3. EXPENDITURE PROGRAMME

Establishing a credible expenditure programme that responds to priority concerns of both creditors and the Kyrgyz government will be essential to gain support for a debt-for-environment swap. The proposed programme should be narrowly focused on a few priorities and demonstrate how a solid pipeline of projects could be prepared and supported to meet its objectives. This chapter reviews the Kyrgyz environmental priorities, looks into (global) creditors' preferences and aims to identify the most promising priority project pipelines to be discussed during negotiations with potential bilateral creditors.

Various types of projects have been screened against general eligibility criteria[21] identified in the Terms of Reference (ToR) of this project. The ToR require that successful project pipelines should achieve environmental benefits jointly with poverty reduction, and should facilitate local sustainable growth and job creation. In particular, the projects within each priority area should:

- facilitate achievement of water and environment-related Millennium Development Goals, the 2003 Johannesburg WSSD (World Summit for Sustainable Development) targets and the objectives of the WEHAB (**W**ater Supply and Sanitation, **E**nergy, **H**ealth and Environment, **A**griculture and **B**iodiversity) agenda;
- facilitate alleviation of poverty, and generate sustainable local incomes;
- provide regional or global environmental benefits, and facilitate the fulfilment of international environmental agreements by the Kyrgyz Republic;
- contribute to peace and security in Central Asia by alleviating regional and cross-border conflicts related to the management of shared and trans-boundary natural resources; and,
- be consistent and complementary to other foreign aid programmes and contribute to the implementation of commitments made by the Kyrgyz Government.

Based on the above criteria, three priority areas and five specific project pipelines were identified. The pipelines were analysed in terms of geographic location, main project types, typical project owners as well as project (financial) sizes. In addition, all current and expected project portfolios/pipelines financed by different sources have been reviewed and funding gaps analysed with the aim of identifying a niche where DFES resources could be most useful. The final choice of the project pipelines takes into account the forecast of likely revenues of the DFES scheme. Special attention is given to projects that can attract co-financing from other sources, including the private financial sector, IFIs and foreign grants. In the end, two pipelines are recommended for further analysis.

3.1 Existing Environmental Infrastructure and General Environmental Conditions

The Kyrgyz Republic has a well-developed legal system in the field of environmental protection. The environmental management system comprises two fundamental elements: a) co-ordination and supervision, and b) natural resources management. Environmental co-ordination and supervision is exercised by the Ministry of Ecology and Emergencies, in co-operation with seven *oblast*-based environmental

[21] These general eligibility criteria were agreed upon with the Kyrgyz Government at the outset of the project.

administrative units and environment protection inspectorates. Natural resources management has been entrusted to a number of state authorities; the Ministry of Agriculture is responsible for water resources; the State Forest Inspection Service, with responsibilities for natural resources protection as well, reports to the President of the Republic. The State Geology Committee's area of responsibility extends to the management of mineral resources.

The Kyrgyz Republic is a signatory to all environmental conventions related to its location and natural conditions, such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; the Vienna Convention for the Protection of the Ozone Layer; the Ramsar Convention on Wetlands; the UN Convention to Combat Desertification; the Convention on Biological Diversity; the UN Framework Convention on Climate Change.

