EAP Task Force

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JOINT MEETING OF

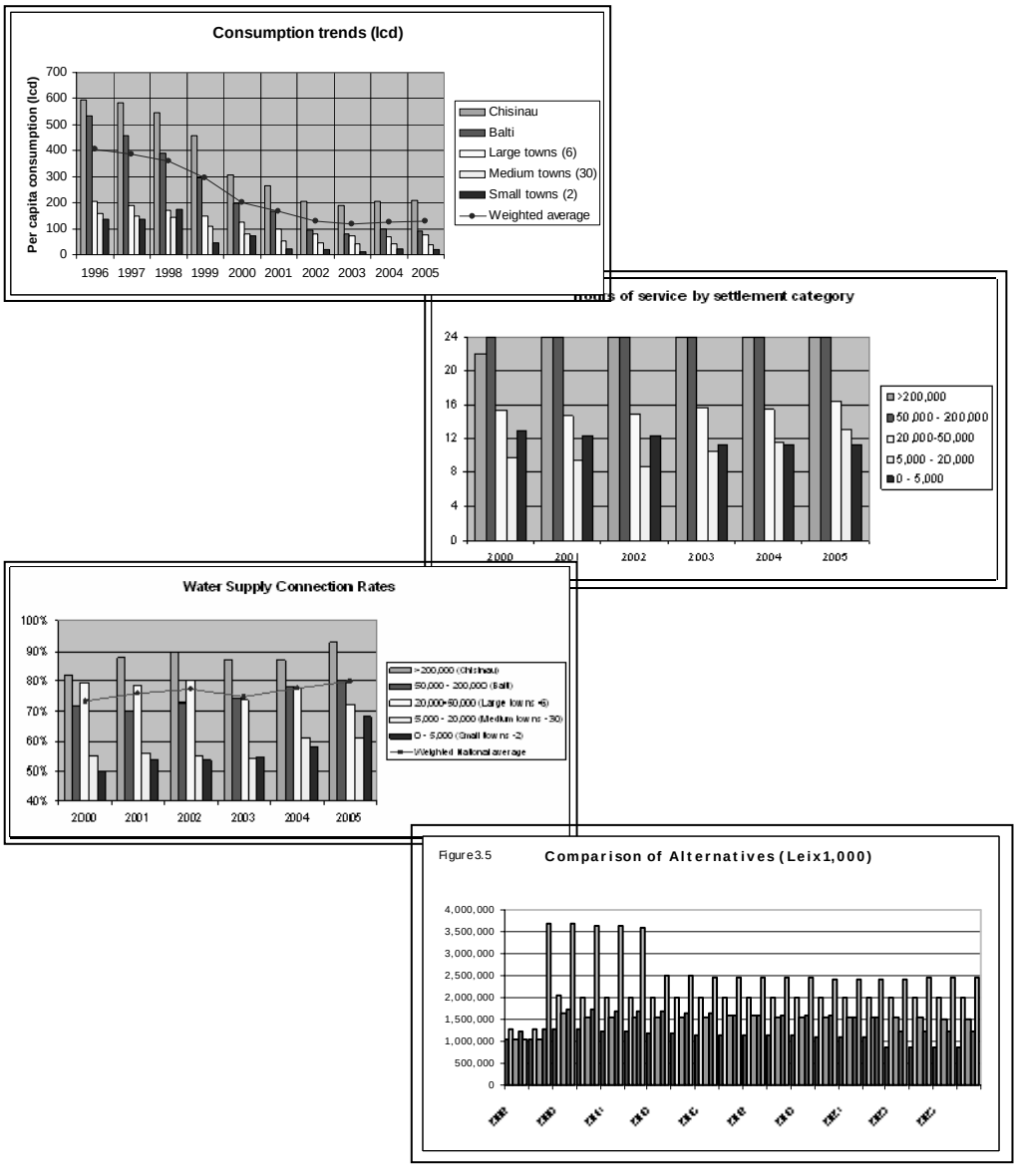
THE EAP TASK FORCE'S GROUP OF SENIOR OFFICIALS ON THE REFORMS OF THE WATER SUPPLY AND SANITATION SECTOR IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA

THE EU WATER INITIATIVE'S EECCA WORKING GROUP

DRAFT
DISCUSSION PAPER FOR WATER AND WASTEWATER DEVELOPMENT STRATEGY FOR MOLDOVA

DOCUMENT 7

Draft
Discussion Paper for Water and Wastewater Development Strategy for Moldova



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Report: Discussion Paper for Water and Wastewater Development Strategy for Moldova

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Executive Summary

1. Introduction

Having suffered from decades of neglect and under-investment, the country's water and wastewater infrastructure is, in general, in a deplorable condition, and radical changes in how the sector is financed and managed is urgently needed to halt further deterioration.

This paper, prepared as part of an on-going study financed by the EC, Germany, the UK, and the EU Water Initiative, and implemented by the OECD/EAP Task Force, assesses the financial consequences to the Government of Moldova of adopting different policy targets in the water and wastewater sectors.

2. Alternative policy targets and financial implications

The different policy targets assessed are shown in Table 1 below, which also shows which sector and which beneficiaries are targeted by the different scenarios.

Table 1 Alternative sector targets considered and beneficiaries

Policy targets	Urban	Rural
1) **Baseline**: To halt deterioration of existing infrastructure	• Improved O&M • Reinvestment in old infrastructure • Very modest improvements	• Very modest capital investment improvements
2) Baseline + Meeting the **MDGs**	• As baseline	• Investment in non-piped supplies. • Modest investment in simple piped water supplies • Investment in on-site sanitation.
3) Baseline + **EC Directives**	• As baseline, Plus: • Water supply extensions to reach 95% of population in urban settlements. • Wastewater extensions to reach 90% connections to urban towns. • Water and wastewater treatment	• As baseline
4) Baseline + **MDGs + critical WWTP**s	• As Scenario 2 with full rehabilitation of 7 WWTPs	• As Scenario 2
5) Baseline + **MDGs + EC Directives**	• As Scenario 3	• As Scenario 2
6) Draft Strategy	• All targets	• MDGs

The financial consequences of adopting the different targets are shown in Table 2.

Table 2. Financial consequences of sector targets

Target	User charges needed above existing level, by the factor of	Government contribution (% of budget) per annum	External assistance, EUR million per annum	Total 20 year expenditure EUR Million
Existing	1	0.5%	5 million	
1) Baseline	2.3	2.3%	17 million	1320
		Either from 2.3% up to*	**Or from 17 million up to*:**	
2) 1 + MDGs	2.3	4.2%	37 million	1820
3) 1 + EC Directives	2.3	4.2%	37 million	1840
4) 2+ critical WWTPs	2.3	4.5%	50 million	1910
5) 1+MDGs+ EC Directives	2.3	5.6%	72 million	2340
6) Draft Strategy	2.3	12.0%	160 million	3240

* *Scenario 2 to 6 include baseline financing conditions and show incremental requirements for government budget contributions or external assistance (alternatively a combination of government budget or external assistance).*

As shown by the baseline scenario, major increases in sector expenditure are required to fund adequate levels of operation and maintenance and to commence a programme to replace old, unserviceable infrastructure. Increase in user charges up to affordability levels (increased gradually over time up to 5% of the household disposable income), of over twice the existing average tariff levels, will fund most of the baseline expenditure. However, increases in Government contributions (by over 400%) and external assistance (by over 300%) will also be required. These increases rise to apparently unrealistic levels as the policy targets increase as shown in Table 2.

