



Short Justification for the Municipal Water Services Financing Strategy, Kazakhstan

Submitted to the Ministry of Environment
and Natural Resources, Kazakhstan



.....
OECD  OCDE

EAP Task Force

DEPA/DANCEE

Danish Environmental Protection Agency
Danish Cooperation for Environment in Eastern Europe

This report has been prepared by COWI AS in association with COWIconsult International Ltd., Russian Federation.

The work was financed by the Danish Environmental Protection Agency (DEPA) as part of the Danish Cooperation for Environment in Eastern Europe (DANCEE).

The work has been coordinated by a DEPA steering committee also comprising representatives of the Organisation for Economic Cooperation and Development (OECD) and the beneficiary ministries.

The opinions expressed are those of the consultant. The Danish Ministry of Environment – Danish Environmental Protection Agency (Danish EPA), the OECD EAP TF and the beneficiary ministries may not agree with these opinions.

2001

Short Justification for the Municipal Water Services Financing Strategy, Kazakhstan

Submitted to the Ministry of Environment
and Natural Resources, Kazakhstan



DEPA/DANCEE

Danish Environmental Protection Agency
Danish Cooperation for Environment in Eastern Europe

Background

The Danish Ministry of Environment and Energy, The Danish Environmental Protection Agency, (The Danish EPA) has decided to fund a number of projects to provide assistance to the OECD Environmental Action Plan Task Force (EAP TF) Secretariat and directly to selected Ministries of Environment in the NIS.

The projects commenced in August 1999. The present document, “Short Justification for the Municipal Water Services Financing Strategy, Kazakhstan”, is one of a series of documents coming from the projects.

The projects will:

- Provide assistance in elaborating national environmental financing strategies in four selected countries in the NIS, viz.: Georgia, Kazakhstan, Moldova and Ukraine.
- Provide assistance in elaborating regional environmental financing strategies in two selected regions in the Russian Federation, viz.: Novgorod and Pskov regions.
- Provide assistance to the EAP TF in the preparation of a survey on the use of economic instruments for pollution control and natural resources management in the New Independent States.
- Conduct a study of the suitability of the OECD methodology for assessment of environmental expenditure based on case studies in Georgia and two regions in the Russian Federation, viz.: Novgorod and Pskov

Table of Contents

1	Introduction	1
1.1	Acknowledgements and disclaimer	1
2	Executive summary	3
3	Existing situation	7
3.1	Service level	7
3.2	Tariff regime	9
3.3	Baseline scenario	9
4	Financing strategy (short to medium term)	13
5	Long-term scenarios	17
5.1	Scenario: Extended wastewater treatment	17
5.2	Scenario: Expenditure and financing required for Astana development	19

List of Tables and Figures

Table 3.1	Population and population served in cities in Kazakhstan	7
Table 3.2	Renovation needs - municipal water supply	8
Table 3.3	Renovation needs - municipal wastewater treatment plants.....	8
Table 3.4	Share of water supplied which complies with sanitary norms	9
Table 3.5	Baseline expenditure Kazakhstan water and wastewater services ..	10
Table 3.6	Baseline supply of finance Kazakhstan water and wastewater services	11
Table 3.7	Baseline financing gap and maintenance backlog	11
Table 4.1	Expenditure requirements and financing in the financing strategy 2000 - 2020.....	15
Table 5.1	Expenditure requirements and financing in the " Extended wastewater treatment" scenario 2000 - 2020.....	18
Table 5.2	Expenditure requirements and financing in the " Astana Development" scenario 2000 – 2020.....	20
Figure 3.1	Municipal water and wastewater baseline maintenance backlog 2000 - 2020.....	12
Figure 4.1	Expenditure needs, supply of finance, financing gap and maintenance backlog in the financing strategy (KZT million).....	16
Figure 5.1	Gap assessment, "extended wastewater treatment" scenario.....	19
Figure 5.2	Astana development scenario - financing gap	21

Abbreviations and acronyms

AMC	Anti-Monopoly Committee
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
EFS	Environmental financing strategy
EUR	Euro
FDI	Foreign direct investment
GDP	Gross domestic product
KZT	Kazakh tenge
M	Mechanical wastewater treatment plant
MB	Mechanical-biological wastewater treatment plant
MNREP	Ministry of Natural Resources and Environmental Protection
OECD	Organisation for Economic Co-operation and Development
O&M	Operation and maintenance
PIP	Public investment programme
WWTP	Wastewater Treatment Plant

1 Introduction

The Danish Ministry of Environment and Energy (DANCEE) has funded a project to provide assistance to the OECD Environmental Action Plan Task Force (EAP TF) Secretariat and to selected Ministries of Environment in the NIS in the field of environmental financing strategies, environmental expenditure, and economic instruments for pollution control and natural resources management.

As part of this project, COWI was entrusted by DANCEE and the OECD EAP TF to assist the Ministry of Environment and Natural Resources of Kazakhstan in the development of a financing strategy for the municipal water services sector. This paper presents the short justification for the financing strategy and the conclusions of the work undertaken jointly by COWI and the Ministry of Environment and Natural Resources of Kazakhstan supervised by the project steering committee.

The paper presents the proposed financing strategy for the short to medium term (5-10 years) by providing an overall target and suggesting a number of policy interventions in order to reach that target. In addition, two possible scenarios for the longer term are presented.

It is anticipated that this paper will provide a useful framework for further policy development for the municipal water services sector, as well as for the planning of public investments to maintain and develop municipal water supply and wastewater infrastructure in Kazakhstan.