3.1.1 Environmental Conditions and Targets

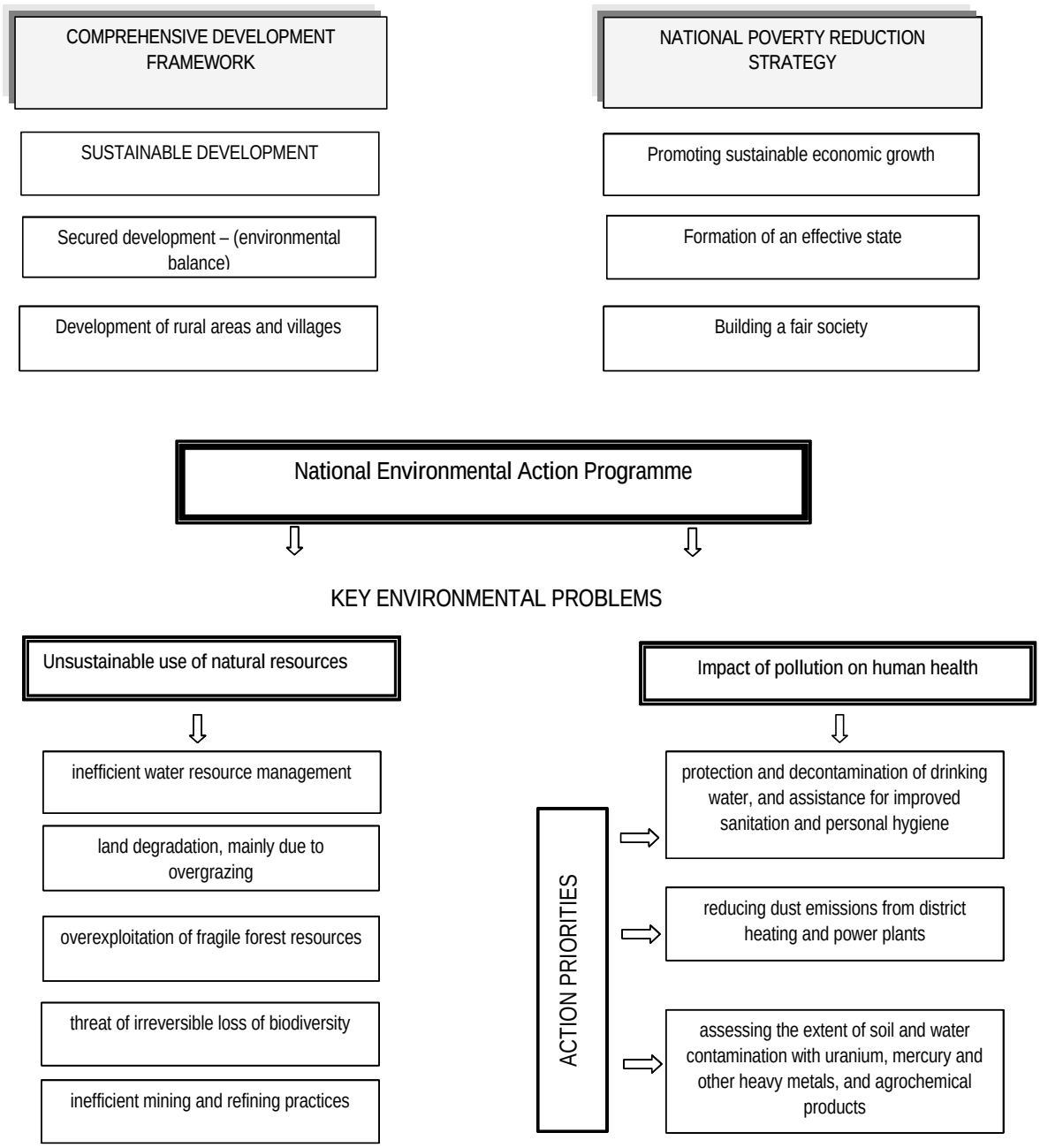
The strategic goals of the Kyrgyz Republic are defined in two fundamental documents: the *Comprehensive Development Framework* (CDF) and the *National Poverty Reduction Strategy* (NPRS). The implementation of these strategic goals is monitored by the World Bank and the International Monetary Fund. Each of the two strategic documents identifies three main objectives, with sustainable development as a common framework (Chart 9).

In addition, the *National Environmental Action Programme* (NEAP) prepared in co-operation with the World Bank (1995) identifies two main environmental problems: (i) unsustainable use of natural resources, and in particular of water resources, soil, forests, biodiversity, and mineral resources; and (ii) the impact of pollution on human health, with special attention to water pollution, air pollution (especially in large urban agglomerations), and mining-related hazardous waste with a considerable uranium, mercury, and heavy metal content. After 10 years of implementation, the NEAP seems to be out-of-date. As a result of the economic development and transformations, a lot of industrial enterprises have ceased their production. The current state of the environment has brought to light new threats that need immediate responses, such as, for example, land degradation.

Due to the shortage of budgetary resources, the *action priorities* identified in the NEAP have been limited to the elimination of pollution affecting human health.

The state of the environment of the Kyrgyz Republic is presented in the periodically published *National Report on the Conditions of the Kyrgyz Natural Environment*. The most recent 2001-2003 report was prepared by the Department of Ecology of the Ministry of Ecology and Emergencies and published in 2004.

Chart 9. Principal Strategic Goals of the Kyrgyz Republic



The analysis of all available data and information on the state-of-the-environment aims to identify current health hazards for the population and nature. Pollution levels are reviewed and compared with the environmental situation in selected OECD countries, for illustrative purposes. This course of the analysis allows to select priority sectors for the Kyrgyz Republic where the level of pollution is alarming, or the costs of inaction are potentially very high. What follows below is a short description of the main environmental problems in the country.

With regard to climate protection, the Chuyska *oblast* and Bishkek account for nearly 100% of greenhouse gas (GHG) emissions. The power sector accounts for 74% of these emissions. The total GHG emissions in

1990 (the base year) totalled 36 647 million Mg, and then dropped to 15 million Mg in 2000. Such considerable greenhouse gas emission abatement results directly from the deep economic recession in the country. For the same reasons, total air emissions decreased from 662 000 tonnes in 1989 to 239 000 in 1998 with a record low of 220 000 in 1997. Average emissions *per capita* were some 51 kg in 1998, all pollutants included. For comparison, average emissions (NO_x and SO_2 only) in OECD member states total 80 kg *per capita*.

