transferring income (the convertibility and also the availability of some currencies) make the operation of many projects a challenge, over and above that necessary for the proper delivery of the scheme.

9.7 How can the private sector assist the reform process in the water sector?

There are several ways that the private sector can work towards improving the situation in which these PPP projects operate. As part of technical assistance and educational projects, the private sector already provides advice and expertise to improve capacity of public bodies at various levels within government, as well as strengthening institutions, such as water undertakers and municipal offices, to create an enabling environment for sector reform. In addition to commercial technical assistance activities, many companies are now developing links with the public sector and with NGOs, to establish a framework

for better collaboration. One example of this is the UK Government's PECE Initiative (Partners for Environmental Cooperation in Europe), which is co-funding pilot studies to improve the sustainability of environmental projects across EECCA, in collaboration with the private sector.

Partnering is developing as a concept within utility contracting (notably construction contracts), whereby the parties to a given contract conduct their activities in a far more open and non-confrontational manner; accepting a greater level of trust between the parties involved and including open-book accounting between client and contractor. Whilst this concept may seem a distant one in many EECCA PPP schemes, it could be utilised in many outsourcing contracts as part of the overall PPP process.

The private sector can also demonstrate its commitment to a long-term vision of sector reform within EECCA. The sector is often accused of not showing the long-term commitment needed for water PPPs. Too frequently, private participants are keen to withdraw from projects when difficulties arise, giving both the PPP concept (and the sector as a whole) a less-than favourable name. Such withdrawals are of course made for sound commercial reasons, but there is a degree of 'cause and effect' involved in such circumstances. Perhaps the suggestions put forward in both this and the preceding sections might reduce the tendency for any premature withdrawal?

It is axiomatic that the reform process is reliant upon support from the general public if it is to succeed. Here again, the private sector's experience and ability to improve customer service awareness and delivery can be used to create a better environment for PPP. Moreover, the knowledge gained within the sector from tripartite arrangements (including in addition civil society / NGOs) under such programmes as 'Building Partnerships for Development' will be of great potential.[124] Such BPD projects have been focused on Latin America and Africa, but the lessons so learned can be applied appropriately to EECCA as well.

9.8 How can the international Private Sector and local Private Sector work together to improve water services?

One marked development in parts of EECCA since the Almaty Conference has been the rise in the presence of the local private sector as operators/investors in parts of the region. This has been particularly true in the Russian Federation. Whilst it may not at this stage represent a regional trend, it is nevertheless important to consider the implications for joint international / local private sector activities.

In many ways, the spread of local large-scale service providers (as opposed to small-scale bottled water or tanker providers) offers many opportunities for joint developments, which in turn could improve the attractiveness of the region for PPP:

- local private sector service providers can offer viable services in urban areas that might be regarded as too small for international operators working alone

[124] Building Partnerships for Development (formerly Business Partners for Development): BPD Water and Sanitation is a not-for-profit membership organisation (a UK-registered charity) which seeks to demonstrate that strategic partnerships involving business, government and civil society can achieve more at the local level to improve access to safe water and effective sanitation for the poor than any of those groups acting individually. For further information see www.bpdws.org.

- the local private sector can combine with international operators to target peri-urban / informal supply areas in addition to urban centres

- local private sector companies can reduce costs and risks for international players

- international companies can provide investment-grade financial status for local companies, to enable them to access debt funding more effectively

- transfers of skills and 'know-how' can occur more effectively between private companies (international and local) and also then between local private and public organisations, thereby improving overall levels of awareness and abilities.

There are therefore a number of areas where there is potential for improvements in PPP in the region, and where the public and private sectors might work to assist further the reform of water and wastewater services in EECCA.