In addition to this paper, two major outputs for the Municipal Water Services Financing Strategy have been provided:

- The decision support tool containing city level data on the water and wastewater sector.
- A report presenting the Background Analysis for the Financing Strategy

1.1 Acknowledgements and disclaimer

The principal authors of this paper are: Birgitte Martens, Zsuzsa Lehoczki, and Michael Jacobsen. However, many others have provided useful comments and

contributions. These contributions notwithstanding, all errors and omissions remain the responsibility of the authors.

The opinions expressed are those of the consultant. DANCEE (the Danish Ministry of Environment and Energy); the OECD EAP TF and the beneficiary ministries may not agree with these opinions.

2 Executive summary

Extensive infrastructure

The urban population of Kazakhstan is served extensively with centralised piped water supply. In the larger cities (towns with more than 50,000 inhabitants) most of those served by piped water supply are also connected to sewers and to a wastewater treatment plant. In the cities of 20 - 50,000 inhabitants the share of persons with access to piped water supply is almost as high as in the larger cities, but wastewater sewers and in particular treatment of sewerage is much less widespread. The pattern is not dissimilar to the one seen in Western Europe 30 years ago and in Central Europe until recently.

But poorly maintained

Unfortunately, the water and wastewater services infrastructure has been inadequately maintained for at least a decade. As a result the need for renovation of existing infrastructure is very large. The surveyed authorities assess that in the larger cities more than half of the water supply network, more than a third of the surface water treatment plants and just about one third of the mechanical – biological wastewater treatment plants need renovation.

A crisis is looming

Water supply is still regular in most cities, but on average 17% of the water supplied in large cities does not comply with sanitary norms. The deterioration in service level is less in the beginning, then more later in the physical lifetime of the infrastructure. The fall in service level may become rapid towards the end of the lifetime. Many cities in the former Soviet have experienced a very rapid deterioration in water supply quality and regularity over a short time span as a result of inadequate maintenance.

Unless there is more finance

There is a risk that this may also happen in many cities in Kazakhstan unless the water services sector on an annual basis gains access to financial resources that are roughly double the current level of revenues for the sector.

Doubling of revenues needed to maintain current state

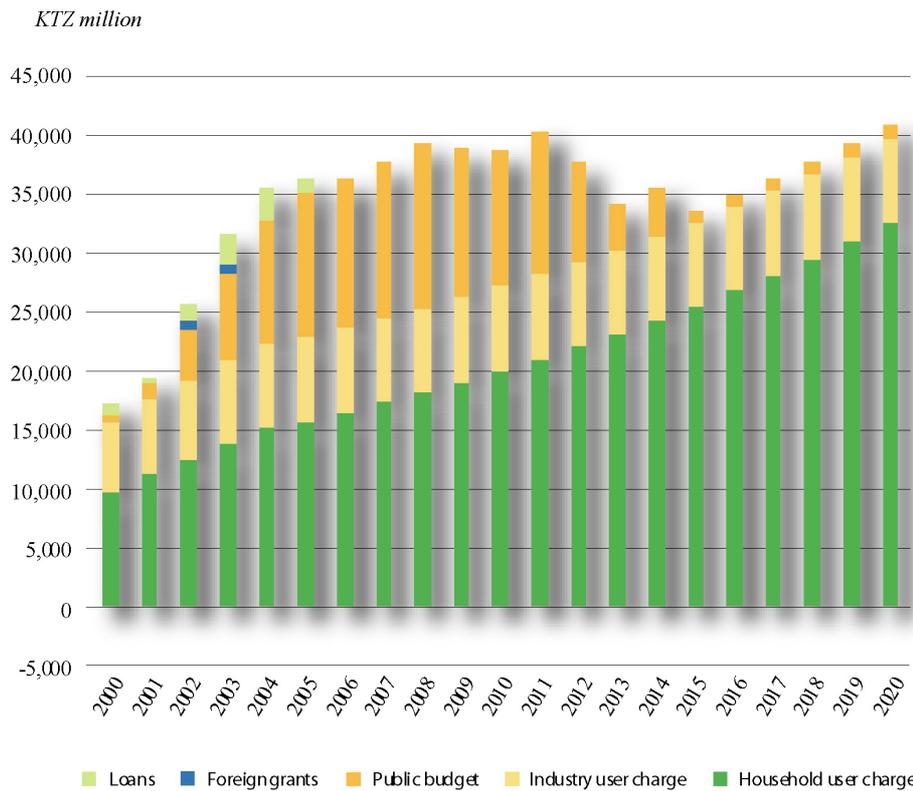
Based on a survey of water and wastewater utilities in 41 large and medium sized cities of Kazakhstan an overview of the present state of the infrastructure has been developed. Using a costing model, which has been developed for CIS countries and calibrated for Kazakhstan, the expenditure needed to maintain the current state of the infrastructure have been assessed. A doubling of the current level of revenues is necessary just to maintain the current state of the infrastructure. Additional financing is needed to renovate the existing infrastructure.