3. Discussion

The baseline scenario was designed to provide the lowest level of expenditure to halt further deterioration of existing infrastructure, and to make some modest rehabilitation to reduce operating costs. This scenario was discussed during the Steering Group's meeting in March, where the consensus was that the resulting financing requirements were challenging. Nevertheless, given serious Government backing and reform to sector management and administration to increase its implementation capacity, this could be attainable.

The implementation of the baseline scenario is seen as the essential first step to improving the water and wastewater sectors, and these costs are therefore essential to all other alternatives considered.

The difficulties expressed in mobilising the financial resources and in implementing even the baseline objectives implies that achieving more costly objectives such as meeting the MDGs and EC Directives would not be possible, at least in the immediate future.

To make these alternative scenarios more affordable, and more logistically possible, the cost estimates for the above assessments assumed least cost solutions and longer periods for implementation.

Nevertheless, as shown in Table 2, these still appear to be beyond the level of financing that could be realistically assumed in the near to medium term.

4. Conclusions

a) The baseline scenario (or something close to this in financial terms) is the only realistic level of expenditure at the current time. The option assumes substantial increase in tariffs, as well as over 400% increase in Government budgetary support and over 300% increase in external support. It also assumes reform to sector management and administration. However, this scenario does not address rural requirements, and does not meet Government sector targets such as the MDGs, EU Directives and pollution reduction to international waters.

This conclusion does not mean that the Government should abandon these targets, but rather adopt a more flexible approach to the proposed deadlines for achieving them.

b) Assuming the Government actively pursues the recommendations of the Poverty Reduction Strategy Paper, and an efficient, transparent, market economy evolves, then, as the economy improves, the Government targets can be raised, to meet the following objectives in order of priority:

- MDGs
- Improvements to key wastewater treatment plants discharging to international waters
- EC Directives

List of acronyms and abbreviations

BNS	Bureau of National Statistics
EAP TF	Environmental Action Programme Task Force
EC	European Commission
EU	European Union
EUR	Euro (currency of the European Monetary Union)
GDP	Gross Domestic Product
GoM	Government of Moldova
IFI	International Finance Institutions
Lcd	Litres per capita per day
MACA	Moldova Apa Canal Association
MDGs	Millennium Development Goals
MDL	Moldova Lei
M3/s	Cubic metres per second
MF	Main Funds
O&M	Operation and maintenance
OECD	Organisation for Economic Co-operation and Development
PRSP	Poverty Reduction Strategy Paper
RM	Republic of Moldova
WS	Water supply
WW	Wastewater
WWTP	Wastewater Treatment Plant

Currency equivalents

Currency Unit = Lei
The exchange rate used in this report is EUR 1 = 16.5 Lei

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1 Introduction

The deteriorating condition of water and wastewater infrastructure in Moldova, and the consequences of its failure to public health and the environment, results in an urgent need for the development of a sector strategy to halt and reverse this trend. Previous attempts to develop a strategy have concentrated on evaluating the engineering capital costs of improvements without addressing the critical issues of the cost of properly operating and maintaining existing infrastructure, the availability of finance, and capacity for implementation.

To illustrate the scale of investment requirements, and the decisions faced by the Government of Moldova, this paper makes a preliminary assessment of the financial requirements of a number of notional alternative development strategies and discusses the realistic prospects of attracting the finance required. It also briefly looks at existing capacity to implement projects in Moldova, and suggests ways of improving this.

This assessment has been prepared as part of an on-going study, and the results should be viewed as preliminary, pending completion of the study. The analysis has used real constant prices for costs, revenues and income levels, which assumes that both costs and revenues increase in real terms in conjunction with each other over time.

2 Existing situation & Need for Action

Existing situation

Basic indicators for population coverage are summarised below:

Table 2.1 Basic indicators (2005 figures)

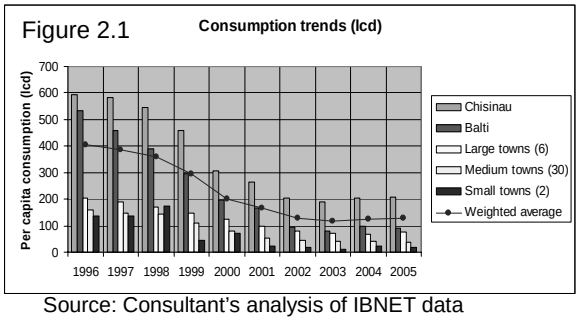
Size of town	Nr	% off population	% WS connections	% sewer connections	Per capita consumption lcd
> 200,000 (Chisnau)	1	17%	93%	81%	193
50,000-200,000 (Balti)	1	4%	80%	64%	77
20,000-50,000	6	4%	72%	55%	78
5,000 – 20,000	35	12%	61%	36%	44
0-5,000	11	1%	68%	33%	35
Rural settlements(1)	1472	61%	12%	5%	33
Overall		100%	38%	27%	110

Source: MACA data base for year 2005
(1) Consultants estimates, based on Acvaproiect's 2002 survey results

The low connection rates in rural areas reduce the national average connection rates to around 38% for water and 27% for wastewater.

The dramatic impact on consumption of the introduction of metering from 1996 is demonstrated in Figure 2.1, which shows the rapid decline from excessive pre-

Figure 2.1



Source: Consultant's analysis of IBNET data

independence design norms, to consumption levels that are apparently below international averages. Consequences of this trend include; reduction in revenues, excess capacity of existing infrastructure and the need to regulate the quality of water meters.

With few exceptions, the existing infrastructure was built in pre-independence times to generous design norms but with poor materials and workmanship. This has lead to high operating costs and short economic lifetimes. In addition, financial constraints on the operators have resulted in insufficient investment in repairs, renovations and replacements, resulting in deterioration of the condition of the infrastructure and of the service levels provided.

The poor condition of the infrastructure and poor financial health of water utilities are evident from the irregularity of supplies, as indicated in Figure 2.2, which shows the average hours of service for different sizes of towns. (Irregularity is often due to the inability of water utilities to pay their electricity bills on time, as well as other bills, including salaries).