Table 12. Air Emissions from Stationary Sources in the Kyrgyz Republic, 1991-2003, Thousand Tonnes

	1991	1992	1993	1994	1995	1996	1997	1998	2001	2002	2003
Total	161.3	128.6	94.1	64.8	55.0	47.4	37.5	41.2	35.2	32.2	35.7

Source: National Statistics Committee.

Records of air pollution caused by toxic gas above permissible levels exist for Bishkek only. The average allowable annual rates of concentration of nitrogen oxides (NO-0.06 mg/Nm^3, NO_2-0.04mg/Nm^3) are exceeded on 16-29% of days *per annum*, specifically in the city centre, whereas the average allowable annual SO_2 concentration rate (0.2mg/Nm^3) is exceeded only in the vicinity of the combined heat and power plant in Bishkek. Data for Bishkek show high average concentration rates of formaldehyde of 0.023 mg/Nm^3, which effectively means that allowable standards are exceeded 7.7 times. Notwithstanding the above, a comparison of average annual dust, NO_x and SO_2 concentration rates against data recorded, for example, by Lithuania and the United Kingdom shows that the Kyrgyz Republic frequently records concentration rates lower in order of magnitude.

Since 2000, the Kyrgyz Republic has been party to the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol which regulate the elimination of ozone depletion substances (ODS). The Kyrgyz Republic does not produce ODS whereas ODS imports in the year 2000 totalled 67.49 tonnes, nearly 80% of which is used in refrigerators, with the remaining part used in agriculture, mainly for milk cooling purposes.

Managing waste is among the most serious environmental problems in the Kyrgyz Republic. There are 30 radioactive waste landfills and 5 heavy metal content waste dumps, all inherited from the Soviet period. Waste dumps are not adequately protected, and all pose a real danger to the population in the country as well as to neighbouring states. This applies in particular to the Majluu-Suu dump (Jalal-Abad *oblast*), which – if disrupted by erosion or a seismic activity – may prove a real threat to the densely populated and fertile Fergana Valley divided between the Kyrgyz Republic and Uzbekistan.

Of the 15 087.65 thousand hectares of soil, 47% is prone to intense wind- and water-induced erosion. Agricultural land covers a total of 10 797.2 thousand hectares, 1 237.2 of which is allocated as arable land. Since 1960, the area of arable land has shrunk by 247.3 thousand hectares, with an additional 92.9 thousand hectares of arable meadows gone as well. The share of saline land taken out of agricultural production is increasing rapidly (1 180.8 thousand hectares in 2002).

The Kyrgyz Republic uses 12-17% of its water resources *per annum*, 95% of it in agriculture (sprinkling and irrigation), a further 3% for consumers' use, and 2% in industry. In 2002, 8 467.2 million m^3 of water was used, 342 million m^3 of which was from underground screens. Eighty three percent of the country's population have access to clean drinking water. The average water consumption rate *per capita* in the Kyrgyz Republic totals about 130 litres, 161 litres in cities, and 98 litres in rural areas. In Bishkek, on the other hand, the average water consumption rate *per capita* totals 227 litres.

A mere 28.4% of the population has access to a wastewater collection network combined with wastewater treatment. In 2001, 1 156 million m^3 of waste was discharged, of which only 134 million m^3 was treated according to official standards. In 2002, 2 270.4 million m^3 of municipal waste was discharged into rivers,

of which only 108 million m^3 was treated appropriately. The country has 20 wastewater treatment plants totalling 719 800 m^3/day in capacity. Their technical conditions raise understandable doubts on the part of the environmental protection authorities. In reality, only the first (mechanical) stage of wastewater treatment is anywhere near satisfactory. Major surface water pollution has been recorded in river waters in their course below Bishkek. In the Ala-Archa and Ak-Suu rivers, the content of organic substances, nitrates, copper compounds, and phenols exceeds the allowable standards by 2-3 times. The fact that allowable standards for phenol and copper compound content rates have been exceeded by more than double the permitted rate in the coastal waters of Lake Issyk-Kul in the vicinity of the city of Balykchy as well as in individual bays is a cause of serious concern.

3.2 Priorities for the Expenditure Programme

The above information on the state of the environment in the Kyrgyz Republic introduces some of the main problems which are discussed as part of the identification of priority sectors in the report. For the purposes of this analysis, various public domain sources have been reviewed and carefully studied. At this stage, two main criteria have been used for the sector analysis: the scale of the impact of an environmental problem on human health, and the possible size of financial resources that could be obtained through a DFES. As a result, four main environmental sectors have been scrutinised, namely:

- air;
- water resources;
- natural resources (soils, forests); and,
- waste management.