Astana needs finance	Furthermore, it will be necessary to invest in new water and wastewater infrastructure in particular as a consequence of the development of Astana.
Sensible levels for user charge	Per capita water production and user charges both vary significantly from town to town. On average production is more than 435 litres per capita per day and users are charged on average 0.15 USD per m ³ for water and wastewater. Charges are uniform across user groups within each city and there is no cross-subsidisation of households by industry. The tariff level does not in itself seem unreasonable in an international perspective. Collection rates are 67% to 75% which is acceptable, but not impressive. However, due to the high costs of operating the systems, reflecting over capacity, large water losses, high cost of water supplied from water transmission companies etc. user charges generally cover only operational expenditure. Current user charges are - on average - not sufficient to contribute to the current maintenance expenditure.
But rules are not transparent	User charges are constrained by legitimate concerns about affordability of higher charges for some socio-economic groups. The process of tariff setting involve negotiations with the local Anti-Monopoly Committee. The rules are complicated and the tariff setting process is not transparent. User charges differ widely from municipality to municipality. This indicates that there ought to be socio-economic room for increased charges in a number of the "cheaper" cities.
Limited scope for general tariff increases	While tariffs may be increased in some cities, it is unlikely that user charges in general can be increased drastically in the short run. Over time revenues can be increased if the real "burden" of user charges is maintained. Specifically, if water payments are increased in line with both inflation and increases in per capita growth, and if collection rates for households and industry are raised to 90%, ten years from now the increased revenues could finance maintenance of the current infrastructure. In other words, unless substantial additional financing is made available water services infrastructure will continue to deteriorate for another ten years. This is not viable.
Necessary to attract both public and private finance	User charges must be supplemented by a combination of public expenditure (for water and wastewater rehabilitation and new investments), foreign direct investment and debt financing in order to avoid a crisis situation.
Current level of public finance is very low	The current level of public financing of water and wastewater services in Kazakhstan is very, very low compared to other countries both Central European and former Soviet countries. Currently, public expenditure for water supply and wastewater constitutes 0.025% of GDP in Kazakhstan. Many Central European countries have managed to combine public and private financing to renovate and improve their water services. In these countries public expenditure for water and wastewater often constitutes more than 0.5% of GDP equivalent to twenty times the ratio in Kazakhstan.
An increase requires better project preparation	Taking international experience into consideration a twenty fold (!) increase in public expenditure for water and wastewater services appears to be realistic. However, such an increase in finance from the public budget would require a huge effort on the part of the relevant authorities, including the Ministry of Natural Resources and Environmental Protection, in preparing high quality

project and budget proposals and in convincing the Government including Ministries of Economy and Finance to allocate a larger share of the public budget for the sector.

Steep increases in finance can eliminate financing gap

The figure below illustrates a possible increase in the supply of finance assuming increases in user charges in line with inflation and income growth etc, a twenty fold increase in public expenditures over five years complemented by additional foreign grants, loans and/or equity investments.



But backlog of maintenance exist for at least 10 years

An increase similar to the one illustrated is necessary to eliminate the current underfinancing of the sector (or financing gap) as quickly as possible. However, even in a scenario of funding whereby the financing gap turns to a financing surplus after four years, the accumulated backlog of maintenance, which is not carried out in the next four years, will only be eliminated after 11 years. This is illustrated in the figure below. In this scenario it will only be possible to address the current rehabilitation needs (or backlog of maintenance) after 11 years!



Private finance can contribute

Debt financing and foreign direct investments can also contribute to supply the financing, which is necessary in the short to medium term. For Kazakhstan much of this financing will be from international financial intermediaries or from foreign investors, who will require public co-financing of infrastructure rehabilitation. Thus private financing is not a substitute for additional public financing, but it can be complementary if a number of policy conditions are fulfilled. The exact balance between private and public finance can be different to the one illustrated in the figures above, but public budget financing will have to contribute a significant share.

Policy conditions must be fulfilled

Debt financing and foreign direct investments is well suited to bridge a short term gap in financing, provided that there are:

- Credible policies which safeguard creditors' claims, ensure sufficient autonomy for the water utilities; and underpin enforcement of tariff collection by water utilities;
- A tariff approval regime that is transparent and which takes debt service needs into account; and
- Sound and credible macro-economic and exchange rate policies, which reduce credit risk and exchange rate risk.

The long term

In the longer term the water and wastewater sector will require additional finance. This is true for the extension of infrastructure in Astana. It is also the case in order to finance any improvement in water supply quality, regularity and coverage as well as in sewer coverage and improved wastewater treatment quality. These issues are important in their own right and they will need to be addressed. However, they are not as acute as the need to address the country – wide deterioration of water and wastewater infrastructure which has taken place for a decade and continues to take place at an alarming rate.

3 Existing situation

3.1 Service level

Population served

The urban population of Kazakhstan is served extensively with centralised piped water supply. In the larger cities (towns with more than 50,000 inhabitants) most of those served by piped water supply are also connected to sewers and to a wastewater treatment plant. In the cities of 20 - 50,000 inhabitants the share of persons with access to piped water supply is almost as high as in the larger cities, but wastewater sewers and in particular treatment of sewerage is much less widespread. This is illustrated in the table below.

Table 3.1 Population and population served in cities in Kazakhstan

Town category	Towns more than 50,000 inh.	Towns more than 50,000 inh.	Towns more than 20,000 inh., less than 50,000	Towns more than 20,000 inh., less than 50,000
	No.	Per cent of total	No.	Per cent of total
Total population	5,820	100%	1,227	100%
Connected to water supply	4,600	79%	903	74%
Gap 1	1,220	21%	324	26%
Connected to sewers	4,192	72%	687	56%
Gap 2	408	7%	216	18%
Connected to wastewater treatment	4,066	70%	206	17%
Gap 3	126	2%	481	39%

Sources: Data collected by the team from local branches of the State Environmental Inspectorate and the Anti-Monopoly Committee

The pattern is not dissimilar to those seen in Western Europe 30 years ago and in Central Europe until recently.

Renovation needs

The regional branches of the State Environmental Inspectorate and the Anti-Monopoly Committee assess that a significant part of the systems need rehabilitation.

Table 3.2 *Renovation needs - municipal water supply*

Town category	Share of network that needs renovation	Share of surface water treatment plants that need renovation	Share of groundwater system that needs renovation
> 50,000 persons	53%	38%	25%
20,000 - 50,000	31%	21%	37%

Sources: Data collected by the team from local branches of the State Environmental Inspectorate and the Anti-Monopoly Committee

The situation in each municipality differs. However, as illustrated in the table, the need for renovation of existing systems is very large. This reflects an existing backlog of maintenance, inadequate maintenance has been carried out for a number of years. A continued lack of maintenance of networks, intakes and treatment plants may soon lead to a crisis situation in several municipalities.