Figure 2.2

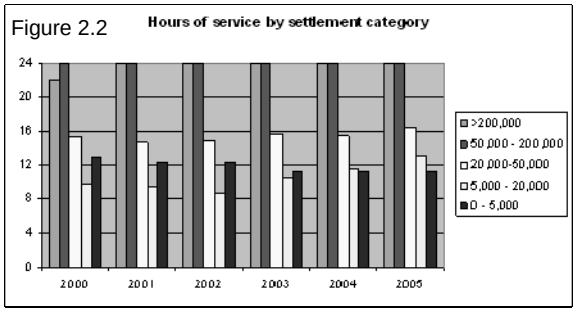
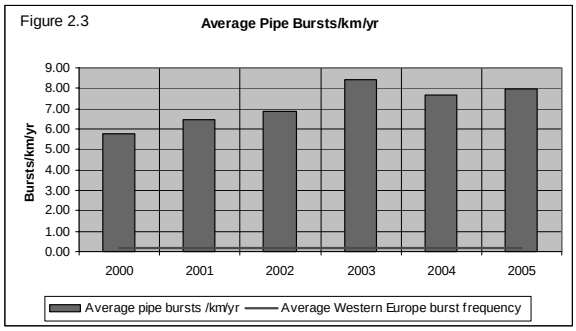


Figure 2.3 indicates the high levels of pipe bursts (40 times higher than Western Europe, and increasing). Sewer blockage rates are equally high, as are the levels of unaccounted water.

Figure 2.3



Source: Consultant's analysis of IBNET database

With the exception of Chisnau and Balti, effluent discharged from urban wastewater treatment plants fails to meet the required effluent standards for about 70% of the time, and the 750 treatment plants built in rural areas do not operate at all.

Urgent investment in the sector is required, in order of priority to:

1. provide adequate funds to operate and maintain existing infrastructure
2. replace those parts of the infrastructure which are no longer serviceable
3. rehabilitate the infrastructure to desired serviceability and capacity levels
4. Extend systems to population not supplied.

Without investment, the situation will become worse, with inevitable consequences to public health and to pollution of surface waters, which include the Prut, Dniester and the Black Sea, all of which are subject to international agreement.

In addition, decentralisation of the management of infrastructure has lead to most towns having insufficient human (as well as financial) resources to effectively manage and operate the systems.

As indicated in the Poverty Reduction Strategy Paper[1], current practices and procedures for the implementation of projects within the sector are cumbersome, inefficient, and are a deterrent to international investors. In addition, organisational changes and the low level of construction activity over the last two decades have lead to a lack of capacity and know-how to implement projects.

[1] Republic of Moldova: Poverty Reduction Strategy Paper; IMF; Dec 2004

Therefore, in parallel with the urgent need for investment in infrastructure, there is also an urgent need for change in the way the sector is organised:

- To provide tariff regulation to ensure operators have sufficient income to operate and maintain their systems.
- To ensure adequate human resources are available for operation and maintenance
- To maximise the use of the limited number of skilled professionals within the sector.
- To provide a level of equity between cost of water in villages and towns
- To improve the capacity to transparently implement projects

Alternative development options are discussed in the following Chapter 3, the scope for financing these options is discussed in Chapter 4, and the Organisational issues that need to be addressed to improve sector performance and implement the chosen Development Strategy are briefly discussed in Chapter 5.

3 Alternative Development Options

Initial considerations

The final strategy will need to take account of a number of objectives, which to a certain extent, overlap:

1. Maintenance of existing infrastructure: to halt deterioration
2. Improvements to coverage and reliability: to provide modest improvements
3. Meeting the MDGs: Targeting improvement of health in rural areas.
4. Meeting the requirements of the EU Directives: Benefiting mainly urban areas and environmental objectives.
5. Meeting MDGs and a few critical wastewater treatment plants (WWTPs).

The first two objectives; to provide sufficient funding to operate, maintain and halt deterioration of existing infrastructure, and to provide some basic improvements to operating performance is an essential element to all strategies, and this has been taken as the baseline scenario. All other alternative strategies therefore include these baseline costs.

Financial constraints dictate that the time frame for meeting these alternative strategies needs to be carefully assessed together with a realistic assessment of the financial resources available. The following scenarios have therefore been assessed, to provide an indication of the financial consequences of meeting the different objectives. To improve affordability, least cost engineering solutions and extended target dates have been assumed in preparing the estimations. Details of the options are described in more detail in the following sections.

Table 3.1 Alternative development options

Options	Urban	Rural
1) Baseline	• Improved O&M • Reinvestment in old infrastructure • Very modest improvements	• Very modest capital investment improvements
2) MDGs	• As baseline	• Major investment in non-piped water supplies. • Modest investment in simple piped water supplies • Major investment in on-site sanitation.
3) EC Directives	• As baseline, Plus: • Water supply extensions to reach 95% of population in urban settlements. • Wastewater extensions to reach 90% connections to urban towns. • Water and wastewater treatment	• As baseline
4) MDGs & EC Directives	• As Scenario 3	• As Scenario 2
5) MDGs + critical WWTPs	• As Scenario 2 with full rehabilitation of 7 WWTPs	• As Scenario 2

With scarce resources, Government objectives and policies will need to be prioritised and adjusted as suggested below:

- Meeting MDGs prioritised to safeguard health and to met international agreements
- Date for achieving MDGs to suit realistic financing
- Secondary priority for investment in strategic wastewater treatment plants to protect international waters and to suit realistic target dates
- Third priority meeting EC Directives and target dates.

It is reasonable that Moldova first of all strives to comply with international liabilities undertaken, i.e. to achieve MDGs and provide respective waste water treatment for water discharged into international rivers such as the Prut and the Dniester (borders with Romania and Ukraine) and into the Black Sea. Achieving more distant strategic goals such as compliance with EU Directives should be second priority for resource expenditure.

3.1 Baseline scenario (maintaining existing infrastructure with modest improvements)

This option investigates the cost of operating and maintaining the existing infrastructure, and making some very modest improvements (renovating 25% of treatment plants and extending services in only those towns with lowest levels of connections).

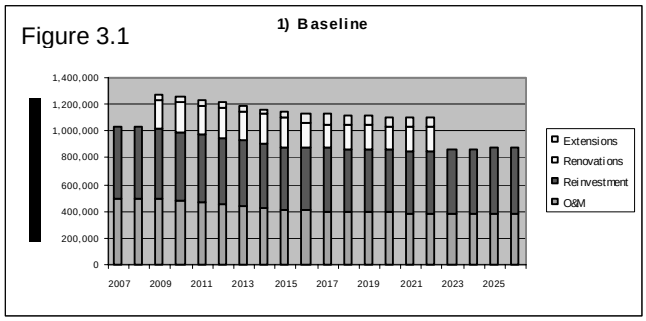
The assumptions made for this scenario included:

- Full costs of operation and maintenance (continuous).
- The annual cost of replacement of worn out infrastructure (continuous)
- Limited renovations to treatment plants and distribution systems (Water Supply investments 2008-2015; Wastewater investments 2015-2022)

- Minor extensions in towns with particularly low connection rates to water and wastewater services. (Water Supply investments 2008-2015; Wastewater investments 2015-2022)
- Minor improvements to rural infrastructure (continuous).
- Reliable 24 hour supplies

Total financial resources required amount to 21.8 billion Lei, (1.3 billion EUR) peaking at 1.3 billion Lei (79 million EUR) per year in 2009. Sixty percent of the costs are for water and 40% for wastewater infrastructure. The annual variation of the different components of costs is indicated in Figure 3.1.

