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2 Environmental Financing Strategies

2.1 The Concept

The environmental financing strategy methodology was developed in response to the limitations of national environmental strategies and action plans to adequately address associated financial issues. Environmental financing strategies aim to organise information in a form that facilitates decision making, whether in setting policies and targets, creating or strengthening institutions, or mobilising sources of financing. The key (and this was the major limitation of NEAPs) is to impart realism, and promote the concepts of affordability and cost-effectiveness in the implementation of environmental programmes.

An environmental financing strategy is a methodological framework for medium- to long-term strategic balancing of environmental and infrastructure service targets with available financing. It is applicable in the environmental sectors that require investment-heavy environmental infrastructure.²

The basic idea behind the environmental financing strategy concept is quite simple. There should always be a balance between the money needed to meet the target and the money available to do so. Applying this concept yields a number of benefits, which can most easily be explained through a stylised example as included in the Box 2-1 below.

² The methodology as implemented in the FEASIBLE model was developed by the OECD EAP Task Force. The model itself was developed by the Danish consulting company COWI in close co-operation with the OECD with financial support by DANCEE.

Box 2-1 Financing strategies - an illustrative stylised example

Assume that the target in a country is to have mechanical and biological treatment of all municipal wastewater. Developing a financial strategy for the water and wastewater sectors would imply a need to estimate the costs of this target and establish a coherent strategy for its financing. The costs include not only the investment in new treatment plants in the towns which do not currently have such plants, but also, and equally important, the operation and maintenance costs of the existing and new facilities.

Assessing all these costs and subsequently comparing them with the available supply of finance may reveal that significant additional financial resources will be required to achieve the target. A financing strategy aims to close the gap between the financial requirements and the supply of finance currently available. That can happen through a combination of three types of measures:

- Cost reduction related to efficiency improvement.
- Increased supply of finance.
- Reduction of the target service level.

Through the analytical process, it may become clear that cost reduction through re-investments aiming at energy savings combined with the maximum affordable user charges will not be sufficient to close the financing gap. In that case, the conclusion may be that the target cannot be achieved or the time schedule for implementing the target has to be extended. In our example, it might be necessary to postpone the deadline for achieving wastewater treatment in the small and medium-sized towns.

Having this kind of formalised financial strategy will be very useful for stakeholders. For the authority that distributes investment resources, the result of the financing strategy gives an important input to the overall prioritisation of the investment funds. If no formalised financing strategy exists, there is a risk of ad hoc prioritisation and resulting non-optimal distribution of the investment funds. In such case investment in infrastructure may end up being wasted if there is, subsequently, no money for proper operation and maintenance.

In this way, the financing strategy can be used by many stakeholders to identify what they need to contribute in order to achieve a given service level. In our example, the municipalities may have to contribute through subsidies and/or by allowing user charges to increase to full cost recovery level or to the highest affordable level.

The process of preparing the financing strategy is as important as the technical calculation. By engaging all relevant authorities responsible for finance, economy, construction, environment – it promotes dialogue and eventually consensus on the specific actions that each should take. Thus the process of developing government programmes of action, if well organised, builds a bridge to effective implementation.

2.2 Application

The development of an environmental financing strategy aims to verify the realism and affordability of the general long-term objectives of sector policies and programmes. The strategy provides a long-term predictable framework for preparing mid-term investment programmes and for project pipelines in the public sector at different levels of government. It helps streamline the annual budget process and the preparation of individual capital investment projects.

Historically, environmental action plans have often been prepared without proper regard to how the identified activities should be financed and whether people could afford them. These issues have been particularly difficult to analyse realistically for large-scale environmental programmes that require heavy capital investments in public infrastructure and have a long time span. As a result, the subsequent implementation has often been impeded by resource constraints and characterised by interruptions, delays, cost overruns, conflicts over resource allocation, and ad hoc spending decisions. An environmental financing strategy assists in determining realistic and affordable service levels and in demonstrating the roles that different sources can play in financing the required expenditure. Thus, a well prepared environmental financing strategy increases the chances of successful implementation.

In most countries, if there is not enough money to reach policy objectives, policy makers try either to mobilise more money or to revise the objectives. In the EU candidate countries and EU member states, the targets of environmental and infrastructure development programmes are, to a large extent, externally determined by the EU laws. Under these circumstances, the purpose of the environmental financing strategy is to identify, in quantitative terms, the measures that would ensure an adequate supply of finance in the right places and times. This can help EU accession countries to design feasible implementation programmes for complying with EU directives.