Table 3.3 *Renovation needs - municipal wastewater treatment plants*

Town category	Share of M wastewater treatment plants that need rehabilitation	Share of MB wastewater treatment plants that need rehabilitation
> 50,000 persons	9%	33%
20,000 - 50,000	23%	26%

Sources: Data collected by the team from local branches of the State Environmental Inspectorate and the Anti-Monopoly Committee

Compliance with sanitary norms

The water utilities are required to comply with certain standards of drinking water. The Ministry of Health (Sanitary and Epidemiological Agencies) is responsible for monitoring and controlling drinking water quality. As illustrated below, the share of water that complies with sanitary norms is in the 75 - 85 per cent range.

Kazakhstan in transition

The fairly extensive, but poorly maintained, water supply and wastewater infrastructure in Kazakhstan reflects the transitional problems which the Republic of Kazakhstan experienced in developing a market economy - similar problems were experienced in other NIS countries. In 1998, the GDP of Kazakhstan was 97.5 per cent of its 1990 level¹. The Government of Kazakhstan has prepared a macroeconomic forecast for the period 2000-2005. Based on this, annual GDP growth is assumed to be between 3 and 4 per cent in the period 2000-05. Assuming that the 2030 Strategy is successful, we have projected that GDP growth is at 5 per cent per annum in the long term.

¹ EBRD, Transition report 1999 (estimated)

Table 3.4 *Share of water supplied which complies with sanitary norms*

Town category	Share of water supplied that conforms with sanitary norms
> 50,000 persons	83%
20,000 - 50,000	75%

Sources: Data collected by the team from local branches of the State Environmental Inspectorate and the Anti-Monopoly Committee

3.2 Tariff regime

Decentralisation of water utilities

In 1993, the Republican Government decentralised responsibility for water services to the municipalities in a move to reduce its fiscal burden. Today, water utilities are owned by municipalities or operated as joint stock companies (in Almaty in a joint venture with the French firm Vivendi).

Utilities must be self-financing

The water utilities are required to be self-financing and are empowered to collect user charges from consumers for water supply and wastewater services. The user charges (as well as norms for non-metered consumers) must be approved by the Anti-Monopoly Committee. Charges are uniform for different user groups. Thus, unlike most CIS countries, industry does not subsidise household consumers.

Tariffs are tightly controlled

User charges are established according to the procedures laid down in the “Instruction on Order of Submission, Consideration, Approval, and the Introduction of Tariffs for Goods (Works, Services) Provided by the Natural Monopoly” approved by the Central Anti-Monopoly Committee on August 14, 1998. Basically the calculation involves a cost plus formula including operational costs plus a limited mark-up². Investment programs and repayment of loan principals cannot be included in tariff calculation. There are examples, however, that the AMC has discretion to approve tariffs calculated in a different manner in special instances. For example, some vodokanals have been able to obtain loan financing which is to be repaid through increased user charges (Atyrau, World Bank project). According to the AMC, this is judged on a case-by-case basis.

3.3 Baseline scenario

Definition of baseline scenario

The baseline scenario is defined as one in which there are “no policy changes compared to the present situation”. It shows a situation where the service level of the municipal water services is unchanged compared to the existing situation. This means that only the expenditure associated with operating and maintaining water and wastewater systems at their current level of service is included in the calculated expenditure needs in the baseline. On the supply of finance side the assumption is that there is no policy change in the provision of finance.

² based on a “norm of profitability” set by the AMC

Baseline expenditure The expenditure needed to operate a water supply or wastewater system is assessed based on the consumption of physical volumes (of labour, power, chemicals) and their price. The estimated required physical volumes are based on international experience and assumes proper operation of the system. The prices reflect Kazakh price levels. Thus expenditure needed may differ from (be higher than) the expenses actually incurred, if water utilities short of liquid funds save on chemicals, power etc. and thus do not deliver the service that the system could provide if operated to its full potential.

Similarly, the expenditure needed to maintain the water abstraction, water and wastewater treatment, water and sewer networks is calculated based on the physical structures required to perform a given service, their estimated life time and their price (replacement price as new).

In the baseline, we have also included the effect of major ongoing investment projects - the Kyzylorda water supply project. The project gives rise to investments now and reduced operational costs later. The project also gives rise to loan service later. This is included under financing.

Table 3.5 Baseline expenditure Kazakhstan water and wastewater services

Kazakhstan billion Kazakh Tenge (KZT) ³	2000	2005	2010	2015	2020
Operational	15.9	15.3	15.2	15.2	15.2
Sustainable maintenance	16.9	16.6	16.6	16.6	16.6
Rehabilitation investment	0.3	0.0	0.0	0.0	0.0
New (extension) investment	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0
Total baseline expenditure requirements in the water sector	33.1	31.9	31.8	31.8	31.8
of which water supply	17.7	17.4	17.4	17.4	17.4
of which wastewater	15.4	14.6	14.4	14.4	14.4

Source: Decision support tool calculations

Note: The table illustrates the annual expenditure needs to properly operate and maintain existing water and sanitation infrastructure at 2000 levels of service under business as usual scenario in Kazakhstan (in billion tenge - fixed prices)

Baseline supply of finance The baseline supply of finance is the finance that can be expected to be available assuming that there are no policy changes. Specifically, it has been assumed that:

- The ratio of public expenditure for water and wastewater in GDP stays constant over the projection period;
- User charges are maintained at the current level in real terms; the collection rate also remains the same;

³ in fixed KZT 2000

- Debt financing is included only for ongoing projects (Kyzylordar). Loan servicing is included under expenditure.