All data sources on atmospheric pollution in the Kyrgyz Republic show that total air loads per inhabitant are in general 40 % lower than in OECD countries. Also, the annual average concentrations of gases such as SO_2 and NOx are much lower than in European countries (in terms of order of magnitude). For the sake of comparison, in Bishkek (where the highest levels of air pollution are recorded) the average rate of SO_2 concentration is 0.008 mg/m^3 and of NOx is 0.04 mg/m^3, while in most European countries these rates are respectively between 0.02 – 0.03 mg/m^3 for SO_2 and 0.02 mg/m^3 for NOx. In the absence of large air polluters, the transboundary pollution affecting neighbouring countries is not really a problem.

In the light of the above, air protection is not considered as a priority sector to be financed within the framework of a potential DFES mechanism. Within this sector, only the problem of GHG emissions is analysed. The annual per capita emissions of greenhouse gases in the Kyrgyz Republic amount to 3 Mg/capita while in Germany it is 10 Mg/capita. In compliance with the Kyoto Protocol, ratified by the Kyrgyz Republic, the country is not legally obliged to make any GHG emissions reductions. However, the current critically low level of consumption of energy (0.74 toe/capita) (compared to European countries (4 toe/capita) coupled with further economic development points to the fact that energy consumption will only grow in the future. The use of renewable energy sources is one area where the Kyrgyz Government could focus its efforts. This particular area has been subjected to further analysis in identifying potential project pipelines to be co-financed from DFES resources.

The Kyrgyz Republic has huge water resources of excellent quality. Reports on the state of the environment note some elevated level of pollution of industrial origin only in the region of Bishkek. And this is due to the lack of technically suitable sewage systems. The clean Kyrgyz waters can be explained by the fact that only small quantities of sewage are disposed into rivers, only about 5 % of the entire river flows are estimated to be polluted. The main reason for this is that only 28% of the population has access to sewage systems (hence pollution remains scattered and generates long term risks). An additional element for eliminating this sector from the analysis is the large size of capital costs needed. Even a single project of modernisation and/or construction of sewers and a waste water treatment plant usually exceeds several million of USD. However, the special nature, social and economic position of the lake Issyk-Kul

and the considerable international aid that has been flowing to this region makes water investments in this area appropriate for a project pipeline under the DFES scheme.

Special attention is given to environmental problems related to devastation of the soils, desertification processes, the irreversible loss of natural resources (and especially forests) which pose a significant threat not so much to human health but to the health of the nation.

The problems of communal waste and radioactive waste in the Kyrgyz Republic are particularly serious. However, the level of resources needed to implement even one single project only often exceeds the potential amount of expected DFES revenue. In addition, for the implementation of a proper waste management policy, as seen from the experience of European countries, a necessary legal and financial framework needs to be in place and it is currently lacking in the Kyrgyz Republic.

Therefore, three priority areas have been identified for further analysis. These are:

- water resources (regional waters);
- biodiversity; and,
- climate change.

The analysis of the specific pipelines in each of the priority areas has gone through the following 4 major steps:

1. Familiarisation with the current and expected work of other partners in the Kyrgyz Republic – this first step involves the identification of current and expected projects of international agencies, government and NGOs in the three thematic areas.
2. Identification of assistance gaps in view of national strategy documents - this step consists of the analysis of existing portfolios and pipelines against priorities set by strategy documents in the priority areas of biodiversity, regional waters and climate change, and poverty reduction. The gap analysis results in the identification of "entry points", which are defined as national priorities that currently receive no or insufficient funding.
3. First identification of most promising pipeline opportunities - within the strategic entry points, the various types of projects are screened against the general eligibility requirements as defined in the ToR. This work forms the basis for the identification of at least 1 or 2 potential pipelines in each of the three priority areas. Suggested pipelines are analysed in terms of **(i)** geographical location of eligible projects; **(ii)** main types of projects, including size; **(iii)** typical project owners (e.g. municipalities; municipal enterprises); **(iv)** justification of DFES financing of the pipeline.
4. Selection of three most promising pipelines – in consultations with the OECD and the Kyrgyz authorities, the two most promising pipelines have been identified for further analysis.

In addition, justification of each of the pipelines is proposed and potential difficulties and challenges are outlined.

3.2.1 Area 1. Water Management: Identification of Promising Pipelines

The Kyrgyz Republic's water resources are of key importance to the economy of four neighbouring states: Kazakhstan, Uzbekistan, Tajikistan, and Turkmenistan. 44.46 km^3 of water flows out of the country per year. In the early eighties, the five countries signed a number of agreements on water distribution. In 1991, ministers responsible for water management confirmed the validity of the agreements signed in the 1980s. Today, the Kyrgyz authorities are not satisfied with the system of financial compensation for the maintenance and renovation of water reservoirs. Multilateral agreements are being replaced with bilateral agreements, such as, for example, the agreement signed with Kazakhstan (1998). A similar agreement – a trilateral one, was signed for the Syr Darya catchment basin water management purposes between the

Kyrgyz Republic, Kazakhstan, and Uzbekistan (1996). Compensation payments due to the Kyrgyz Republic are laid out in annual agreements.

