

# Feasible Financing Strategies for Water Supply and Sanitation

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## Introduction

Adequate supplies of clean water are vital for human health and development. But an important obstacle to achieving water supply and sanitation goals in many countries has been the failure to adequately address financial issues: the costs of achieving goals; how those costs could be minimised; and the challenge of matching costs with available resources. The need for a fresh approach has become evident, for example, as central European countries come to terms with the need to mobilise substantial financial resources to comply with challenging EU environmental requirements, and as many developing countries struggle to achieve the internationally agreed Millennium Development Goals on water and sanitation.

The OECD and the Danish government have jointly developed an approach to meet these challenges, particularly for investment-intensive water supply and sanitation infrastructure such as urban and rural water supply, wastewater collection and treatment. This approach, backed by a special decision-support tool called FEASIBLE, has been applied in several transition economies including former Soviet Union countries, new EU member countries and China. The main ideas underlying this approach are realism, affordability and cost-effective use of resources.

Using FEASIBLE is more than a technical exercise: by engaging all the major stakeholders involved in financing water supply and sanitation infrastructure, it supports constructive policy dialogue and consensus-building that make it easier to implement programmes effectively, improve service quality and achieve water service goals. Such work also supports the objectives set-out in the Paris Declaration on Aid Effectiveness. This work is now being extended to several countries in Africa in the framework of the OECD's project on sustainable financing of water and sanitation services. A member-lead Task Team, chaired by France, has been established to supervise and guide this work, and the European Union Water Initiative is actively supporting it. ■

## How does the FEASIBLE approach work?

The basic approach underlying the FEASIBLE method is to collect detailed technical data on existing infrastructure, select public policy targets in water supply and sanitation – usually the Millennium Development Goals –, determine costs and timetables for achieving them, and compare the schedule and volume of expenditure needs with available sources of finance. This reveals any financial deficits likely to arise along the way. FEASIBLE can be used to develop various scenarios to determine how the gaps might be closed, such as identifying ways to help achieve the targets at lower cost or to mobilize additional finance; setting less ambitious targets, or rescheduling the programme. (See Figure 1.)

An important feature of FEASIBLE is the emphasis on realism and affordability. FEASIBLE can be used to assess the levels of finance (public, private, domestic, foreign) that might be available under different macro-economic and fiscal conditions. This provides a check on what public budgets might realistically be expected to contribute. FEASIBLE can also help to assess the potential social implications of raising tariffs by determining the impact of price increases on household income. It helps to systematically review the policy and institutional obstacles that would need to be addressed in order to mobilize private sector and foreign financing for environmental infrastructure. FEASIBLE is usually used to support a process of dialogue and consensus-building among stakeholders and to build bridges between policy development and implementation.

The assumption underlying the FEASIBLE methodology is that governments should not be expected to finance all or even most of the expenditure required. The main role of government in relation to financing is to establish the policy, regulatory and institutional framework as well as the incentive structure, within which resources from users, financial markets, capital markets, local budgets and enterprises can be mobilised in a complementary way, and be applied as cost-effectively as possible to achieve agreed goals.

Developing a finance strategy using FEASIBLE takes about 12-18 months. The project usually involves setting up a steering group consisting of senior policy makers from relevant institutions, who meet at least five times to discuss different financing scenarios and the policies and assumptions that underpin them.

### **FEASIBLE software**

A computerized decision support tool, FEASIBLE helps develop financing strategies for environmentally related sectors involving costly public infrastructure. It currently may be applied in the water supply, wastewater and solid waste management sectors. FEASIBLE is available free of charge from the OECD by registering on line at [www.oecd.org/env/finance](http://www.oecd.org/env/finance), or through COWI, the Danish consulting firm that developed the model, at:

[www.cowi.com/cowi/en/menu/projects/nature/environmentalpolicyandregulation/feasiblemodel.htm](http://www.cowi.com/cowi/en/menu/projects/nature/environmentalpolicyandregulation/feasiblemodel.htm). ■

**What has been learned by applying FEASIBLE?**

Several lessons have been learned from using FEASIBLE in the countries of Eastern Europe, Caucasus and Central Asia (EECCA: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russian Federation, Ukraine, Turkmenistan, Tajikistan and Uzbekistan).