9.9 Annex

Main International Public-Private Partnership projects in EECCA

Country	City	Company	Private operator	% owned	Year	Type of contract	Duration, years	Amount of transaction, $	Committed by IFI, US$	IFI	Population affected	Source
Armenia	Yerevan	Acea & Company Armenian Utility S.c.a.r.l.	Acea	55	2000	management	5	32 800 000	30 000 000	WB	1 100 000	Blue Pages
	Armvodokanal	SAUR Sevan Services	SAUR		2005	management	4			WB	700 000	
Azerbaijan	Imishli		Berlinwasser International AG(BWI)	74,9	2001	joint venture and management	10			KfW	50 000	KfW
Russia	Butowo		Wassertechnik Essen WTE (now part of EVN Austria)	100	1996	BOT	12, 5				250 000	BW
	Zelenograd		Wassertechnik Essen WTE(now part of EVN Austria)	100	1998	BOT	12, 5				400 000	BW
	Moscow	Rossa	SAUR	50	1993	joint venture	30				n/a	
	St Petersburg		Veolia		2005	BOT for WWTW						
Tajikistan	Dushanbe	Dushanbe Vodokanal (Dushanbe Water Supply Company)	MVV Energie AG (Germany)	n.a.	2002	Management (Services)	3	20 600 000	17 000 000	IDA	700 000	MVV Energie AG
Uzbekistan	Bukhara and Samarkhand		Amiwater		2004	management	4	62 330 000	20 000 000	WB	800 000	PSIRU

REFERENCES:

Code	Source
Blue Pages	Water Supply and Sanitation Blue Pages. World Bank http://www.worldbank.org/watsan/pdf/WSS-Blue-Pages-2003.pdf
BW	Berlinwasser International's website <http://www.berlinwasser.net/>
MVV	MVV Energie AG, http://www.mvv-investor.de//de/download/hauptversammlung/Folien_HV_2003.pdf
PSIRU	PSIRU Reports, http://www.psiru.org/reportsindex.asp
WB	World Bank Porject Database <http://www-wds.worldbank.org/default.jsp?site=wds>

CHAPTER 10 PRIVATE BUSINESS DEVELOPMENT IN THE RUSSIAN WATER SECTOR

S. SIVAEV AND V. PROKOFIEV

10.1 Introduction

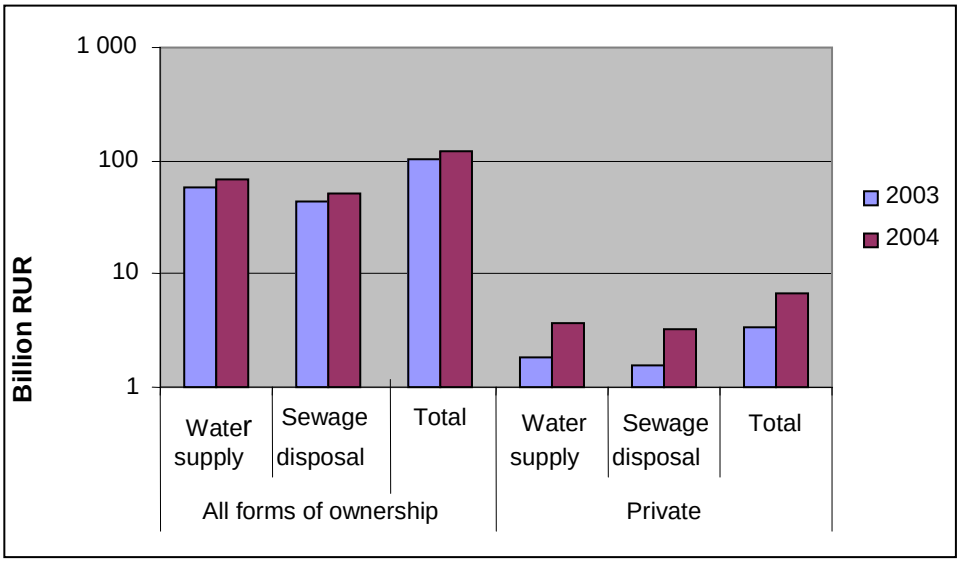
In recent years domestic private sector actors from the EECCA region have started to play a role in the water supply and sanitation sector (WSS) of a few EECCA countries. The most notable example is that of the Russian Federation, where several large private operators have been set-up, each with the objective of taking-up considerable market-share in Russia. More than 20 mostly large and medium size municipalities in the Russian Federation now have privately operated water systems. This report analyses private business development trends in the Russian water supply and sanitation sector over the last two years and tries to identify the key challenges and opportunities that this new situation is creating. It investigates whether the model of private sector involvement that is in use in the Russian Federation is sustainable in the long term and what it con contribute to the reform process.