Table 13. Main River Basins in the Kyrgyz Republic

River Basin	Main Tributaries on Kyrgyz Territory	Watershed Area (km^3)	Average Flow Rate (Billion m^3/year)
Chu	Chu	14 154	3.73
Talas	Talas	7 640	1.35
Assy		454	0.19
Syr Darya	Naryn, Kara-Darya	99 458	27.42
Amu Darya		7 700	1.25
Issyk-Kul Lake		15 738	3.33
Ili		997	0.36
Tarim		22 650	6.15
Total		**168 791**	**44.46**

Source: NEAP, 1995.

Kyrgyz rivers belong to the catchment basin of the Aral Sea (78.3%), Tarim (14.8%), Issyk-Kul (6.5%), and Lake Balhash (0.3%). Glaciers cover an area of 8 100 km^2, i.e. 2% of the country's territory. Three-quarters of glacial waters feed the catchment basins of Syr-Darya and Tarim. The largest Kyrgyz tributary is that of the River Narin system, including the River Kara-Darya, delivering water to the Syr-Darya. The catchment basin of Lake Issyk-Kul includes more than 80 small rivers. This huge lake located at an altitude of 1 608 m above the sea level, unique to Asia in its natural and physiographic features, has no outflow waterways; evaporation provides water balance. The catchment basin totals 15 738 km². The catchment basin of the River Chuy is yet another important one to two countries: the Kyrgyz Republic and Kazakhstan. The basin totals 38 400 km^2, with its major part located in Kazakhstan.

Current and Expected Work by Donors/Government and National Priorities

In conformity with the methodology outlined above, this section provides information on priorities and investment activities in the area of water management.

Table 14 presents the major current and planned projects by donors and the Kyrgyz Government in the area of water management as identified in the NEAP. Donors support these activities mainly through grants while the Kyrgyz Government contributes mostly through credits obtained from multilateral financing institutions, particularly from the World Bank (WB) and the Asian Development Bank (ADB).

Table 14. Current and Expected Work by Donors/Government and National Priorities in the Area of Water Management

National Priorities	Major Current & Planned Projects	Years	Funding Agency/Type of Fund	Implementation Agency	Budget (USD)
Protection and decontamination of drinking water, and assistance for improved sanitation and personal hygiene	Rural water and sanitation project	3/1/2002 8/1/2007	DFID UK - GRANT	Ministry of Agriculture & Water Management	5 743 044
	Rural water and sanitation project	3/1/2002 3/1/2006	DFID UK - GRANT	Ministry of Finance	5 445 990
	Water management system	1/1/2002 10/1/2005	Government of Swiss Confederation-GRANT	Ministry of Agriculture & Water Management	2 076 208
	Water Supply Authority	7/1/2003 7/1/2006	Government of Swiss Confederation-GRANT	Ministry of Agriculture & Water Management	1 483 000
	Water, sanitation and flood protection	14/12/2004 31/10/2007	World Bank - GRANT/LOAN	Ministry of Finance	15 000 000
	Rural water and sanitation project	04/12/2001 31/10/2007	World Bank - LOAN	Ministry of Finance	15 000 000
	Institutional strengthening and rehabilitation of water supply in 500 villages and 5-10 small cities; sanitation	2000-2006	ADB - LOAN/GRANT	Ministry of Agriculture, Dept. for Rural Water Supply	Grant – 9 000 000 Loan – 35 000 000
	Policy guidance and monitoring for the water sanitation sector (component of the World Bank programme)	1/03/2002 1/03/2007	DFID UK - GRANT	Ministry of Agriculture, Dept. for Rural Water Supply	7 480 000

Identification of Assistance Gaps and Potential DFES Pipelines

This section contains analysis of the financial coverage options for potential water protection projects as well as an assessment of the opportunities for identifying potential project pipelines.

On the basis of *eligibility requirements* adopted for priority areas related to water management in the Kyrgyz Republic, the 2001 *Regional Environmental Protection Action Plan for Central Asia* concludes that observed river pollution is local in nature, and is of no major importance to the overall cleanliness of trans-boundary waters. Water is considered a priority in the country's social and health care context. In this context, and in line with international objectives laid out in the Millennium Development Goals, *Water Supply and Sanitation* is recognised as a priority area. Undoubtedly, any investment completed in this

priority area directly affects the *alleviation of poverty*. The World Bank has assessed the country's financial requirements as totalling USD 180-200 million. Such an amount would have to be allocated over a short period of time to an overall project of modernising and constructing water supply networks, wastewater collection networks and wastewater treatment plants, should the majority of the population be provided with access to safe drinking water and sanitation facilities. For comparison, in 2003, domestic expenditure in the Kyrgyz Republic for water resources protection totalled 6.9 million soms (about USD 160 000), *current expenditures* excluded.