**Extensive water and wastewater infrastructure is falling apart**

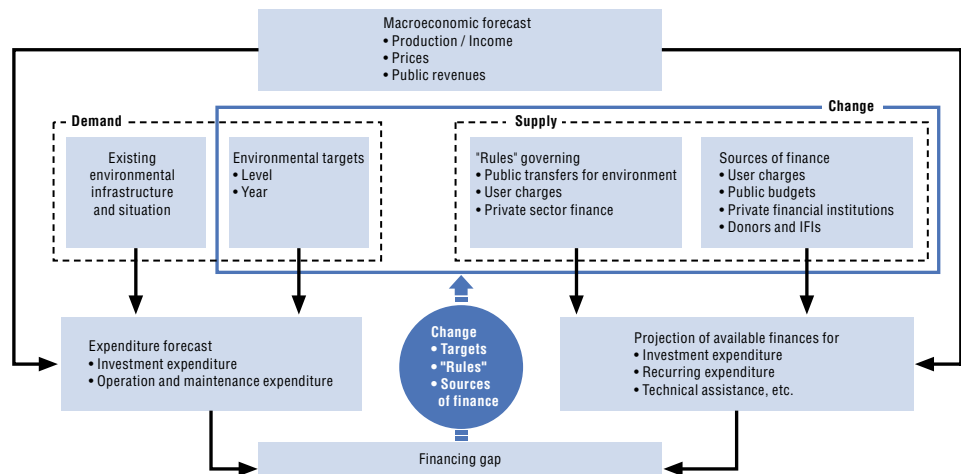
Analysis of financing strategies prepared for countries of the former Soviet Union has shown that more of the **urban** population is covered by water supply, wastewater treatment and solid waste management infrastructure than in developing and transition countries with a similar income level. The rates of urban population connected to centralised water supply and wastewater collection systems (75%-95%) are often comparable with those in OECD countries. Most large cities have biological wastewater treatment plants, sometimes with significant excess capacity.

However, much of this infrastructure was inefficiently designed, is oversized, and is very costly to operate and maintain. This affects the quality of services and access to safe water which are much lower than the connection rates and capacities of treatment plants would suggest.

Huge losses in the distribution system are a result of badly maintained supply systems, and overconsumption. 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. In several cases, the infrastructure is so run down that there is a serious threat of complete collapse of the entire system, with potentially dramatic consequences to health and economic development.

The situation is generally much worse in **rural** areas, home to more than a third (36%) of the population, due to the collapse of water services following the dismantling of the collective farm system. In Kyrgyzstan, for instance, access to sustainable water supply decreased by 12% between 2000 and 2003.

**Figure 1.**  
**OVERVIEW OF THE FEASIBLE ENVIRONMENTAL FINANCING STRATEGY METHODOLOGY**



*The existing financing situation is not sustainable*

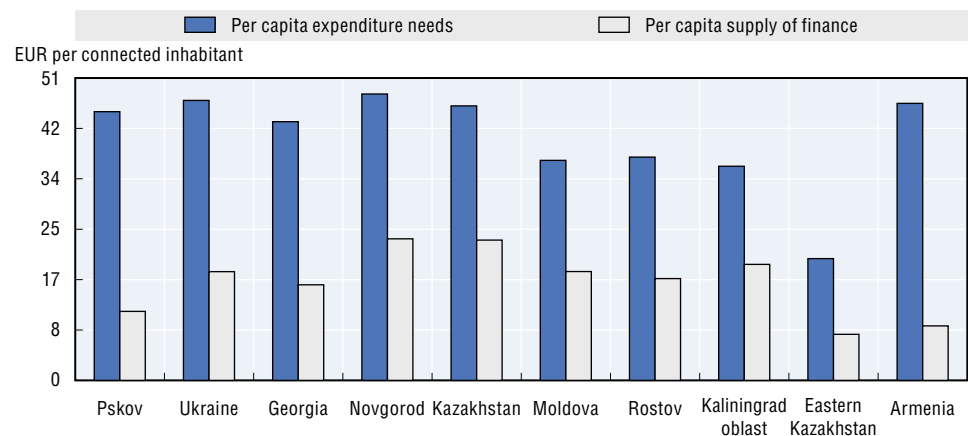
In all the countries studied, significant underfunding was found, even for basic costs of operating and repairing facilities in operation, when the studies were undertaken. Usually only around half of the funds required to meet these targets are provided (Figure 2). This chronic underfunding of basic running costs, especially of regular, preventive maintenance was the major reason for a significant decrease in the level and quality of infrastructure services. User charges account for the major share of financing. 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 or private equity is usually marginal compared to user charges and public funds (5-10%, with exception of Armenia with 30%).