10.2 The Russian water market and PPP

Currently domestic private companies provide WSS services for some **11**% of the urban population and operate in at least 20 cities in the Russian Federation (see table 10.2 in the annex) [125]. Most of these cities have a population of more than 250,000. The annual operating income of private operators more than doubled between 2003 and 2004 and now reaches RUR 6.9 billion, or about **6%** of the total operating income of state, municipally and privately owned water utilities in the Russian Federation (RUR 120 billion or USD 4.21 billion). In 2004 the growth of the municipal water supply and sanitation sector revenues was at 18%, significantly less than that of privately operated water utilities at 202% (see table 10.1 in annex).

[125] These figures do not include cities and share of population served by regional companies or companies operating *fully privatized* infrastructure facilities. Total market share of private companies could be roughly estimated as 16%-19% of total urban population.

Figure 10.1: Market share of private operators in the Russian water supply and sanitation sector



Source: Federal Statistical Agency.

While the *financial performance* of the municipal water supply and sanitation sector was still negative in 2004[126], the trend is towards an improvement, largely supported by the water tariffs for households increasing faster (at 28%) than production costs for this consumer group (at 26%, see annex, table 10.1)). In large cities with a population of 200,000 and more, most water utilities enjoyed operating profits, while in smaller towns and in rural areas (settlements with populations of less than 5,000) most water utilities incurred losses.

The entry of private businesses into the Russian WSS sector dates from 2003 when many large businesses declared their wish and preparedness to meet the challenge of supplying Russian end-users with electric power, heat, and water supply services. This was a politically motivated declaration made on the eve of the presidential election when the regime was particularly interested in sharing, with business, the responsibility for a sector in difficult condition. Still this declaration had great strategic importance as it signified big business' growing awareness of the potential benefits of the WSS sector as a new market with stable demand, significant cash flows, and limited competition.

This process was characterized by:

- The fast (in half a year) appearance of 5-6 companies positioning themselves as national communal (utility) services operators;

- The active expansion of the companies' business in various Russian regions with the intent to obtain control over power, heat, water and wastewater supply facilities, initially mostly for political rather than economic reasons;

[126] In this case the financial performance is defined as operating revenues minus operating costs across all water utilities.

- The signing of about 20 short-term utility leases (without investment commitments) and detection of many objective and subjective obstacles to private businesses' entry to the public services market;

- The clear dominance of the Russian Communal Systems Joint-Stock Company (JSC) during the initial period, when it managed to set-up daughter companies and/or open branch offices in 24 Russian regions in one year.

The past year has brought many changes in the government/business relations in the public service sector, the most notable of which are:

- Major improvements of the sector-related legislation through enactment of laws "On Principles of Utility Tariff Regulation" (December 2004), "On Concession Agreements" (July 2005), and the new "Housing Code of the Russian Federation" (December 2004). The laws are expected to significantly improve the investment climate in the sector and in the WSS sector in particular. However, the real effect of this legislation will become tangible no sooner than next year.

- The position of the big Russian private companies, which two years ago were so eager to develop the market for public services, has become more financially oriented and less politically loaded. Particularly notable changes are evident in the most prominent private operator - Russian Communal Systems JSC - which has reduced its presence in the field to only 13 regions.

- A new important trend towards long-term lease contracts, including investment commitments has emerged (such contracts may be easily converted into concession agreements). Already more than 10 contracts of this type have been concluded in the WSS sector.

- In the past year municipalities, for the first time, offered their WSS facilities for private operation through public tenders.

- Alongside big companies marketing themselves as national public service operators, Russian regions are also seeing the emergence of regional private operators that usually are affiliated either to regional power producers or powerful regional politicians.

- In many countries, engagement of foreign operators for water servicing is common practice, unlike in Russia where they have not met with success yet and are now less active.

These points are discussed in more detail in the following.

10.3 Legal trends

Two recent legal developments should help to improve the situation for a durable involvement of the private sector in operating water supply and sanitation infrastructure in the Russian Federation.

A new law on "Fundamentals of Utility Providers Tariff Regulation" (Federal Law nr.210-FZ), is coming into force on 1st of January 2006. It is expected that this law would help to reduce the tariff risk for utilities by making the change of tariffs more predictable, as it requires tariff setting authorities to take the full cost of operating and maintaining water systems into account and to set tariffs for a specified duration. The law also requires the involvement of the public in the process of tariff setting, and associates this to obligatory affordability assessments for household tariffs, which should help to improve the acceptance of tariff increases in the population. It also introduces a water utility performance monitoring system based on performance indicators, including the publishing of the data.