Completed foreign-funded projects, presented in Table 14, show that international aid has been focused on *Water Supply and Sanitation*, and on improving the water management system. The World Bank has declared that it will focus on supporting the water sector reform during the next few years, with particular attention paid to sustainable development, and to the financial balance of the sector, with a realistic user fee system to be introduced for water supply and wastewater collection and treatment.

In the largest catchment basin of Rivers Narin and Kara-Darya, all the big cities (Osh, Jalal-Abad, Narin, Kara-Kul, and Tash-Kumir) are major pollution hot spots. The volume of non-treated wastewater discharged totals nearly 1.6 million m^3 per year. These rivers deliver 18 km^3 of water to the Syr-Darya per year. Such a minor sewage volume results from the fact that the sewage networks in these cities are poorly developed (less than 20% of the population are covered). Just under 30% of the population are provided with water from the water pipe system. In the Osh and Jalal-Abad *oblasts,* a programme of rehabilitating and constructing water supply pipelines in several hundred villages over several consecutive years was launched in 2000. The Asian Development Bank provided a grant of USD 9 million and a loan of USD 35 million to support the programme. Moreover, water supply and wastewater collection were supported through grants totalling USD 7.5 million provided by the Swiss and British Governments to the Osh, Jalal-Abad, and Narin *oblasts*. All the above projects will have been implemented by the year 2007. The above regions are also home to two *Water Supply and Sanitation* projects, supported with World Bank loans totalling USD 30 million. These projects consist of three main components:

- rural water supply systems – rehabilitation and construction;
- small towns systems rehabilitation; and,
- institutional strengthening.

In this context, the Issyk-Kul lake has a special place. The first state nature reserve was established on the Issyk-Kul lake territory as early as 1948, now covering all of its vast area – an ample proof of the area's natural values. Top protection status was assigned to 19 086 hectares of water surface and coastal zones, inhabited by 24 species of protected mammals, 232 bird species, 12 fish species, and 297 floral species. A water-and-bogland area of specific value, this conservation area has been recognised as an International Preserve listed under the Ramsar Convention. Socially, Lake Issyk-Kul is a reservoir of special importance as well: it is a rest and leisure site for citizens of neighbouring countries, and thus forms part of the economic development perspectives for the Issyk-Kul *oblast*. In addition, a biosphere protection area was established for the entire Issyk-Kul *oblast* (4 314 400 hectares) in the year 2000.

Foreign donors have recognised the natural values of the Issyk-Kul region, as proven by the abundance of programmes targeted at this part of the country. Two of these, unique to the Kyrgyz Republic, form part of a comprehensive development and master plan for the area. The first programme is funded by the European Union (TACIS), with an amount of nearly USD 2 million (2003-2006). The second "Study on Integrated Development Plan of the Issyk-Kul Zone" is managed and implemented by the Japanese International Co-operation Agency (JICA), with a target completion date of March 2005. As part of the *Water Supply and Sanitation* priority, two UK DFID-funded projects (totalling nearly USD 13 million) are in progress in the Chuy, Talas, Narin and Issyk-Kul *oblasts*. Similarly, a *Water, Sanitation and Flood Protection World Bank* project (a loan of USD 15 million) is currently under implementation in the region.

Unfortunately, the *Water Management* priority area offers few opportunities for inclusion into a DFES programme. The only exception could be a pipeline of projects on rehabilitation and construction of wastewater treatment plants in the cities of Balykchy and Karakol (on the coast of Issyk-Kul) – and these are more suitable for inclusion in the *Biodiversity Protection* priority area (as will be discussed later). The analysis of making potential DFES funding part of projects included in the *Water Supply and Sanitation* priority area in the territory of the key catchment basins in the Kyrgyz Republic (Rivers Narin and Kara-Daria and Lake Issyk-Kul) proves beyond doubt that despite the considerable *financial gaps* (with only several major foreign funded projects), the scale of the needed investments exceeds the expected revenue from potential DFES several times over.

It would be possible to tailor DFES funding to reducing pollution of regional/international water bodies by focusing resources on the co-financing of smaller projects in decentralised wastewater treatment systems serving dispersed human settlements and rural areas. Such a model could be considered and analysed, especially in environmentally sensitive areas; such as Lake Issyk-Kul. Such an approach would benefit from managing wastewater as closely to the origin of its generation as practically feasible, and to the location of its potential beneficial reuse. Decentralised wastewater management allows the application of various cost-effective options, tailored to the prevailing conditions in the various sections of the community. Operational and maintenance costs of small-scale, decentralised wastewater treatment technologies in particular can be low, if the systems are designed to utilise gravitational flows and natural biological processes for filtration and decomposition of effluents (soil layers, plant roots, etc.). The wastewater management system may comprise several smaller sub-systems for collection, treatment and reuse. This theory is confirmed in practice by a well-functioning root-and-cane wastewater treatment plant with a capacity of 350 m^3/day located to the north of Karakol. This type of wastewater treatment plant costs several times less than "traditional" installations.