These findings suggest that the countries of the former Soviet Union face a far greater challenge in trying to achieve the Millennium Development Goals on water and sanitation than is shown in official UN monitoring data. The discrepancy is due to the fact that water service quality is not considered in the official indicators. ■

**Can users pay for services?**

Among the countries and regions studied, only Moldova (despite extremely low income per capita) and Novgorod, on average, bill users for water at a level close to full operating costs. However, not all the bills are actually paid, and user revenue nowhere covers more than half of the costs of operating and maintaining existing assets. Most households seem able to pay more than they actually do, despite low incomes, and there is evidence, that they are often willing to pay more for improved services. In several countries studied, the average fees paid for water and wastewater services as a proportion of average household income (0.5%-2.5%) are below international benchmarks for countries of similar income levels (typically 3%-5%). On the other hand, Kazakhstan and Moldova are recovering a much higher share of costs from households, with charges approaching the limits of what the households on average can probably afford.

**Figure 2.**  
**ANNUAL EXPENDITURE NEEDS AND FINANCING AVAILABLE TO OPERATE AND MAINTAIN THE PRESENT, LOW LEVEL OF WATER AND WASTEWATER SERVICES IN EECCA COUNTRIES (EUR PER CONNECTED INHABITANT IN THE FIRST YEAR OF THE BASELINE SCENARIO)**



(1) Data for urban population, with the exception of Moldova where it includes both urban and rural population.  
 (2) First year of baseline scenario differs according to countries/regions: Novgorod, 1999, Pskov, Kazakhstan, Kaliningrad, 2000, Ukraine, Rostov, East Kazakhstan, 2001, Armenia, 2002, Georgia, 2003, Moldova, 2006.

Even in countries and regions that impose relatively high charges on users, affordability is a serious problem for a relatively small share of the population (10%-30%). The most affected social groups are also often well defined, *e.g.* pensioners, disabled. Replacing existing price subsidy schemes with more targeted income support for specific social groups would be more efficient and result in overall savings in public budgets. Furthermore, experience from environmental financing strategies shows that as tariffs increase, water consumption decreases. As a result, the total water bill to households will usually not increase in direct proportion to tariff increase.

Particular problems exist in rural areas, where the costs of centralised water services are highest while affordability is lowest. An effective way of dealing with this can be using higher payments by better-off urban people to subsidise costs for the rural poor. ■

### How to bridge financing deficits?

The grave situation in the former Soviet Union calls for a fundamental reform in the approach to financing water supply and sanitation infrastructure and the associated policy and institutional arrangements. Analysis of FEASIBLE financing strategies suggests that overly ambitious targets for extending the coverage and level of infrastructure services in urban areas need to be replaced in the short and medium term by more realistic, modest capital improvement programmes. These should be tailored to provide essential repairs and rehabilitation of critical elements of infrastructure in order to maximise efficiency gains (mainly reduction of energy costs) within the limits of what households and public budgets can afford.

Similarly, policies to expand and upgrade services to people living in rural areas, which are meant to contribute towards achieving the Millennium Development Goals, need to be carefully assessed. In most of the poorer economies in the region, only very basic services will be affordable, while policies and politicians often call for expensive centralized water systems.

On the financing side, FEASIBLE analysis has shown that baseline financing will need to be increased in all former Soviet Union countries if further deterioration is to be prevented. All financing sources and instruments will need to be mobilised in a synergistic fashion. There will be no magic solutions brought about, for example, by earmarked environmental funds or private sector participation. User charges will be the most important long-term source of finance for operation and maintenance expenditure. Public budgets will have an essential role to play in the short and medium term in financing capital investments, providing social protection and facilitating access to credit. Scarce public funds and donor grants need to be strategically prioritised and used more efficiently. The importance of domestic financial and capital markets will grow over time as the framework conditions become more enabling. International financial institutions (IFI) will continue to play an important role in providing long-term financing for major capital investments and promoting financial and management discipline. The role of the private sector will for many years be more important in providing managerial know-how than as a source of finance.