In order to set a better legal basis for the involvement of private operators in the WSS sector, the legislator has also adopted a federal law on "Concession Agreements" (Federal law nr.115-FZ adopted in July 2005). This law includes provisions regulating the fundamental guarantees of the rights and legal interests of the concessionnaire, aimed at protecting his investments against expropriation, including unfavourable changes in taxation and/or regulatory framework. The law also stipulates that concession contracts need to be awarded in open competitions.

The package of laws on housing and communal services sector approved in the fall of 2004 has established a private sector participation system, based on the "French" model, and concluded several years of intensive debates in the Russian Federation, which also considered the "German" model (corporatisation of water utilities including transfer of ownership of WSS infrastructure to the utility, but with a controlling share remaining with the municipality) and the "UK" model (full divestiture of WSS infrastructure with regulatory oversight). The debate came to this conclusion, because it was perceived that the "French" model allows for a stronger role for the private sector and more competition than in the "German" model, while not requiring the same, sophisticated regulatory capacity to be installed at the central government level as in the "UK" model.

10.4 Contracts

While at the outset, most PPPs were short term leases, about half of them have been transformed into long term leases over the past year. Between 2003 and 2004 more than 10 contracts for terms between 15 and 49 years were concluded, with the total serviced population covered by them approaching seven million.

This is, of course, a strategically important outcome, which will encourage the inflow of private investments into the water sector.

It should be remembered that in the early years of private operation of water services in Russia, preference was given to short-term leases, typically lasting no more than 11 months. The main reason for this were "technical barriers", which made signing of long-term leases impossible: Russian law provides for mandatory registration of such leases which, in turn, supposes mandatory assessment and registration of leased property. However, in Russia there was no practice to assess and register municipal property when it was put under operating control. Therefore, due to the underdevelopment of the municipal property registers as well as of the property appraisal markets, procedures for utility assessment and registration proved to be both time and money-consuming. For this reason, private operators concerned with getting fast access to the market chose to conclude short-term leases (not subject to mandatory registration).

However, apart from this, there were also other factors that explain the careful approach of both investors and public authorities to long-term contracts:

Public authorities were mostly concerned with the risk of losing property of assets, since the Russian Civil Code allows the lessee, after fulfilment of investment commitments, to claim ownership in newly built or modernised facilities.

Private investors are also exposed to risks associated with long-term contracts, mainly through uncertainty over tariffs where it is unclear whether contractual arrangements over tariffs may prevail over the authority of administrations to set tariffs.

As a consequence, long term leases that have been concluded in the last year are legally very fragile, which is why many are rather declarative and resemble memoranda of understanding more than actual contracts. However, it cannot be denied that these contracts have a great political value.

The new concession law confronts market actors with an interesting dilemma. The reason for this is that contracts that are based on the new concession law will allow to palliate most existing problems with long term contracts. However, such contracts can be placed only through a tender, while a lease may be concluded under a non-competitive procedure. Contracting parties will have to choose between less competition associated to high risks during execution of a contract on the one hand, and competitive selection of the operator, associated to smaller follow-on risks, on the other. Most likely both options will be in demand.

10.5 Industry structure

The past year witnessed major restructuring processes in the industry. Some companies market themselves as national water operators, which is to say they express their interest in the development of the water supply operations in various Russian regions. All these companies are backed by financially strong shareholders.

This group of water operators includes:

- **Russian Communal Systems (RCS)** – a company running water businesses in six Russian cities with a total population of some two million;

- **Eurasian Water Partnership** – a company running water businesses in two Russian cities with a total population of more than two million;

- **Novogor-Prikamje**– a company running water businesses in two Russian cities with a total population of some one and a half million;

- **Rosvodocanal** – a company running water businesses in two Russian cities with a total population of more than one million.

Three companies from this group have been operating in the utility market since 1994, while Eurasian Water Partnership was created only last autumn. Two other business entities that initially intended to enter the Russian water supply and sanitation market did not show any activity so far.

Alongside with the stepping up of the involvement of big businesses in the utility market, the water sector witnessed several new trends in the last year as a consequence of the ongoing corporatisation of water utilities.

The first trend lies in the fast emergence of regional private operators in the utility sector. Usually these are affiliated either to powerful regional politicians or to regional power producers. A good illustration is the case of Krasnoyarsk City where the Krasnoyrsk Communal Company, created as a privately-owned entity, was contracted for management of utility and housing property for the city (population, one million), including water and sewage facilities. The company is loyal to the interests of Mr. Khloponin, the *governor* of Krasnoyarsk Region, and co-owner of Norilsk Nickel. The company is headed by the *former vice-governor* of the region.