An environmental financing strategy provides a framework for systematic costing of environmental targets in line with the best international standards and for assessing the implications of aggregated costs on liquidity and household affordability. It develops scenarios that show where the bottlenecks lie, and what kind of funding and other intervention may be needed. It offers a commonly understood language of communication among all relevant stakeholders involved

in the development of the environmental and municipal infrastructure sectors, especially among environmental, technical and financial stakeholders.

The financing strategy methodology presented here is a strategic planning tool designed for governments operating in market economies, i.e. governments that are policy makers and regulators of economic activity, rather than the central planners and owners of all assets and projects. Developing financing strategies by the government does not imply that the government should finance all or most expenditure, or own all projects. In fact, relying on the public budget to finance e.g. operational and maintenance costs of collective infrastructure is not a sustainable solution. Users, financial markets, capital markets and local budgets all need to complement each other in effective financial packages. Governments, however, create the legal and regulatory framework in which private financial institutions operate. Governments have several instruments to stimulate or hinder their willingness to provide finance for public environmental infrastructure. Hence, the financing strategy framework is not only needed to plan the government budget, but also to plan and reform those government policy instruments that affect the capacities and decisions of other public and private financial agents.

Environmental financing strategies can be used by transition and developing countries as well as western market economies:

- To assess total investment needs of alternative policy targets.
- To bring about practical implementation programmes taking into considerations what the economy and households can afford.
- To identify investment projects and build short- to medium-term project pipelines.
- To identify the policies and measures which are necessary to ensure effective financing of the project pipelines.
- To support claims of environment and other ministries responsible for municipal services on the public budget.
- To support transition country requests for donor and IFI financing.

- To measure and report on the progress in the implementation of programmes and policies.

Environmental financing strategies are also used by donor countries and IFIs:

- To check if local co-financing commitments are realistic.
- To co-ordinate different donor and IFI programmes.
- To identify country pipelines of supported investment projects.
- To provide an additional dimension (bigger picture) for appraisal of the financial viability of individual investment projects.

An illustrative example of several of these points is provided in Box 2-2 below, which summarises the role of the environmental financing strategy for Georgia in linking feasibility studies and macro-level planning.

Box 2-2 Environmental financing strategies - linking feasibility studies and macro-level planning

Environmental financing strategies can help link feasibility studies at the project level with macro-economic and budget planning, a linkage that is often not examined. Although both municipalities and IFIs analyse the affordability and liquidity related to individual investment projects, environmental financing strategies provide a framework for systematic aggregation of these and other projects at regional and national levels in order to assess their joint implications for domestic policies and budgets.

This value added was clearly demonstrated in Georgia, where the World Bank was developing a project for rehabilitation of the water and sanitation system in Tbilisi, while the European Commission was encouraging rehabilitation of the wastewater treatment plants along the Black Sea coast. Each party was making independent assumptions about the availability of co-financing from the central budget of Georgia, without full information of the aggregated claims on the consolidated budget. Merging these two ambitious investment programmes, as well as other programmes related to water services in other parts of Georgia, into the framework of an environmental financing strategy helped identify, in quantitative terms, the difficult trade-offs that the Georgian budget planners would face if they wanted to fulfil all these commitments.

2.3 The FEASIBLE Model

A computerised decision support tool has been developed to support the practical implementation of the methodological framework. The tool, called FEASIBLE, facilitates an iterative process of matching the expenditures required to meet given targets with available finance.

Most of the financing strategies described in the present publication have been developed using FEASIBLE. However, other approaches using the same or a similar methodological framework can also be used to elaborate financing strategies.

The key feature of FEASIBLE is the use of generic cost functions, which allow easy estimation of the costs of alternative service and environmental targets with a limited data collection effort. Further information on the FEASIBLE model is provided in Chapter 3.

2.4 Implementation to Date

To date, about a dozen environmental financing strategies have been developed in EECCA countries and regions covering water supply, wastewater treatment and municipal solid waste. An overview of these strategies is provided in Table 2-1.

Table 2-1 Overview of environmental financing strategies in CEE and EECCA countries

Country	Region	Sectors covered	Finalised
EECCA			
Georgia	National	WS & WW	2001
Moldova	National	WS & WW	2000
Russia	Kaliningrad	WS & WW	2002
	Novgorod	WS & WW	2000
		MSW	2002
	Pskov	WS & WW	2001
	Rostov on Don	WS & WW	2003
	Rostov on Don	MSW	2003
Kazakhstan	National	WS & WW	2001
	Eastern Kazakhstan Oblast	WS & WW	2003
Ukraine	National	WS & WW	2003
Armenia	National	WW	2003
CEE			
Lithuania	National	WS, WW & MSW	2001
Latvia	Riga	MSW	2002
Other Transition and Developing Countries			
China	Sichuan Province	WW	2003

Note: WS (Water supply), WW (Wastewater treatment), MSW (Municipal Solid Waste).