In conclusion, the option of financing Water Supply and Sanitation with support of rather limited DFES funds could be envisaged only in case of the **Improvement of Wastewater Collection and Treatment in the Coastal Villages and Cities of Issyk-Kul Lake.** Notwithstanding the above, it seems that this priority area does not carry sufficient capacity to conform to project pipeline requirements. The above priority, i.e. the conservation of habitats in Lake Issyk-Kul offers positive global spill-overs in terms of biodiversity conservation, but not in terms of reducing the pollution of regional/international waters.

Description of Project Pipeline 1. Improvement of Wastewater Collection and Treatment in the Coastal Villages and Cities of Issyk-Kul Lake

As mentioned earlier, the region of the catchment basins of the lake Issyk-Kul encompasses 15 738 km^2. Eighty rivers flow into the lake. Two hundred thousand people live along the banks of the lake. Moreover, during the tourist season an additional 250 000 people are estimated to visit the region each year. According to data of the Ministry of Ecology and Emergencies, about 16 millions m^3 of waste water is disposed of per year in the region, of which only 5.4 million m^3 is sufficiently treated. A JICA report on the Study on Integrated Plan of the Issyk-Kul Zone (2004) notes that the state of existing wastewater treatment plants in Cholpon-Ata, Karakol and Blykchy is alarming. The biogenic substances T-N (total Nitrogen) and T-P (total Phosphorous) have the most sizable impact on the water of Issyk-Kul. In 2002, T-N in the lake did not exceed the permissible standards and amounted, on average, to 0.15 mg/l. The content of T-N in rivers was respectively 1.03 mg/l. Similarly, the content of T-P in the lake and in in-flowing rivers was respectively 0.0011 mg/l and 0.012 mg/l. However, the concentrations of compounds of copper, zinc and the concentrations of phenols in some gulfs of the Northern part of the lake are alarming and need urgent measures. The JICA report foresees a rapid increase in the pollution levels of the lake due to a significant increase of tourist flows to the region. For example, JICA consultants note that the rehabilitation of the wastewater treatment plants in Cholpon-Ata, Karakol, and Balykchy is urgently needed.

Geographical Location:

Issyk-Kul Lakeside.

Main Projects Types:

Projects under this pipeline would finance: (i) repair work on wastewater treatment plants (WWTPs), (ii) upgrading of WWTP; (iii) establishment of decentralised wastewater systems tailored to the needs of targeted communities or units (e.g. hospitals, tourist centres; hotels; industrial facilities; etc), and (iv) use of plants and ecosystems management for cleaning up wastewater.

Project Size:

The project size would depend on the type of repairs needed, the upgrading proposed and overall characteristics of the decentralised wastewater systems. Current estimates suggest that the complete rehabilitation of non-operational wastewater management facilities in Karakol would cost a minimum of USD 4 million.

Typical Project Owners: Municipalities (5 000 to 100 000 inhabitants).

Justification for DFES Financing:

The pipeline shows direct benefits in terms of reducing pollution of Issyk-Kul waters and it also meets all National Poverty Reduction Programme (NPRS) priorities. Decreased pollution of lakeside waters will contribute to increased benefits for communities along the Issyk-Kul lakeside, and would include a more conducive environment for income generation in the tourism sector. This pipeline would reduce risks to public health due to the reduction of the faecal coli form population in drinking and bathing water sources. This would be an indirect, though important, contribution to the objectives of the NPRS. Finally, this pipeline has considerable potential for complementing the actions of other donors. There are a number of initiatives currently financed by donors and multilateral agencies in the Issyk-Kul *oblast*. These projects comprise both technical and investment components. The bulk of financial resources for investments is likely to come in the form of loans with requirements for national government co-financing while O&M costs will be covered by users.

Difficulties for DFES Financing:

A serious problem for initiating this project pipeline is the lack of sufficient financial resources. As discussed earlier, the expected revenue flow from a DFES would not be sufficient for substantial improvements of the municipal sewage dumped into the lake. The 16 million m^3 of waste water that flows into the lake annually is only slightly treated, if at all. It is estimated that the modernisation of the sewer systems and the existing waste water treatment plants requires about 15 million USD which, if implemented, would consume all potential DFES resources.