Table 3.6 *Baseline supply of finance Kazakhstan water and wastewater services*

Kazakhstan billion 2000 Kazakh tenge (KZT)	2000	2005	2010	2015	2020
Public budgets	0.6	0.6	0.7	1.0	1.3
User charges total at current rates	15.4	15.4	15.4	15.4	15.4
User charges collected from households	9.4	9.4	9.4	9.4	9.4
User charges collected from enterprises and institutions	5.9	5.9	5.9	5.9	5.9
International sources	0.9	0.0	0.0	0.0	0.0
Other (e.g. loan service)	0.0	-0.1	-0.1	-0.1	-0.1
Total financing available for the water sector	16.8	15.9	16.0	16.3	16.5

Source: Decision support tool calculations

Baseline financing gap The baseline shows that the current supply of finance, which mainly consists of user charges, on average for Kazakhstan, is just sufficient to cover operational expenses of the current municipal water and wastewater systems. Consequently, there is not sufficient revenue available to maintain the municipal water and wastewater systems in Kazakhstan. Their assets and the service they are able to provide are deteriorating year by year.

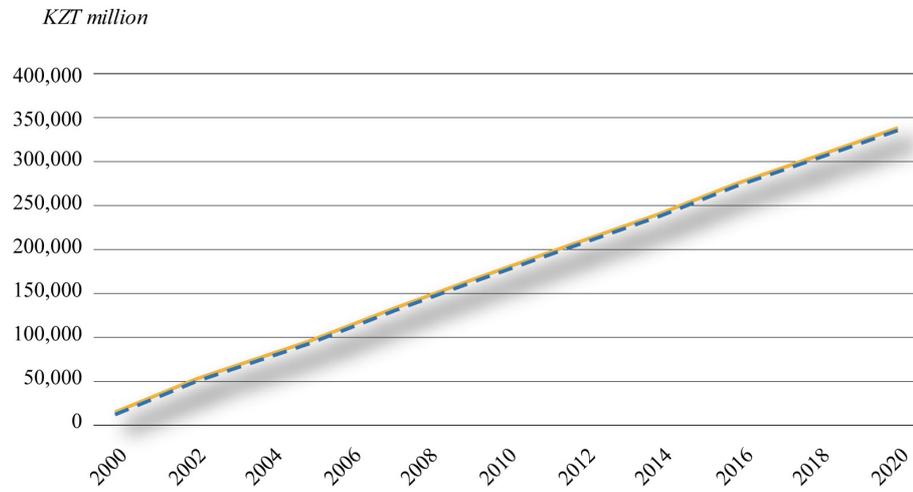
Table 3.7 *Baseline financing gap and maintenance backlog*

Kazakhstan billion 2000 Kazakh tenge (KZT)	2000	2005	2010	2015	2020
Baseline financing gap	16.2	16.1	15.8	15.6	15.2
Financing available as % of expenditure requirement	51%	50%	51%	51%	52%
User charges as % of operational expenditure requirement	97%	101%	101%	101%	101%
User charges as % of O&M expenditure requirement	47%	48%	48%	48%	48%
Accumulated maintenance gap (backlog)	16	96	175	254	331

Source: Decision support tool calculations

A cumulative maintenance gap of more than KZT 330 billion over 20 years is not sustainable. Considering that the situation has been ongoing for some years, the municipal water and wastewater sector in Kazakhstan may soon experience a very critical situation similar to that already experienced in other CIS countries, unless substantial volumes of financing is allocated for maintenance and rehabilitation very soon.

Figure 3.1 *Municipal water and wastewater baseline maintenance backlog 2000 - 2020*



Source: Decision support tool calculations

4 Financing strategy (short to medium term)

Given the severity of the existing situation, immediate action needs to be taken to avoid the situation where the service levels will decrease further and a crisis situation develops in one or more cities. A considerable increase in the level of financing is needed just in order to avoid the build up of a maintenance backlog. Against this background, the Steering Committee decided that the strategy for the short to medium term should be that of maintaining the existing service level⁴.

Policy target

The policy target for the short to medium term financing strategy is to avoid a further deterioration in water supply and wastewater services in the municipalities of Kazakhstan.

More specifically, the target chosen is to maintain the existing level of service through eliminating the financing gap in the short term (5 years) and the maintenance backlog in the medium term (10 years).

In fact, attainment of even this very moderate policy target is extremely challenging. Specifically, the following (or equivalent) measures are required:

Ninety per cent collection rate for tariffs

Collection of user charges must be increased from 67 to 90 per cent for households and from 75 to 90 per cent for other consumers over a period of four years. Experience from other countries indicates that such an increase in collection rates is feasible, but requires very substantial efforts, including, but not limited to:

- Decisive political support to the water utility in achieving the increase;
- Strong enforcement including punitive actions against non-payers;
- A billing and collection system that is simple, transparent and reasonably secured against fraud;
- A rate structure that is perceived as fair by customers

Tariffs to grow in line with income

As the economy improves, there will be increased affordability to pay for water and wastewater services. In order to close the financing gap (and to generate

⁴ Steering Committee Meeting 6th September, 2000

some surplus in the long term) it has been assumed that tariffs will be adjusted upwards both in line with inflation and in line with general income growth in Kazakhstan.

The above increases in user charges are regarded as what can be achieved given the household affordability. However, this increase in the user charges cannot in itself close the financing gap in the short run. A maintenance backlog would still be accumulated if there is a sole reliance on user charges to close the financing gap. This would most likely bring about a severe crisis, in which parts of the system will have deteriorated to such an extent that rehabilitation is no longer possible. It is crucial that an increase in user charges is combined with other policy instruments, which can contribute to closing the financing gap in a shorter period.