Figure 3.1



3.2 MDGs with baseline scenario (focus on improvements in rural areas)

It is assumed that all development options must include the operation, maintenance and annual replacement costs necessary to maintain the condition of the existing infrastructure. The costs of achieving the MDGs will therefore be in addition to the costs of the baseline scenario given above.

The water and wastewater Millennium Goals established in 2004[2] included:

Table 3.2 MDG Targets and Indicators

Target	Indicator
Target 10: To halve, by 2015, the proportion of people without sustainable access to safe drinking water	The proportion of population with sustainable access to an improved water source to reach 65% by 2015
Target 11: Significant improvement of the living conditions	The proportion of population with access to improved sanitation to reach 90% by 2015

From Table 2.1, it can be seen that approximately 78% of the urban population is already connected to piped water supplies and 68% to sewerage, whilst rural connection rates are only 12% and 5% respectively. With roughly 60% of the total population classified as rural, it is evident that, to meet the MDGs, it is necessary to concentrate on rural areas.

To meet the MDGs, it has been estimated that approximately 0.85 million people will need improved water supplies and 0.83 million people will need improved sanitation. Due to the financial constraints that exist in Moldova, and the high cost of piped water and wastewater reticulation systems, it has been assumed, for the purposes of this paper, that low-cost solutions for water and wastewater will be the more financially appropriate technologies, and initial analysis indicated that the target date of 2015 for meeting the MDGs should be reviewed.

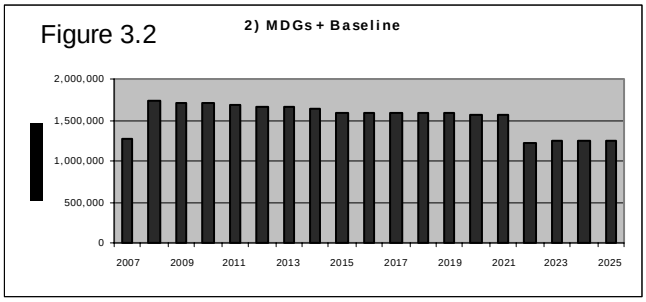
[2] Millennium Development Goals "Targets and Indicators for the Republic of Moldova" UNDP/Government of the Republic of Moldova; 2004.

The appropriate low-cost technologies for water supplies are: improved, and or relocation of shallow wells and, where water quality concerns still prevail, simple piped supplies, based on good quality borehole sources.

For sanitation, the most appropriate technologies are; simple improved pit latrines that are easy to clean and maintain, and exclude flies and odours. In areas where simple pit latrines are not appropriate, the use of septic tanks is recommended unless other considerations dictate that a sewer reticulation system is mandatory.

Concern over the resulting high annual cost of meeting the MDGs by the year 2015 led to the distribution of investments over a longer period (2008-2022), to reduce the annual investment requirement.

Figure 3.2



The total estimated cost of meeting the MDGs, (including the baseline costs), amounts to 30.3 billion lei (1.8 billion EUR), peaking at 1.7 billion Lei (103 million EUR) per year in 2009 as indicated in Figure 3.2. It should be stressed that this represents a least cost alternative for meeting the MDGs, and that if piped water supplies and sewer reticulation systems are considered, the costs would increase significantly

3.3 EC Directives (urban) with baseline

The key (most costly) Directive for estimating required investment costs is the Urban Wastewater Directive (91/271/EEC), as this requires wastewater collection and secondary treatment to all agglomerations of over 2,000 pe, and provides more stringent limits for Nitrogen and Phosphorous removal for towns of more than 10,000 pe. Other significant Directives include The Drinking Water Directive 98/83/EC and the Water Framework Directive 2000/60/EC.

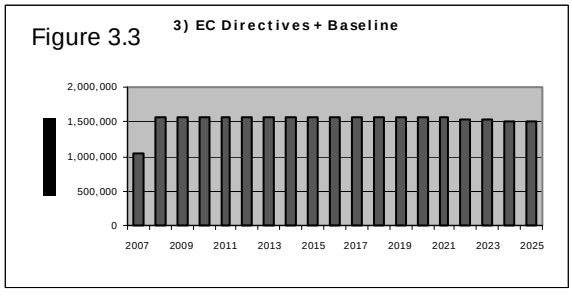
For the purpose of this paper, it was assumed that, as a first priority, the EC Directives should be applied to towns categorised as urban with centralised piped water supply and sewerage systems. It is also assumed that, in common with strategies adopted by most Accession States, rural settlements even those with populations over 2,000, will be addressed as a second priority, with a more distant target date, after the larger towns satisfy the EU Directives.

The result is that this option focuses on investment in Urban systems, and cannot therefore be considered as a comprehensive country wide strategy on its own.

Due to anticipated affordability constraints to be expected from an early target date, the investment period has been assumed to commence in 2008 and last until the end of the immediate planning horizon of 2026.

The total estimated cost of meeting the EC Directives (including the baseline costs), amounts to 30.1 billion lei (1.8 billion EUR), and because investment has been assumed to be evenly distributed between 2008 and 2026, the annual

Figure 3.3



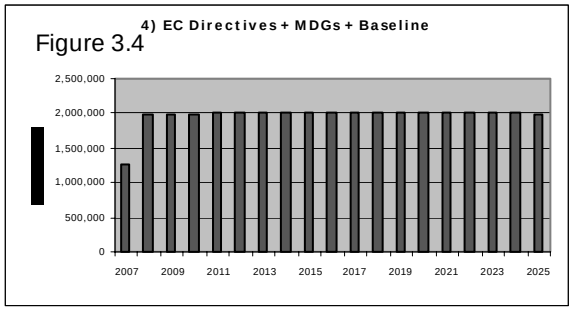
cost is roughly constant at 1.6 billion Lei per year (97 million EUR), as indicated in Figure 3.3.

3.4 MDGs + EC Directives + Baseline

As described in the above sections, to meet the MDGs it is necessary to focus investment in rural areas, and to meet the EC Directives it is necessary to focus on urban areas, therefore, both policies on their own do not provide a comprehensive development strategy for the whole country. A further scenario therefore looks at combining the investments required for these two policies:

The total estimated cost of meeting the MDGs and EU Directives (including the baseline costs), amounts to 39 billion lei (2.4 billion EUR), and because investment has been assumed to be evenly distributed between 2008 and 2026, the annual cost is roughly constant at 2 billion Lei (121 million EUR) per year, as indicated in Figure 3.4..