The dynamism of regional energy companies in the utility market may be exemplified by many Russian cities. For example, their initiatives in Barnaul (Altaj Kray's capital city with a population over 500 000) and in *Leningrad Oblast* are particularly noteworthy. In these areas, regional power producers and national operators joined their efforts and created cooperative ventures for utility services management. In Barnaul, such a venture was founded by Rosvodocanal, a national operator, and Barnaulenergo, a regional energy company, for management of the city's water sector. In Leningrad

Region, top managers from Lenenergo, a regional energy company, and Novogor Company established a cooperative venture for managing a low-voltage network belonging to rural municipalities of the region. This trend may be deemed positive and indicative of the growing interest in the utility sector of regional business elites alongside Moscow-based business majors. The contractual arrangements in these cases follow the same pattern as for the national operators, where the infrastructure remains in public (municipal) ownership and is managed by private companies on a contractual basis. Market share of private regional operators could be estimated as 3-5%.

The second trend is the conversion of municipal water enterprises into joint-stock companies who own the WSS infrastructure, with the equity entirely belonging to municipal or regional governments. The case of Yuzhno-Sakhalinsk, Primorsky Kray (Vladivostok) and Stavropol may serve as examples of this model of corporatisation. In these cases the ownership of WSS infrastructure operated by former municipal\state water utilities has been transferred to newly created private companies as an equity contribution, in fact following the "German" model. The trend towards using this model appears to be progressing steadily. Big private operators disapprove such practice as they believe that local administrators use it as an instrument for hidden privatisation of public property. Around 2-3% of WSS are provided through privatized infrastructure.

10.6 Competition

When interviewed, major private operators point out that the huge size of the Russian market for water services is going to limit competition at least in the medium term. As the supply of potential projects is far larger than the current demand of private operators for projects, intensive competition is likely to be limited to a few high profile deals. Today private operators have to compete mostly with local administrations, which may be tempted to keep cash flows from water supply and sanitation under their control.

Unlike Russian private operators that have been rather successful on the water market, international operators' have so far largely failed to establish themselves on the market. In the past year they have won no contracts for water facility management. Repeated attempts by Veolia, a French operator, to obtain operating control over the water and sewage sector in Podolsk City and other towns in the Moscow Region have been unsuccessful. This has been the case for all other foreign operators. The primary reason is the low transparency of deal making. Until now, the better part of leases, including long-term, were concluded under a non-competitive procedure. The current practice of non-public negotiations has resulted in a certain priority given to domestic operators. This priority is a result of Russian operators' better knowledge of the intricacies of the water sector and the decision making mechanisms rather than the result of corruption practices (although this risk should not be fully ruled out in circumstances of low transparency).

International private operators will be better placed to participate in the market, when significant investment will be attracted into the sector, as they have a competitive advantage in accessing low-cost capital. Therefore it is important for them to keep operating in the Russian water services market despite the low success rate to date, so as gain knowledge of the market and to be ready to step in when the opportunity arises.

Only two Russian cities (Omsk and Berezniki) have so far set-up a competitive bidding process to award contracts for the operation of their water services. Both of these tenders have been contested. The tender in Omsk has been criticised for having been manipulated, with only one of the bidders having the necessary credibility to receive serious consideration by the municipal authorities. The tender in Berezniki resulted in two strong bids being put forward, but the award of the contract to one of them has been challenged since then in court and the bid evaluation criteria have been criticised for being too subjective. With the recent adoption of the Russian Concession Law, which requires the competitive bidding for

concession contracts the number of tenders is likely to increase, building-up the needed experience and capacity to organise such tenders more effectively in the future. As mentioned earlier, the lack of serious bidders might however reduce the effectiveness of this approach.

10.7 Investment

Only now that long-term contracting has become actual practice it is reasonable to expect the inflow of private investments into the water sector. A year ago, when contracts were made mostly for a short term, the question did not arise. However, even today real private investments are rare. It is clear from available reports on utility sector investments, that today such investments are financed from operator's own funds, either from tariffs, *i.e.* profit, amortisation and capital repair charges, or from equity capital.

What this situation suggests is that the sector is not yet attractive for private investment, both due to its currently low profitability, and to the significant financial risks that are associated to such operations.