20 fold increase in public expenditure

Consequently, an increase in public expenditure for water and wastewater (mainly for rehabilitation investments) from the current level of 0.025 per cent of GDP to 0.5 per cent of GDP over a five-year period is proposed. This level is maintained over an additional period of 5 years followed by a gradual decrease to the current level in year 2015.

The suggested level of 0.5 per cent is similar to (or below) the level in several CEE countries.

However, the measure amounts to a twenty-fold increase in public expenditure for water and wastewater in a short span of time.

This will be extremely demanding in terms of changing public expenditure priorities in the short term. It means, among other things, that the Ministry of Environment and Natural Resources and/or the local environmental committees must be able to design and implement a large number of credible maintenance projects for water services infrastructure (annual renovation). It will further require that these projects are included in the PIP and/or the annual budget. The quality of project proposals should be such that the Ministries of Economic Planning and Ministry of Finance as well as the Cabinet feel convinced that implementation of the projects will indeed mean that the policy target will be achieved.

Alternatively, municipal governments will have to increase their spending on water and wastewater drastically in the short term. However, municipal governments are very short on liquid funds. Due to lack of data, it has not been possible to analyse the potential extra contribution of municipal budgets to the water services sector in the short term.

As illustrated in the table and figure below, the combination of increased user charges and steeply increased public expenditure is sufficient to meet the target.

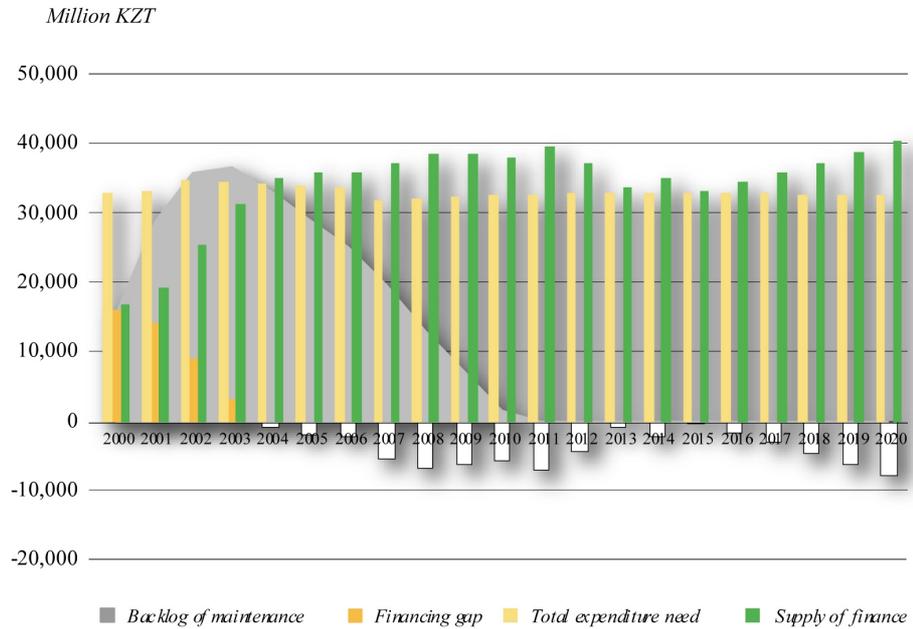
Table 4.1 Expenditure requirements and financing in the financing strategy 2000 - 2020

Kazakhstan billion 2000 Kazakh Tenge (KZT)	2000	2005	2010	2015	2020
Expenditure requirements ⁵					
Operational	15.9	15.2	15.0	15.0	15.0
Sustainable maintenance	16.9	16.6	16.6	16.6	16.6
Rehabilitation investment	0.2	2.1	-	-	-
New (extension) investment	-	-	-	-	-
Total expenditure requirements in the water sector	32.9	33.9	31.6	31.6	31.6
of which water supply	17.5	19.4	17.2	17.2	17.2
of which wastewater	15.4	14.5	14.5	14.5	14.5
Supply of finance					
Public budget	0.5	12.2	11.4	1.0	1.3
User charges total at current rates	15.4	22.6	26.9	32.4	39.4
User charges collected from households	9.5	15.5	19.8	25.3	32.2
User charges collected from enterprises and institutions	5.9	7.1	7.1	7.1	7.1
Equity					
Equity dividend payment			0.2	0.2	0.2
Debt (international sources)	0.9	1.1			
Debt servicing	-	-0.1	-1.0	-1.3	-1.0
Total financing available for the water sector	16.9	35.8	37.1	31.9	39.4
Resulting financing gap	16.0	-2.0	-5.5	-0.2	-7.8
Financing available as % of expenditure requirement	51%	106%	117%	101%	124%
User charges as % of operational expenditure	97%	149%	179%	215%	262%
User charges as % of O&M expenditure requirement	47%	71%	85%	102%	124%
Accumulated maintenance gap (backlog)	15.4	29.3	1.6	-	-

Source: Decision support tool calculations

⁵ Rehabilitation projects in the cities of Atyrau, Kzylordar, and Almaty with their connected loan financing have been included in the scenario as they are at advanced stages of preparation. This results in a changed expenditure requirement and supply of finance compared to the baseline.

Figure 4.1 Expenditure needs, supply of finance, financing gap and maintenance backlog in the financing strategy (KZT million)



Source: Decision support tool calculations

Providing the policy instruments recommended above are implemented, the calculations indicate that additional financing may be available after the year 2011. This is closely linked to the steady increase in the revenue from user charges stemming from the proposition that user charge rates for households will increase at the same rate as has been assumed for the GDP (see above).

Against this background, two scenarios for long-term policy options have been developed.