Figure 3.4

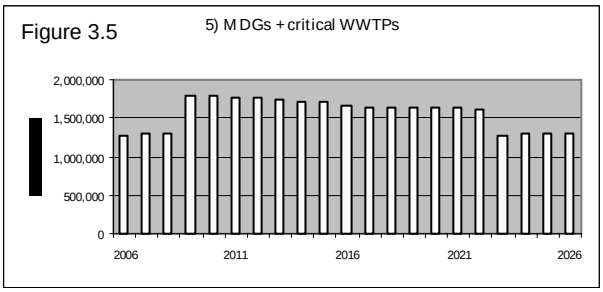


3.5 MDGs + critical wastewater treatment

The cost of fully renovating a number of critical wastewater treatment plants (to suit existing levels of flows), was added to the cost of achieving the MDGs. For the illustrative purposes of this exercise, the treatment plants chosen included Cantemir, Cahul, Rezina, Basarabeasca, Ungeni and Soroca.

The total estimated cost of meeting the MDGs and renovation of critical treatment plants (including the baseline costs), amounts to 33 billion lei (2 billion EUR), and the investment distributed as indicated in Figure 3.5

Figure 3.5

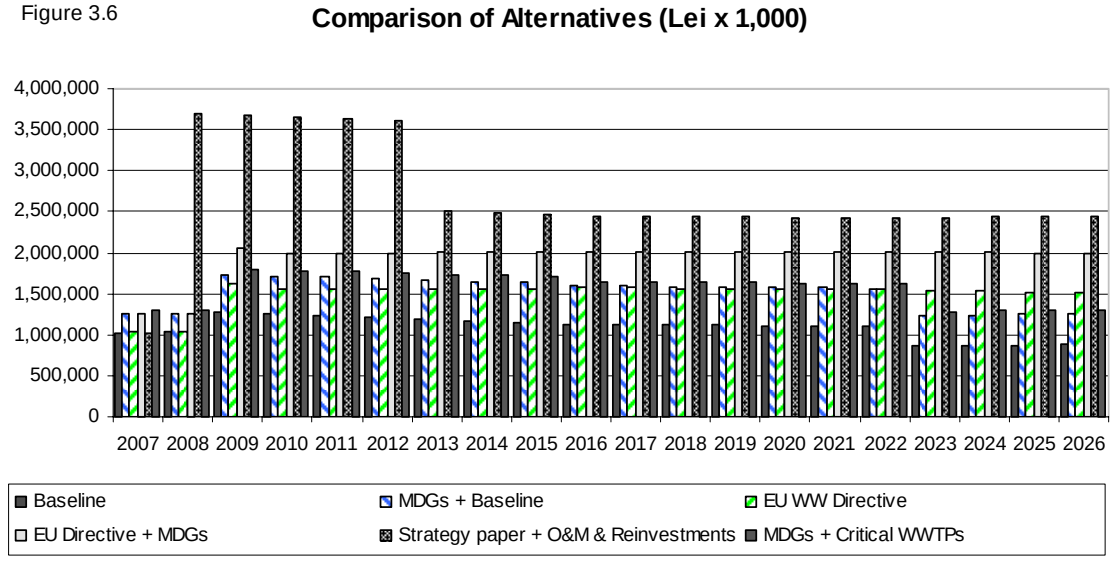


3.6 Comparison with "Draft Strategy"

The recent Draft Strategy provides an unconstrained assessment of the costs of improving the water supply and sanitation infrastructure in Moldova, which assumes no constraints on finance and implementation capacity. The total cost, to which has been added the operation and maintenance costs of the baseline scenario, amounts to 53.5 billion Lei (3.2 billion EUR), with peak annual costs of around 3.6 billion Lei (220 million EUR) per year.

Figure 3.6 below compares the Draft Strategy to the annual cost of the above alternative scenarios. As can be seen, the expenditures under the draft strategy are much higher than expenditures for even the most expensive of the other scenarios.

Figure 3.6



4 Scope for Financing Alternative Development Options

4.1 Introduction

This section assesses the scope for financing the alternative development scenarios discussed in the preceding sections. It examines the potential sources of finance for the baseline scenario, and carries out projections for the level of funds that could be realistically available from each source. And finally it highlights the potential financing gap that would be need to be addressed for each scenario

4.2 Financing Requirements

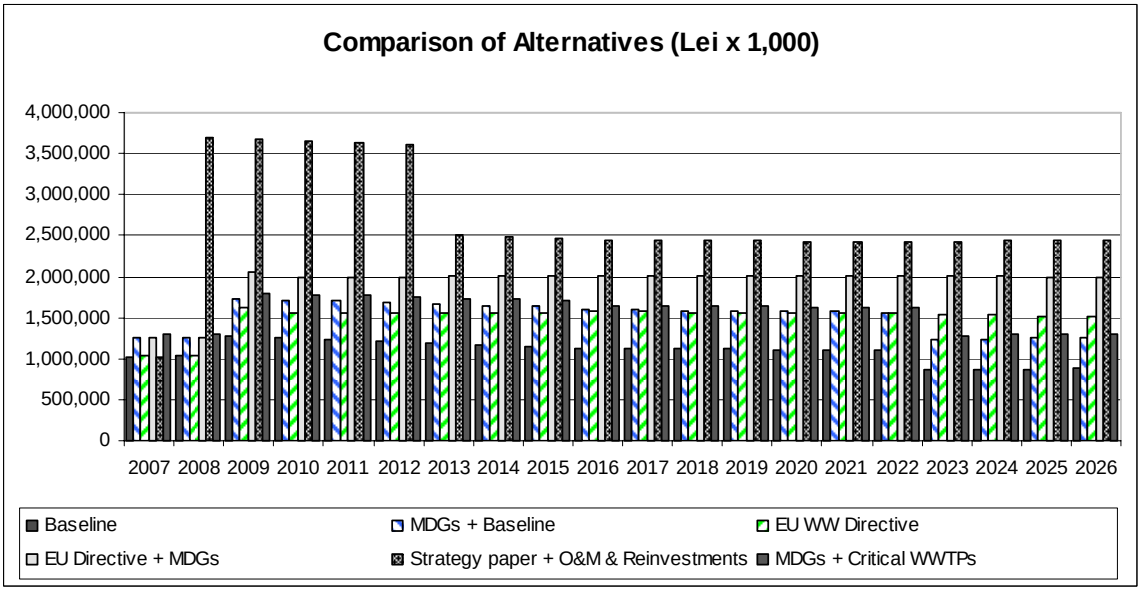
Total annual financing requirements for the alternative scenarios for rehabilitation and improvements of water supply and wastewater sectors which comply with the different objectives are shown in Figure 4.1. The accumulated total expenditures over the period are estimated to be as shown in Table 4.1

Table 4.1 Accumulated Total Expenditures for Alternative Scenarios

Scenario	Lie billion	Euro billion
Baseline	21.8	1.32
EU Wastewater Directive plus Baseline	30.1	1.82
MDGs plus Baseline	30.3	1.84
Baseline plus MDGplus Critical WWT plants	31.5	1.91
EU Directive plus MDG plus Baseline	38.7	2.34
Draft Strategy	53.5	3.24

The costs are projected in real terms in 2006 prices, which means that there is no allowance for price escalation. Including price escalation at the prevailing rate of 10% per annum over the long term would have produced fairly meaningless expenditure profile.