Increasing the supply of finance to bridge the deficits could involve significant burdens on some countries. In order to fully cover the operating

and maintenance costs of the current urban and rural water infrastructure, Moldova would, for example, need to spend an equivalent of 2.5-4% of current GDP per year. For urban infrastructure, Georgia would need to spend 3.0% of GDP and Kazakhstan 1.2%. In all cases, this would imply doubling or tripling the current level of expenditure in the water sector. In Armenia such efforts are well under way and the government has increased tariffs and public spending, resulting in a doubling of financial flows, now accounting for about 0.8% of GDP. ■

### Can environmental financing strategies work in OECD countries?

In recent years, most OECD countries have not faced major financial deficits in the water and environmental infrastructure sectors. This is, however, changing as significant financial resources will need to be mobilised in the next one or two decades to replace ageing water infrastructure and to meet increasingly stringent environmental and health standards. A recent OECD report estimates that France and the UK will have to increase their spending on water as a proportion of GDP by about 20% just to maintain water services at their current levels, while Japan and Korea may have to increase their water expenditure by more than 40%.

OECD countries that have recently joined the European Union face a particular problem: access to adequate financing is hampering their efforts to meet EU environmental standards in their infrastructure in a very short time. These countries face less dramatic challenges than the former Soviet Union countries, and substantial financial resources are being made available domestically, supplemented by EU financial instruments. In addition, enterprises and municipalities are increasingly financing their own environmental investments and raising funds on financial and capital markets. But with the exception of Poland and Hungary, current levels of environmental investment in these countries may not be enough to cover the official estimates of investment needs.

#### Box 1. RESULTS OF FEASIBLE

The development of environmental financing strategies has already triggered some significant policy changes in several countries. Selected examples are described below:

- In **Armenia**, financing strategies for urban water and wastewater infrastructure clearly demonstrated the affordability constraints that exist in the country, and supported more realistic infrastructure development objectives for wastewater treatment. By revealing the significant financing gap in the sector, the work helped to convince the government to prolong a public subsidy scheme and to continue an ambitious sector reform programme. This work is now being followed-up with a financing strategy for the rural water sector.
- In **Moldova**, the authorities used FEASIBLE to verify the high costs of implementing national stringent wastewater effluent standards. The analysis showed that meeting these standards was so expensive that it would be impossible to finance over the next 20 years, even under the most optimistic assumptions. This triggered a draft government resolution relaxing municipal effluent standards to less stringent EU urban wastewater treatment levels.
- In the **Pskov Oblast of the Russian Federation**, a first round of policy dialogue could not identify any realistic measures that would increase financing for water and wastewater infrastructure to levels that would cover the costs of ambitious

### Are financing strategies relevant for developing countries?

The FEASIBLE methodology may help these countries prepare implementation and financing plans to comply with water and waste directives. Environmental Financing Strategies studies conducted in some accession countries, such as Lithuania and Latvia, proved to be useful steps towards the full application of the FEASIBLE methodology to prepare for EU accession. ■

Developing countries face very different problems from new EU member states and economies in transition. However, there is substantial scope for financing strategies to help them plan financially and technically sound infrastructure development. All sources of financing will have to be mobilised and used more efficiently to meet the Millennium Development Goals related to water and sanitation. The World Summit on Sustainable Development in Johannesburg, and the Fourth World Water Forum in Mexico focused global attention on deficits in water and sanitation services in developing countries and high capital needs of infrastructure development.

Successive reports by international groups on water issues have estimated that total global annual expenditure in the water sector would need to roughly double in order to achieve the Millennium Development Goal of halving by 2015 the proportion of people without sustainable access to safe water and basic sanitation. The reports also pointed to the crucial need to improve governance and financial planning to ensure that funds are being used in the most effective manner.