Private operators are therefore calling for government guarantees to insulate their business from some of these risks, as well as access to low interest loans, and the possibility to use future operating incomes as collateral for bank loans, which currently is not acceptable by Russian commercial banks. They are also demanding improvements in the institutional set-up that would allow them to reduce risks, such as more predictable tariff-setting procedures, and more control over the collection of payments through more effective enforcement mechanisms, including the allowance of disconnection of users.

10.8 Annex

Table 10.1: Main performance indicators of water companies in 2003-2004

	All forms of ownership			State owned			Municipally owned			Private		
	Water supply	Sewage disposal	Total	Water supply	Sewage disposal	Total	Water supply	Sewage disposal	Total	Water supply	Sewage disposal	Total
Operating income, RUR thousands												
2003	57 744 235	44 372 839	102 117 074	14 714 520	12 059 103	26 773 624	39 978 741	29 617 254	69 595 994	1 845 367	1 552 078	3 397 444
2004	68 002 955	52 103 634	120 106 589	17 511 683	13 579 240	31 090 923	45 571 485	34 367 223	79 938 708	3 644 158	3 222 729	6 866 887
Increased by	10 258 720	7 730 795	17 989 515	2 797 163	1 520 137	4 317 300	5 592 744	4 749 969	10 342 713	1 798 792	1 670 651	3 469 443
Growth rate	118%	117%	118%	119%	113%	116%	114%	116%	115%	197%	208%	202%
Income from retail services, RUR thousands												
2003	26 467 915	21 583 541	48 051 456	6 455 328	6 103 558	12 558 886	18 537 823	14 387 502	32 925 325	937 111	712 120	1 649 231
2004	34 532 948	27 820 568	62 353 516	8 769 012	7 364 511	16 133 524	23 187 132	8 477 400	41 664 532	1 855 192	1 493 076	3 348 268
Increased by	8 065 033	6 237 027	14 302 059	2 313 684	1 260 953	3 574 638	4 649 310	4 089 898	8 739 207	918 081	780 955	1 699 036
Growth rate	130%	129%	130%	136%	121%	128%	125%	128%	127%	198%	210%	203%
Operating costs, RUR thousands												
2003	65 192 384	46 330 241	111 522 625	15 968 005	11 951 771	27 919 775	45 052 275	31 145 882	76 198 157	2 541 813	1 806 852	4 348 665
2004	74 234 471	54 039 785	128 274 256	18 809 901	13 750 133	32 560 034	49 269 470	35 605 384	84 874 853	4 465 295	3 547 337	8 012 632
Increased by	9 042 086	7 709 544	16 751 631	2 841 897	1 798 362	4 640 259	4 217 195	4 459 501	8 676 696	1 923 482	1 740 485	3 663 967
Growth rate	114%	117%	115%	118%	115%	117%	109%	114%	111%	176%	196%	184%
Financial performance, RUR thousands												
2003	-7 448 149	-1 957 402	-9 405 551	-1 253 484	107 333	-1 146 152	-5 073 534	-1 528 629	-6 602 163	-696 446	-254 774	-951 221
2004	-6 231 516	-1 936 151	-8 167 667	-1 298 218	-170 893	-1 469 111	-3 697 985	-1 238 161	-4 936 146	-821 137	-324 608	-1 145 745
Increased by	1 216 634	21 251	1 237 885	-44 734	-278 226	-322 960	1 375 549	290 468	1 666 017	-124 691	-69 834	-194 524
Growth rate	84%	99%	87%	104%	-159%	128%	73%	81%	75%	118%	127%	120%
Debt receivable, RUR thousands												
2003	28 472 642	21 047 000	49 519 642	5 821 375	5 129 593	10 950 968	21 376 728	14 941 020	36 317 747	738 215	521 993	1 260 208
2004	27 875 024	21 006 191	48 881 215	5 138 927	4 383 715	9 522 642	20 743 763	15 092 041	35 835 804	1 444 850	1 155 500	2 600 351
Increased by	-597 618	-40 809	-638 426	-682 449	-745 878	-1 428 327	-632 965	151 021	-481 944	706 635	633 507	1 340 142
Growth rate	98%	100%	99%	88%	85%	87%	97%	101%	99%	196%	221%	206%
Debt payable, RUR thousands+A29.												
2003	28 638 130	21 316 949	49 955 078	4 857 185	4 017 194	8 874 379	22 769 866	16 308 128	39 077 994	347 464	361 055	708 519
2004	28 134 244	20 990 059	49 124 303	4 835 777	3 870 306	8 706 083	21 290 564	15 638 202	36 928 765	1 331 969	1 142 654	2 474 622
Increased by	-503 886	-326 889	-830 775	-21 408	-146 888	-168 296	-1 479 302	-669 927	-2 149 229	984 505	781 599	1 766 104
Growth rate	98%	98%	98%	100%	96%	98%	94%	96%	95%	383%	316%	349%