Figure 4.1 Total Annual Expenditures for Alternative Scenarios – Lei '000'



4.3 Sources of Finance

There are three basic sources at the disposal of the Government to finance the proposed expenditure presented by the alternative scenarios for development. These include:

- User charges for supply of water and wastewater services
- National public budget support for capital investments and operations
- External donor contributions for capital investments

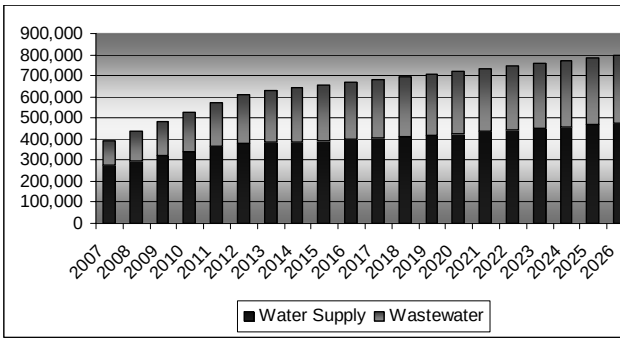
User Charges

In an ideal situation, the tariffs levied on consumers should fully recover the economic cost of services generating sufficient revenues for service providers to undertake all necessary maintenance and capital investments. However, this has rarely been achieved in the economies in transition. The key consideration has been low levels of household incomes

The majority of international financing institutions and EU agencies adopt affordability criteria which recommend that household expenditure on water and wastewater services should not exceed 5% to 6% of its monthly income. The existing expenditure levels account for less than 3% of average monthly per capita income in most towns and cities in Moldova.

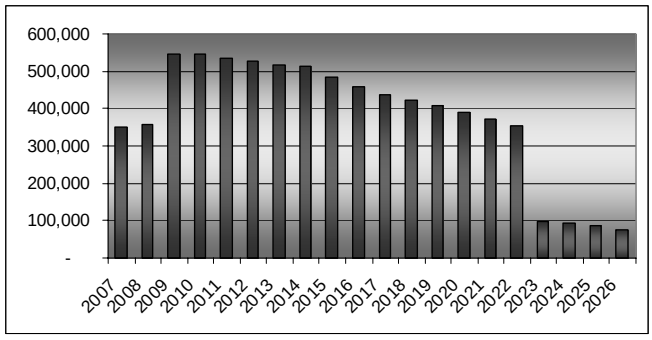
Projected Revenues from User Charges – Lei ('000)

Based on the assumption that tariffs would be raised to affordability thresholds, assumed to be 5% of average monthly per capita income, the projected revenues are assumed to increase relatively quickly until the user charges reach the affordability limit in 2015, and more gradually for the remaining period.



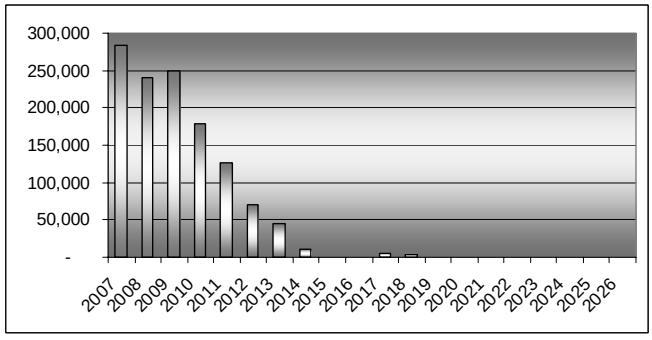
This results from the underlying assumption that real per capita incomes are projected to increase in real terms relative to the costs by 3% per annum between 2007 and 2009, declining marginally to 2.4% per annum between 2010 and 2014 and remaining at annual increases of 1.4% for the rest of the period under consideration. These assumptions are considered to be consistent with the long term economic trends for the national economy. On the basis of these assumptions the contribution of user charges is estimated to generate total revenues of Lei 13.0 billion from water and wastewater services in real prices over the 20 year period.

Projected National Budget Support (Lei '000)



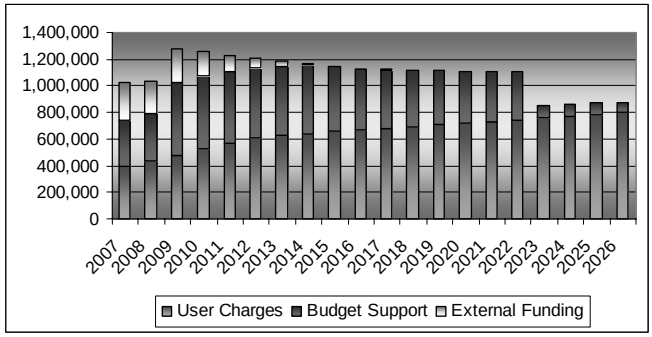
The projected national public budget support, which shows a plausible profile, totals Lei 7.6 billion for water supply and wastewater services over the 20 year period. In 2007 and 2008 it accounts for about 1.8% of forecast overall public expenditure compared with the planned expenditure of just 0.5% in 2006. To meet the financing needs of the baseline scenario it would increase to around 2.3% in 2009, and gradually decline as a proportion of total overall expenditure between 2010 and 2022 and reducing considerably thereafter as the assumed expenditure requirements for the sector are reduced.

Projected External Financing Needs (Lei '000)



The involvement of external bilateral donors and IFIs, who could provide much needed grant and loan funds for the sector, has been fairly insignificant to date. The baseline projections show relatively large contribution by external donors and IFI's to meet the needs of the water and wastewater sector. The financing profile assumes large donor support in the earlier years to provide urgently needed assistance and modest contributions in later years and little or no support after 2014. However, the future role of the external donors would depend on Government policy and how and where it wishes to use external financing. It may be that the Government may wish to harness greater support of donors for the water and wastewater sectors and reallocate the national budget support for critically needed investments in other sectors. Nevertheless, on the basis of the baseline projections, a total of Lei 1.2 billion of external financing is assumed over the period. This would take up a significant proportion of the Government's forecast for external financing assistance between 2007 and 2009

Summary of Base Case Financing Projections (Lei '000)

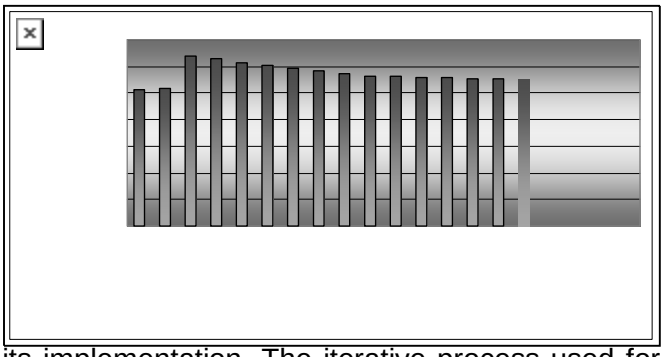


The base case financing projections are considered to represent the most realistic set of assumptions that could be presently used in the economic situation of Moldova. Nevertheless, these can be adjusted to reflect specific priorities and objectives. However, prior to adjustment of the assumptions, the following should be noted about the contribution of each source of funding.