Financing strategies are particularly relevant in the poorest developing countries that struggle to secure access to basic infrastructure services under extremely tight resource constraints. The cost database in FEASIBLE includes a large range of simple, affordable water supply and wastewater treatment technologies that are available to these countries. The trend towards sector wide approaches and more aid provided as budget support are further reasons for the relevance of methodologies such as FEASIBLE. ■

#### Box 1. (cont.) RESULTS OF FEASIBLE

extension of service targets proposed by the environmental authorities. However, simulations revealed very low levels of user fees compared to other Russian regions. This prompted the regional administration to recommend procedures for calculating and approving municipal services tariffs and for improving many existing weaknesses of the tariff policies in the cities. Furthermore, they insisted that local administrations follow the schedule for achieving full cost recovery through household tariffs for municipal services.

- A project in the Chinese province of Sichuan identified an important mismatch between strategies for water supply and sanitation and sewage treatment plants. The expenditure needs for rehabilitating and extending the existing sewerage systems were found to be much higher than the construction costs of new waste water treatment plants. There was a need to channel additional financing for this purpose, and this could come from increased user charges, as 80% of the population could afford to pay more. Affordability analysis recommended direct income subsidies for the poorest 10-20% of the population. If not, the construction of treatment plants would need to be rescheduled.



### For more information

For more information about the OECD's work on water financing, please contact: Peter Börkey, e-mail: [peter.borkey@oecd.org](mailto:peter.borkey@oecd.org), tel.: +33 1 45 24 13 85, or visit [www.oecd.org/water](http://www.oecd.org/water).

### For further reading

OECD (2006), **Infrastructure to 2030 – Telecom, Land Transport, Water and Electricity**, ISBN 978-92-64-02398-7, € 45, 250 pages.

OECD (2003), **Financing Strategies for Water and Environmental Infrastructure**, ISBN 978-92-64-10276-0, € 25, 107 pages.

OECD (2006), **Financing water supply and sanitation in Eastern Europe, Caucasus and Central Asia**, available at: [www.oecd.org/dataoecd/29/46/36388760.pdf](http://www.oecd.org/dataoecd/29/46/36388760.pdf).

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**Country Background reports on financing strategies for water and environmental infrastructure**, available at [www.oecd.org/env/finance](http://www.oecd.org/env/finance).

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### Where to contact us?

#### OECD HEADQUARTERS

2, rue André-Pascal  
75775 PARIS Cedex 16  
Tel.: (33) 01 45 24 81 67  
Fax: (33) 01 45 24 19 50  
E-mail: [sales@oecd.org](mailto:sales@oecd.org)  
Internet: [www.oecd.org](http://www.oecd.org)

#### GERMANY

**OECD Berlin Centre**  
Schumannstrasse 10  
D-10117 BERLIN  
Tel.: (49-30) 288 8353  
Fax: (49-30) 288 83545  
E-mail:  
[berlin.contact@oecd.org](mailto:berlin.contact@oecd.org)  
Internet:  
[www.oecd.org/deutschland](http://www.oecd.org/deutschland)

#### JAPAN

**OECD Tokyo Centre**  
Nippon Press Center Bldg  
2-2-1 Uchisaiwaicho,  
Chiyoda-ku  
TOKYO 100-0011  
Tel.: (81-3) 5532 0021  
Fax: (81-3) 5532 0035  
E-mail: [center@oecdtokyo.org](mailto:center@oecdtokyo.org)  
Internet: [www.oecdtokyo.org](http://www.oecdtokyo.org)

#### MEXICO

**OECD Mexico Centre**  
Av. Presidente Mazaryk 526  
Colonia: Polanco  
C.P. 11560 MEXICO, D.F.  
Tel.: (00.52.55) 9138 6233  
Fax: (00.52.55) 5280 0480  
E-mail:  
[mexico.contact@oecd.org](mailto:mexico.contact@oecd.org)  
Internet:  
[www.oecd.org/centrodemexico](http://www.oecd.org/centrodemexico)

#### UNITED STATES

**OECD Washington Center**  
2001 L Street N.W., Suite 650  
WASHINGTON DC. 20036-4922  
Tel.: (1-202) 785 6323  
Fax: (1-202) 785 0350  
E-mail:  
[washington.contact@oecd.org](mailto:washington.contact@oecd.org)  
Internet: [www.oecdwash.org](http://www.oecdwash.org)  
Toll free: (1-800) 456 6323

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