Source: Federal Statistical Agency

Table 10.2: Water supply and sanitation projects with participation of private operators in the Russian Federation

City	Private operator	Shareholders of the company	Year of entrance	Type of the contract	Term of the agreement	Volume of obligations	Tender	Population of city
Perm	LLC «NewUrban Infrastructure of Prikamye»	CJSC «New Urban Infrastructure»	2003	Long-term Lease + The Investment contract	49 years	Not less than 750 mln. Rub. for 2005-2009 years	No	1 009,4 thousand persons
Berezniki	LLC «New Urban Infrastructure of Prikamye»	CJSC «New Urban Infrastructure»	2005	Long-term Lease + The Investment contract	25 years	Refusal of participation in the project of the World Bank	Yes	250 thousand persons
Omsk	JSC «OmskVodokanal»	LLC «Eurasian Water Partnership»	2004	Long-term Lease + The Investment contract	25 years (with an opportunity of prolongation till 49 years)	4,3 bln. Rub. for 10 years, 450 mln. Rub. for 2005-2006 years	Yes	2 058,5 thousand persons
Rostov-on-Don	LLC « Rostov water partnership»	LLC «Eurasian water partnership» and others	2005	The Investment contract	n/a	1,2 bln. Rub., from which 0,8 bln. Rub. are already invested	No	1 070,2 thousand persons
Kirov	JSC «The Kirov Utility Systems »	JSC «Russian Utility Systems»	2003	Long-term Lease + The Investment contract	15 years	20 mln. USD, on 2006 year it is planned 46,6 mln. Rub.	No	502,9 thousand persons
Tambov	JSC «The Tambov Utility Systems »	JSC « Russian Utility Systems »	2003	Long-term Lease + The Investment contract	25 years	Refusal of participation in the project of the World Bank	No	294,3 thousand persons
Tomsk	JSC «Tomsk Utility Systems »	JSC « Russian Utility Systems »	2003	Long-term Lease + The Investment contract	49 years	n/a [2]	No	487,7 thousand persons
Blagoveshchensk	JSC «The Amur Utility Systems »	JSC « Russian Utility Systems »	2003	Long-term Lease + The Investment contract	10 years	n/a	No	223,7 thousand persons
Volgograd	JSC «The Volgograd Utility Systems »	JSC « Russian Utility Systems »	2003	Short-term Lease	11 months	Not significant	No	1 012,8 thousand persons
Kachkanar	JSC «Sverdlovsk Utility Systems »	JSC « Russian Utility Systems »	2003	Short-term Lease	11 months	Not significant	No	47,4 thousand persons
Petrozavodsk	JSC «Petrozavodsk Utility Systems »	JSC « Russian Utility Systems »	2005	Long-term Lease + The Investment contract	20 years	n/a	No	266,2 thousand persons
Orenburg	LLC «Orenburg Vodokanal»	LLC «Rosvodokanal»	2003	Long-term Lease	20 years	n/a	No	548,8 thousand persons
Barnaul	LLC «The Barnaul Vodokanal»	LLC «Altaivodokanal», debenture trust LLC «Rosvodokanal» JSC «Barnaulpower»	2005	Short-term Lease	11 months	Not significant	No	662,2 thousand persons
Krasnoyarsk	«The Krasnoyarsk Utility »	n/a	2005	n/a	n/a		No	912,8 thousand persons

Notes: 1. This Table does not include information about some other Russian cities where private companies operate successfully (such as, for example, Syzran, Otradniy and Moscow) because of lack of needed information.

2. In 2006 JSC « Russian Utility Systems » will discuss attraction of 70 - 100 mln. USD loans for project financing. Under the forecast, in five years' prospect the volume of loans attracted by JSC « Russian Utility Systems » can increase up to 400 - 500 mln. USD.

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