Projected revenues from user charges for water supply and wastewater services cannot be realistically raised above the affordability threshold of 5% of the household disposable income. It should be noted that the impact of relative increases in real incomes significantly move the threshold criteria upwards resulting in doubling of revenues from user charges over the period. National public budget support, which is projected to increase significantly over the first few years from about 0.5% of the overall budget expenditure at present to around 2.3% by 2010, could be increased further but the Government would have to make some difficult decision about shifting resources from other national priorities. External financing from IFIs and other donors is estimated to have averaged around € 5 million per year over the last four years and it is projected to increase to € 15 million to 17 million over the first few years and reducing to modest levels after 2010 before ceasing altogether after 2013. This is an optimistic assumption considering the trends in recent past. However, higher level of external funding could be harnessed but it would require much more effective donor coordination than at present. In the event greater external financial support could be achieved over this period, the Government reduce national budget support as result.

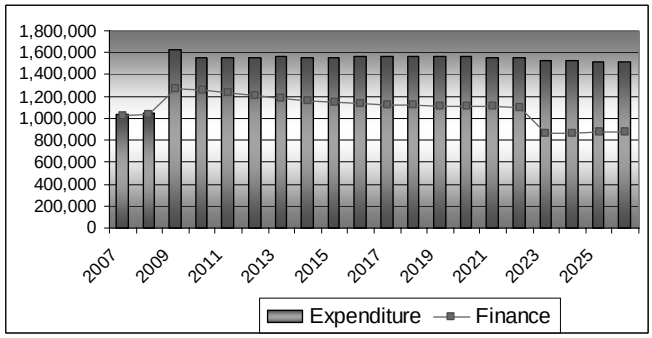
It should be emphasised that the projections shown here for increases in user charge revenues, public budget support, and external financing are substantially greater than achieved before.

4.4 Baseline Scenario (Lei '000)



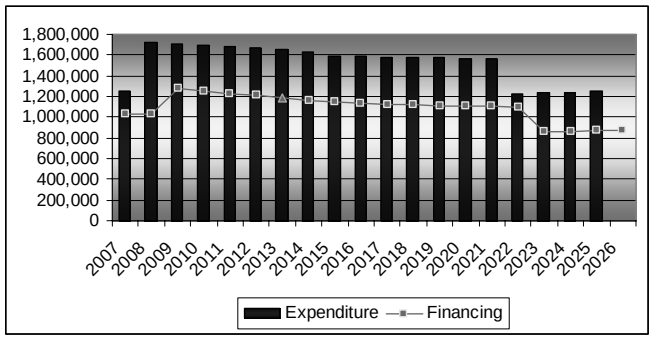
The baseline financing projections shown above are applied to the baseline scenario and not surprisingly they fit perfectly. The baseline scenario for rehabilitation and improvements was developed by the consultants with particular regard to realistic assessment of availability of adequate financial resources for its implementation. The iterative process used for the analysis resulted in the expenditure needs being matched by the financing projections.

4.5 EU Wastewater Directive plus Baseline Scenario (Lei '000)



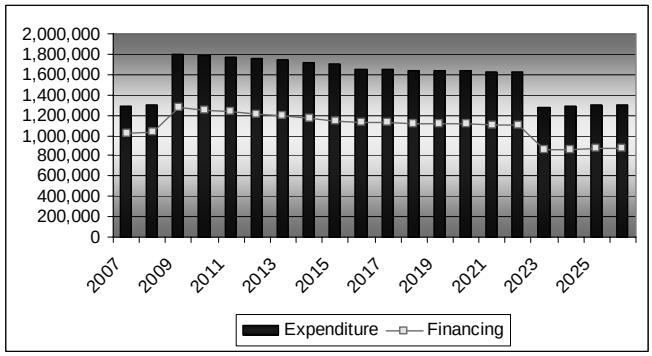
The baseline financing projections are also applied to the scenario of complying with the EU wastewater directive and meeting the expenditure requirements of the baseline scenario. As expected there would be a significant financing gap without adjusting the assumption used earlier for base case financing projections. Under these assumptions financing gap would be approximately Lei 349 million in 2009 which would increase gradually over the period. One option would be to increase the national budget contribution to 4.2% of the total government expenditure in 2009 and keep it at about this level in real terms over the period. The other option would be to increase the external financing contribution to € 37 in 2009, which would have to go up throughout the period. A combination of both of these options could also be considered but all these would present an enormous challenge.

4.6 Millennium Development Goals plus Baseline Scenario (Lei'000)



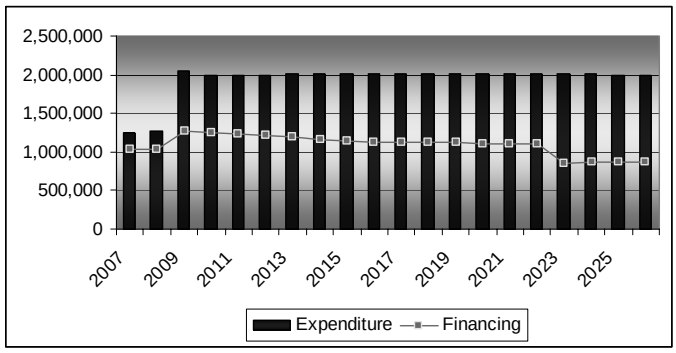
The expenditure pattern of this development scenario is not very different to the preceding scenario and consequently similar financing options are likely to be needed as in the previous case. The base case financing projections show the financing gap

4.7 Baseline plus MDGs plus Critical WWT Plants Scenario (Lei'000)



The expenditure requirements are increased by about Lei 1.2 billion compared with the preceding scenario as a result of rehabilitation of some of the wastewater treatment plants located in environmentally sensitive areas. The resulting financing gap would also increase to Lei 523 million 2009 which would gradually increase over the period. The measures needed to address the financing shortfall would be to either increase national budget support significantly to 4.5% of the total government expenditure in 2009 and continue at about this level over the period or increase the external financing contribution to approaching € 50 million per year in 2009 and keep this up for the remaining period. Neither of these options appear to be feasible in current economic climate.