5 Long-term scenarios

5.1 Scenario: Extended wastewater treatment

Policy target

In the financing stipulated in the financing strategy, there is a finance surplus in the medium to long term of the planning period. The aim of this scenario is to draw on this surplus and introduce a more ambitious target. The policy target of the "extended wastewater treatment" scenario is to achieve improved effluent quality from cities with more than 50,000 inhabitants.

Investment actions

Specifically it is assumed that all mechanical wastewater treatment plants in those cities will be upgraded to mechanical-biological treatment (MB). This means that in the towns of Taraz, Astana, Kostanat, Kzylordar, Atyrau, Leninnorgorsk, the WWTP will be upgraded to MB. The investment expenditure requirement has been calculated based on the assumption that the upgrading can be carried out as a rehabilitation of the existing plants in the six cities. This extension of wastewater treatment adds to the expenditure needs and financing requirements described in the "Maintain existing service level" above.

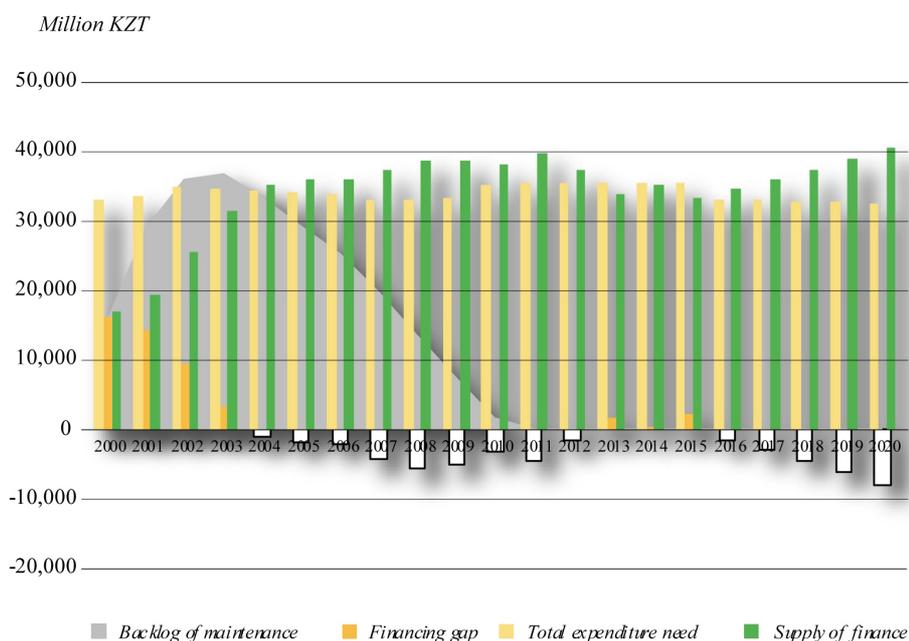
Expenditure needs and their financing in the " extended wastewater treatment" scenario are illustrated in the table and figure below. The supply of finance is identical to that of the "maintain service level" scenario. The table and figure illustrate that even with the increased expenditure need arising from the rehabilitation of wastewater treatment plants in six cities, there is only a very small financing gap in 2013-15 and no maintenance backlog is accumulated in the period.

Table 5.1 *Expenditure requirements and financing in the "Extended wastewater treatment" scenario 2000 - 2020*

Kazakhstan billion 2000 Kazakh Tenge (KZT)	2000	2005	2010	2015	2020
Expenditure requirements					
Operational	15.9	15.2	15.0	15.0	14.8
Sustainable maintenance	16.9	16.6	16.6	16.6	16.7
Rehabilitation investment	0.2	2.1	2.4	2.5	-
New (extension) investment	-	-	-	-	-
Total expenditure requirements in the water sector	32.9	33.9	34.0	34.2	31.4
of which water supply	17.5	19.4	17.2	17.2	17.2
of which wastewater	15.4	14.5	16.8	16.9	14.2
Supply of finance					
Public budget	0.5	12.2	11.4	1.0	1.3
User charges total at current rates	15.4	22.6	26.9	32.4	39.4
User charges collected from households	9.5	15.5	19.8	25.3	32.2
User charges collected from enterprises and institutions	5.9	7.1	7.1	7.1	7.1
Equity					
Equity dividend payment			0.2	0.2	0.2
Debt (international sources)	0.9	1.1			
Debt servicing	-	-0.1	-1.0	-1.3	-1.0
Total financing available for the water sector	16.9	35.8	37.1	31.9	39.4
Resulting financing gap	16.0	-2.0	-3.1	2.3	-8.0
Financing available as % of expenditure requirement	51%	106%	109%	94%	125%
User charges as % of operational expenditure	97%	149%	179%	215%	267%
User charges as % of O&M expenditure requirement	47%	71%	85%	102%	125%
Accumulated maintenance gap (backlog)	15.4	29.3	1.7	-	-

Source: Decision support tool calculations

Figure 5.1 Gap assessment, "extended wastewater treatment" scenario



Source: Decision support tool calculations

5.2 Scenario: Expenditure and financing required for Astana development

"Astana development" scenario

The basis for the "Astana development" scenario is the rapid expansion of the new capital, which is expected to continue in the coming twenty years. It is assumed that the population of Astana will increase from the current 312,965 to 623,000 in the period 2001-2020. The area of the city is assumed to increase from 1,758 ha to 3,000 ha.