Applied methodology

Most of the financing strategies have been developed using the modelling-based FEASIBLE methodology. However, the financing strategies for Kaliningrad and Lithuania have been developed without the use of FEASIBLE using a more project based approach.

While the project based approach can achieve a higher degree of accuracy, its need for project level data limits its applicability to smaller countries/regions and centrally-planned, sectors and makes it more difficult to do the “what-if” scenario analysis, which has proved to be useful for policy development and implementation when applying FEASIBLE.

Donor financing

For the financing strategies developed to date, the following countries/institutions have provided financial support:

- For Rostov on Don and Yaroslavl: EU TACIS, Denmark, OECD.
- For Armenia: Germany.
- For Sichuan: the OECD, Australia, Japan.
- For the remaining financing strategies: Denmark.

The environmental financing strategies have been used by ministries of housing (responsible for urban infrastructure) and ministries of environment in reframing their policies and in their negotiations with ministries of finance and economy on the public investment programmes. For further discussion of policy impacts, please refer to Chapter 5.

Further reading

Readers who are interested in more detailed background material on environmental financing strategies and their practical application or on the computerised decision support tool FEASIBLE should refer, in particular, to the following publications:

- The FEASIBLE Model, Version 2, User Manual and Documentation, 2003.
- Financing Strategies for the Urban Water Sector in the NIS: Overview, Fifth Meeting of the NIS Environmental Finance Network, 21-23 May, 2001, OECD EAP Task Force.

A comprehensive list of relevant publications is provided at the end of this publication under literature.

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Introductory Statement

**by Mr. Hans Christian Schmidt,
Minister of the Environment, Denmark**

During the 1990's National Environmental Action Plans (NEAPs) and strategies were developed in most Eastern European countries to address the challenges of reforming the environmental sector along with the transition from planned to market economies. While providing good overviews of the environmental problems and needs in the region, the first generation NEAPs did not reflect the limitations of scarce resources and the need for structural reforms of the environmental sectors. As a response to the limitations of the NEAPs, Denmark and other donor countries have during the last four years supported work in the OECD to develop Environmental Financing Strategies (EFSs), to help countries plan better for environmental improvements and secure long term sustainability of the planned infrastructure investments. The environmental financing strategy is a methodology used to organise information and to balance environmental policies and targets with available resources.

It is well documented today that the municipal infrastructure sector, not least in the water sector, is in a very critical state. This is especially true in countries of the former Soviet Union, the EECCA countries (Eastern Europe Caucasus and Central Asia), where accession to and support from the EU have so far not been driving forces. The current status of public infrastructure in the EECCA region is one of severe under-investment, huge losses of water and energy and a high accident rate. Preventive maintenance has given way to accident management and damage repair, costing several times more than that of regular maintenance. The needs by far exceed the available financial resources, and therefore, governments and service providers must prioritise and seek ways of increasing the financial flow to the sector as well as reducing the costs of providing the services.

The environmental financing strategy is, thus, a methodology to organise information and to balance environmental policies and targets with available resources. Up to now, Denmark has financed the development of a computerised decision support tool, the so-called FEASIBLE model, which facilitates the balancing of needs with available financing. The tool has been tested on a number of country and regional studies in the water sector (Georgia, Moldova, Kazakhstan, Ukraine and three regions in Russia, viz. Novgorod, Pskov and Kalinin-grad), and lately it has been extended to include the waste sector. The waste model has been tested in Novgorod and in Latvia. The first reports (Georgia,

Moldova and Novgorod) were submitted to the Almaty Conference in the year 2000. In response to the “Guiding Principles for Reform of the Urban Water Supply and Sanitation Sector in the NIS” adopted by Ministers in Almaty, additional studies have now been completed, and the FEASIBLE model has been reprogrammed in a more user-friendly second version. This model is available for free to subscribers.

I am pleased to learn that recently other donors, such as the EU TACIS and Germany, have used the methodology and model developed to support EFSs in other regions in Russia and in Armenia. Furthermore, the methodology has been applied without the use of the FEASIBLE model but as a project based prioritisation tool that is particularly relevant in smaller countries and as a next step when overall policies and targets are set.