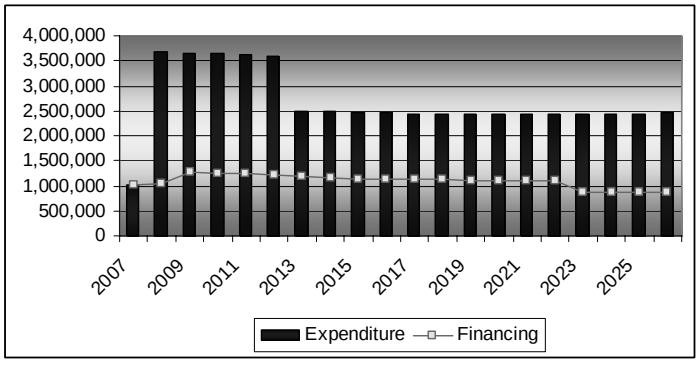
4.8 EU Directives plus MDGs plus Baseline Scenario (Lei'000)



The combination of all these objectives makes even greater demand on the scarce resources of the country. The financing gap, as illustrated by superimposing arguably the most realistic scope for financing represented by the base case financing projections, appears untenable. It is difficult to imagine that a deficit of over Lei 798 million in 2009 over and above the base case financing projections could be financed. If national budget support is considered, it would need to go up to 5.6%of the total Government expenditure in 2009 and remain at about that level throughout the 20 year period. While this level of support for the water and sanitation sector is not uncommon in other transition economies it is very unlikely that it could be feasible in Moldova in the present economic situation. It would also be equally unrealistic to assume that external financing sources could make up this deficit by providing around € 72 million per annum starting in 2009 and keeping up this level of funding throughout the 20 year period. A combination of the two options does not seem any more feasible.

If such a high level of financing is made available, a major problem will be the inability of population to pay the higher tariffs necessary to fully cover the increased O&M expenditure. Donors are extremely unlikely to agree to continue providing grants to cover the resulting shortfall in revenues.

4.9 Draft Strategy Scenario (Lei '000)



The Draft Strategy Paper estimated the cost of meeting various objectives without considering the constraints to financing resources at the disposal over the country. The base case financing projections illustrate the magnitude of gap, which would total Lei 2.4 billion per annum between 2009 and 2012 and reduce to around Lei 1.3 billion thereafter. It would be difficult to contemplate that such a financing deficit could ever be met by a national budget support of over 12% of the total government expenditure or around € 160 million per annum for five years from the external donors. Any number of iterations of combination of financing sources would not fill the financing gap.

4.10 Concluding remarks

Increasing sector expenditure to the levels indicated by the baseline scenario are shown to be plausible, but the further increases necessary to meet the MDGs or EC Directive objectives are considered to be unrealistic in the timeframe considered without radical and major changes in the national economy, Government budgetary allocations and external donor support. A longer timeframe to meet these objectives is considered more realistic.

Due to the evident financing constraints, Government objectives and policies will need to be prioritised and adjusted as discussed in Chapter 3:

1. Safeguarding existing infrastructure
2. Meeting MDGs to safeguard health and to meet international agreements
3. Date for achieving MDGs adjusted to suit realistic financing targets
4. Investment in strategic wastewater treatment plants to protect international waters, and to suit realistic target dates
5. Meeting EC Directive requirements and target dates.

It is therefore suggested that Moldova's mid term policy targets should first aim to comply with international obligations undertaken, i.e. to achieve MDGs and provide waste water treatment for water discharged into international rivers such as the Prut, the Dniester and into the Black Sea. Achieving EC Directive requirements should be a second priority in the light of the possibility of joining the EU

A decision to focus on achieving the sector MDGs will help Moldova mobilize donor support in the short term. This is likely to include funding from the Millenium Challenge Account, financed by the USA, as well as IDA (International Development Association of the WB) and other concession loans.

Meanwhile, a political statement of willingness to comply with the EC Directive requirements in the long-term will help Moldova obtain additional help from the EU countries.

5 Development Issues

5.1 Policy choices

As suggested in the preceding chapters, Moldova's scarce financial resources will mean that the Government will not, in the short to medium term, be able to meet all the targets it desires, and some difficult decisions will need to be made. Choices include:

- A focus on safeguarding existing infrastructure, essential for urban health, is suggested as mandatory, but will utilize all sustainable user charges. Other improvements will therefore be dependent on other sources of finance.
- A focus on rural health will prioritise meeting the MDGs, whereas;
- Meeting EC Directives would tend to focus on urban wastewater collection and treatment.
- A focus on meeting International Agreements for discharge to water bodies would prioritise urban wastewater treatment over meeting MDGs.

5.2 Policy implementation

There are a number of factors that hinder the planning, management, operation, maintenance, investment and implementation of water and sanitation infrastructure in Moldova. Unless these issues are addressed, even the modest objectives of the Baseline Scenario will not be achieved. Some of these factors are discussed briefly below, together with possible solutions:

1. Cost recovery from user charges: To halt deterioration of existing infrastructure, greater cost recovery needs to be achieved from user charges. In the short to medium term user charges should recover all operating, maintenance and annual replacement costs of existing schemes. The baseline scenario indicates that this would require increasing the current average level of tariff by 2.8 times. In the longer term, user charges should also recover all costs including investment costs. However, as this is not affordable in the short-term, a heavy reliance will need to be placed on national budget support and external donor grants and low-interest loans.
2. Financial sustainability: Under current arrangements, water utilities are unable to increase tariffs to cost recovery levels as these are controlled by the municipalities. It has been proposed[3] that the authority to approve tariffs should be shifted to a national regulatory agency or preferably to an independent regulator for the sector, and this view is strongly supported.
3. Management: Decentralisation has left many municipalities unprepared for managing water and sanitation infrastructure. Regional operating companies could help solve the resultant human resource and financial constraints and improve operating efficiencies.
4. Equality of user charges: The unit cost of providing services increases with decreasing size of settlements, which results in poorer communities paying more for water. The creation of regional operating companies, as suggested in (3) above, with uniform tariffs across their service areas, would significantly improve affordability in smaller settlements, without unduly impacting costs in urban areas, but it would be at the expense of cross subsidies from urban areas to smaller settlements.
5. Organization: Clear responsibilities need to be defined for:
   - Regulation (new regulator)
   - Planning (Ministry of Public Local Administration or Agency)
   - Implementation (Agency or new Regional Operators)
   - Management (new Regional Operators)

   Once the organizational framework has been agreed, an intensive capacity building programme will need to be prepared and implemented, mobilising international expertise.
6. Metering: The current policy of metering consumers needs to be strengthened by the introduction of tighter controls on quality of meters and their reading.
7. International finance: To attract higher level of international financing, Moldova will need to implement projects in accordance with internationally accepted practices and procedures.
8. Implementation: The baseline scenario requires replacement of existing infrastructure, renovations and extensions totalling some 740 million Lei (EUR 45 million) per year. This represents approximately 10 times the current level of sector expenditure. In order to implement this increased volume of work, current legislation needs to be reviewed and reformed in accordance with (6) above, together with significant capacity building at the central and regional levels.

[3] Urban Water and Sanitation Sectors Strategy Note, January 2007, World Bank