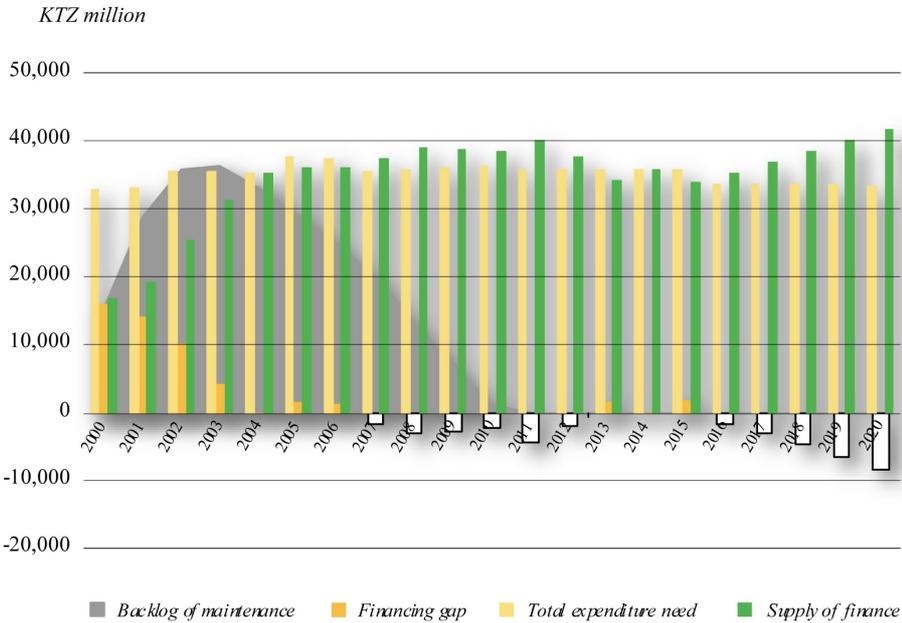
The "Astana development" scenario looks at the costing of rehabilitation of the existing system as well as investment in new capital investments for the developing areas of the city. The projected total new capital investments need alone amounts to KZT 33 billion.

Table 5.2 Expenditure requirements and financing in the "Astana Development" scenario 2000 – 2020

Kazakhstan billion 2000 Kazakh Tenge (KZT)	2000	2005	2010	2015	2020
Expenditure requirements					
Operational	15.9	15.4	15.1	15.1	15.3
Sustainable maintenance	16.9	16.7	16.9	16.9	17.3
Rehabilitation investment	0.2	2.5	0.5	0.3	-
New (extension) investment	-	3.2	3.2	2.3	-
Total expenditure requirements in the water sector	32.9	37.4	35.4	34.6	32.6
of which water supply	17.5	20.7	18.5	17.6	17.6
of which wastewater	15.4	15.1	17.0	17.0	15.0
Supply of finance					
Public budget	0.5	12.2	11.4	1.0	1.3
User charges total at current rates	15.4	22.7	27.3	33.2	43.2
User charges collected from households	9.5	15.6	20.2	26.1	36.6
User charges collected from enterprises and institutions	5.9	7.1	7.1	7.1	7.1
Equity					
Equity dividend payment			-0.2	-0.2	-0.2
Debt (international sources)	0.9	1.1			
Debt servicing	-	-0.1	-1.0	-1.3	-1.0
Total financing available for the water sector	16.8	35.9	37.5	32.7	43.3
Resulting financing gap	16.0	1.5	-1.9	1.9	-10.7
Financing available as % of expenditure requirement	51%	96%	106%	94%	133%
User charges as % of operational expenditure	97%	147%	181%	220%	282%
User charges as % of O&M expenditure requirement	47%	71%	85%	104%	133%
Accumulated maintenance gap (backlog)	15.4	29.2	1.4	-	-

Source: Decision support tool calculations

Figure 5.2 Astana development scenario - financing gap



Source: Decision support tool calculations

The financing gap in the scenario can be closed as illustrated in the figure. However, the underlying implications involve a cross-subsidisation from other cities to the city of Astana up to KZT 3.5 billion per year. This is not likely to be politically acceptable and a more reasonable policy measure in relation to extension of services in Astana would be to stipulate a large government guaranteed soft loan as part of the policy package.

DATASHEET

Publisher:

Ministry of Environment and Energy, Danish Environmental Protection Agency, Strandgade 29, DK-1401 Copenhagen
Telephone int + 45 32660100 Telefax int + 45 32660479
<http://www.mst.dk>

Year of publication: 2001

Title:

Short Justification for the Municipal Water Services Financing Strategy, Kazakhstan

Subtitle:

Submitted to the Ministry of Environment and Natural Resources, Kazakhstan

Author(s):

Mr. Michael Jacobsen, Mrs. Birgitte Martens, Mrs. Zsuzsanna Lehoczki

Performing organisation(s):

COWI AS in association with COWI Hungary

Abstract:

The purpose of the municipal water and wastewater financing strategy for Kazakhstan is to determine a realistic, agreed and affordable service and to demonstrate how environmental expenditure can be financed. The water and wastewater financing strategy has been developed in an iterative process in a dialogue with the finance, environmental and other relevant authorities. This report presents the final background analyses by the consultant.

Terms:

Kazakhstan, NIS, water utilities; water, wastewater; wastewater treatment; infrastructure investment, national environmental action plan (NEAP); environmental financing; environmental policy analysis; water tariffs; international finance

Edition closed: February 2001

Number of pages: 36 **Format:** A4

Number of copies: 100

Printed by: Kannike Graphic A/S

Reproduction is authorised provided the source is acknowledged.
Printed on 100% recycled paper

The purpose of the municipal water and wastewater financing strategy for the Kazakhstan is to determine a realistic, agreed and affordable service and to demonstrate how environmental expenditure can be financed. The water and wastewater financing strategy has been developed in an iterative process in a dialogue with the finance, environmental and other relevant authorities. This report presents the final contribution by the consultant.



Ministry of Environment

DANCEE

Danish Cooperation for Environment in Eastern Europe
Miljøstyrelsen, Strandgade 29, DK-1401 København K
Phone +45 32 66 01 00. Internet: www.mst.dk