This report presents an overview of the EFS methodology and, in particular, the FEASIBLE model, and it provides a synthesis of the results achieved so far by applying the methodology. I will not give a summary of the report here but just point to a few key conclusions:

- The studies show that in the EECCA region the financial resources available today are hardly sufficient to cover operating costs of the existing deteriorating water infrastructure.
- User charges have reached affordability levels in some countries like Kazakhstan and Moldova. There is, however, still room for increasing tariffs in other regions, such as Russia and the Ukraine.
- There is scope for reducing operating costs through energy and water saving measures that should also be taken into account when dimensioning and designing new infrastructure or upgrading existing facilities.
- There is no doubt that public budgets as well as international financial support and partnerships will still have to play a substantial role in the future financing of strongly needed capital investments in improved environmental infrastructure. And this support must be linked with continued institutional and economic reforms.

The FEASIBLE model has proven its applicability, not only in EECCA countries but also in accession countries, and I believe that the cost-effectiveness of

Danish environmental investments could also be improved by applying the methodology more actively in Denmark. Lately, the OECD has demonstrated the applicability of the FEASIBLE model in developing countries by developing a financing strategy for the wastewater sector in the Chinese province of Sichuan.

We see the EFS methodology and the FEASIBLE model as important building blocks for the Strategic Partnership on Water for Sustainable Development, which was launched at the World Summit on Sustainable Development in Johannesburg in September 2002. It is my hope that this publication and the EFS methodology including the FEASIBLE model will be of interest to many new user groups (municipal investment planners, regional and national administrations, international financing institutions, consultants, etc.). I wish to thank those institutions, regions and countries, which have actively participated in developing the EFS methodology and the FEASIBLE tool and made valuable information available for the environmental financing strategies in general and for this publication in particular.

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Most of the financial resources for this work has been provided by the Danish government. Other countries/institutions that have provided support for studies include: Australia, EC/TACIS, Germany, UK, Japan

List of Abbreviations and Acronyms

C&D	Construction and demolition
CIS	Commonwealth of Independent States (of the former Soviet Union)
DANCEE	Danish Cooperation for Environment in Eastern Europe
DEPA	Danish Environmental Protection Agency
EAP	Environmental Action Programme
EECCA	Eastern Europe, Caucasus and Central Asia, comprises countries of the former Soviet Union except the EU accession countries (Estonia, Latvia and Lithuania)
EFS	Environmental financing strategy
EU	European Union
EUR	Euro
FDI	Foreign Direct Investments
FEASIBLE	<u>F</u> inancing for <u>E</u> nvironmental, <u>A</u> ffordable and <u>S</u> trategic <u>I</u> nvestments that <u>B</u> ring on <u>L</u> arge-scale <u>E</u> xpenditure
GDP	Gross domestic product
GEL	Georgian lari
HH	Household
HHW	Hazardous household waste
IFI	International financing institution

ISPA	Instruments for Structural Policy Adjustment
LCD	Litre per capita per day
MRF	Materials recycling facility
MSW	Municipal solid waste
NEAP	National environmental action programme
NIS	Newly Independent States (of the former Soviet Union)
O&M	Operation and maintenance
OECD	Organisation for Economic Co-operation and Development
SMART	Specific, measurable, agreed, realistic and time-bound (targets)
USD	United States dollar
WEEE	Waste electrical and electronic equipment
WS	Water supply
WW	Wastewater
WWT	Wastewater treatment

Executive Summary

An important obstacle to achieving environmental goals in many countries has been the failure to adequately address the associated financial issues: the costs of achieving environmental goals; how those costs could be minimised; and the challenge of matching costs with available resources. This volume presents an approach for addressing these issues, particularly for investment-heavy environmental infrastructure, such as urban water supply, wastewater collection and treatment and municipal solid waste. Its main message is that a systematic modelling approach to investment and financial management can improve decision-making and ensure a better use of scarce resources. The main ideas underlying this approach are the importance of realism, affordability and cost-effective use of resources in achieving environmental goals.

A computerised decision support tool – FEASIBLE – was developed by OECD and Denmark to help develop financing strategies, mostly in the countries of Eastern Europe, Caucasus and Central Asia (EECCA), but also in EU accession countries and China. It currently may be applied in the water supply, waste water and solid waste management sectors, and the goal is to extend it to energy-related infrastructure. FEASIBLE is freely available and can be obtained through the web pages of OECD, the Danish Environmental Protection Agency and COWI, the Danish consulting firm that developed the model.

The basic approach underlying FEASIBLE is to take public policy targets in areas like water supply and sanitation, determine the costs and timetables of achieving them, and to compare the schedule of these expenditure needs with available sources of finance. This analysis generally reveals “finance gaps” during planned implementation. FEASIBLE can then develop various scenarios to determine how these gaps could be closed. This could be by: identifying policy reforms that could help achieve the targets at lower cost; identifying ways of mobilising additional finance; adjusting the ambition level of the targets; or extending the time period for achieving the targets.

An important feature of FEASIBLE is the emphasis on realism and affordability. The model can assess the levels of finance (public, private, domestic, foreign) that might be available under different macro-economic conditions. In this way it provides a check on what public budgets might realistically be expected to contribute. It can also help to assess the potential social implications of increasing tariffs by determining the impacts of such price increases on household income. By focussing on these issues, the application of FEASIBLE is more than a tech-

nical exercise: it also supports a process of dialogue and consensus building among the key stakeholders involved in financing environmentally-related infrastructure. In this way it can build a bridge between policy development and implementation.

The analyses prepared to date for EECCA countries have shown that the percentage of the urban population with access to water supply, wastewater treatment and solid waste management services is higher than in countries at a similar income level, but that these services are inefficiently designed and very costly to operate and maintain. At the same time, the existing arrangements for providing these services are financially unsustainable. Thus, in most EECCA countries there is a chronic shortage of funds for proper operation and maintenance of infrastructure, such as small repairs, replacement of worn-out parts, small capital repairs and essential rehabilitation. This has resulted in the rapid loss of the economic and technical value of assets. If corrective action is not taken, it may eventually lead to the physical collapse of the infrastructure, with severe consequences for human health, the environment and economic activity.

The grave situation in EECCA calls for a fundamental reform in the approach to financing environmentally-related infrastructure and the associated policy and institutional arrangements. Overly ambitious plans to extend the coverage and level of infrastructure services need to be replaced by more realistic, modest capital improvement programmes, tailored at providing 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.

Even achieving these more modest objectives represents a major challenge for EECCA countries. *User charges* will be the most important long-term source of finance for operation and maintenance expenditure, though the low income in many EECCA countries represents an important affordability constraint. *Public budgets* will have an essential role in the short and medium term in financing rehabilitation and capital investments, in providing social protection and in facilitating access to credit. However, infrastructure programmes have to compete with other pressing social priorities. Thus, scarce *public funds and donor grants* need to be strategically prioritised; they will need to be increased in many

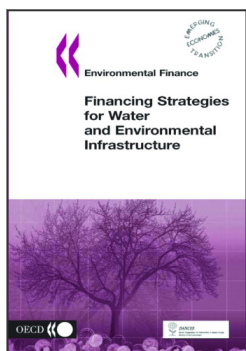
EECCA if the Millennium Development Goals are to be achieved¹. The importance of *domestic financial and capital markets* will grow over time. *International financial institutions (IFI)* will continue to have an important role in capital investments and promoting financial and management discipline. The role of the *private sector* will for many years be more important in providing managerial know-how than finance.

Even though the development of environmental financing strategies (EFS) has only been undertaken in the last few years, it has already triggered some significant policy changes in EECCA countries. *In Novgorod Oblast (Russia)*, the EFS for the water sector was officially adopted by Regional Government and used to identify a portfolio of projects co-financed by the Oblast and international donors. The municipal waste EFS for *the Novgorod and Yaroslavl Oblasts* led to a revision of the waste management plans that involved the identification of more cost-effective regional solutions. *In Moldova*, the EFS was adopted as an official policy document and supported a draft government resolution relaxing unrealistically stringent wastewater effluent standards. *In Kaliningrad (Russia)*, the EFS was used to identify a portfolio of projects co-financed by the Oblast and international donors. *In Ukraine*, the EFS was used to support a comprehensive water sector strategy. *In Pskov (Russia)*, the EFS stimulated a policy debate about infrastructure development targets that were revealed as being financially unsustainable and unrealistic. *In Georgia and Kazakhstan*, the EFS has provided a revealing “reality check” on possible co-financing arrangements with IFIs and donors.

The experience accumulated to date suggests that the environmental financing strategy methodology can be useful tool for governments in developing realistic plans to achieve nationally or internationally agreed targets. The underlying assumption is that governments should not finance all or most expenditure, or sponsor all or most projects. Relying on the public budget to finance operational and maintenance costs of collective infrastructure, for example, is not a sustainable solution. The main role of government in relation to finance is to establish the policy, regulatory and institutional framework within which resources from users, financial markets, capital markets, local budgets and enterprises can be

¹ As one of the Millennium Development Goals, by 2015 all United Nations Member States have pledged to reduce by half the proportion of people without sustainable access to safe drinking water. At the Johannesburg Earth Summit it was further agreed, by 2015 to reduce by half the proportion of people without access to basic sanitation

mobilised in a complementary way, and applied as cost-effectively as possible to achieve agreed goals. Hence, the financing strategies can be useful not only to help plan the government budget, but also in suggesting how policy instruments that affect the capacities and decisions of other public and private financial agents might be reformed.



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