Suggested Pipeline

The analysis presented above indicates that the pipeline meets the criteria stated in the ToR for this study. Specifically, it was shown that the pipeline complies with priorities listed in national and international strategic action documents (such as the Comprehensive Development Framework (CDF), NPRS, NEAP). The pipeline provides regional environmental benefits, and could indirectly contribute to job creation in the waterside cities by contributing to a more conducive tourism environment. Finally, the project pipeline contributes to the NPRS by improving water and sanitary conditions. This contribution is of particular importance for the poorest segment of the population.

3.2.2 Area 2. Biodiversity: Identification of Promising Pipelines

The territory of the Kyrgyz Republic is particularly rich in biodiversity resources. Although the country's territory constitutes a mere 0.13% of the global terrestrial area, it is inhabited by 2% and 3% of all plant and animal species, respectively. Given the above data, it is obvious that the Kyrgyz Republic is a *global biodiversity hotspot* – an area of outstanding density of particularly endemic species. No doubt, the Kyrgyz Republic enjoys such environmental conditions thanks to its extraordinary physiographics: 40% of the

country's territory is located at an altitude exceeding 3 000 m above the sea level, with only 7% of the country's area *suitable for agricultural crops.* Intensive agriculture prevails in three valleys: Chuy, Fergana, and Issyk-Kul. Areas between valleys and tall rocky mountainous ranges are a hilly *semi-savannah and savannah* terrain, used for extensive grazing of farm animals.

Forests sit on 864.9 thousand hectares, i.e. 4.32% (2003) of the country's territory. The Kyrgyz forests are dominated by conifers (36.4%), primarily the Tien-Shan fir. The globally unique *walnut forests* cover an area of 116.2 thousand hectares, with particularly dense wood stand concentration at Arslanbob, the Jalal-Abad oblast. As a direct result of the shortage of easily accessible and relatively inexpensive energy sources, the forest area was reduced by more than one-half between 1930 and 1978 (Table 15), with illegal tree felling by the local population as a main factor. Expensive energy and fuel (coal, gas, electricity) sources in relation to the average household income make *kiziak* (dry animal waste) and wood the only two accessible types of heating and cooking fuel. An average rural area family needs 4-5 m^3/year of burning wood, whereas the accrual rate of total wood mass growth is just under 600 000 m^3/year (State Forestry Service data: 0.71 m^3/hectare/year). These data prove the scale of the threat to forests. Moreover, similarly to other Central Asian countries, 90% of the country's territory suffers from intense desertification. Wind and water erosion affect 6.5 million hectares of land. Should we add the rapidly expanding area of saline land (1 180.8 thousand hectares in 2002), we would have a very alarming picture. The 2001 *Regional Environmental Action Plan for Central Asia* report claims that losses due to regional desertification total USD 347 million per year.

Given the forests' climate and erosion-preventing functions; a single hectare of woodland has the capacity for retaining 22 000-36 000 litres of water. Erosion processes are four times weaker in afforested catchment basins (as proven in scientific research carried out in Poland's mountainous areas, for example). Given the circumstances – a major threat to future generations – the issue of more intense afforestation is crucial to the Kyrgyz Republic and its neighbours.

Table 15. Forest Area by Type

Forest Type	1930 Thousand ha	1978 Thousand ha	Change %
Total	1 396	624	-55
Coniferous	219	89	-59
Artcha	536	213	-60
Walnut	45	28	-38
Other deciduous	219	89	-59
Bush	377	205	-46

Source: KIRFOR, Bishkek, Kyrgyz Republic.

According to the World Conservation Union (IUCN) classification, the Kyrgyz Republic's biodiversity is divided into 4 categories:

- Nature reserves - top legal protection has been extended to 7 state nature reserves, totalling 270 713 thousand hectares;
- National parks – this group comprises 8 national parks – total area of 258.5 thousand hectares;
- Single objects or sites of high natural interest (60); and,
- Forest and botanical reserves (283 thousand hectares).

The total area of protected territories constitutes 4.2% of the country. This is considerably below the world average (6%), and highly unsatisfactory in light of the recommended national implementation of the natural values protection strategy, as seen by the Kyrgyz National Centre of Environmental Strategy and Policy.

At the end of 2004, the *State Forestry Service* prepared their *2005-2015 National Forestry Programme*. The forestry development concept adopted by the Kyrgyz Government in 2004 lists forest and biodiversity protection through nature conservation, planting trees and shrub species threatened with extinction, and development of alternative energy sources as the first three of ten strategic goals.

Current and Expected Work by Donors/Government and National Priorities

Current and expected work in this area carried out by donors and the Kyrgyz Government are presented in Table 16 below.

Table 16. Current and Expected Work by Donors/Government and National Priorities in the Biodiversity Area

National Priorities	Major Current & Planned Projects	Years	Funding Agency/Type of Fund	Implementation Agency	Budget (USD)
Biodiversity protection	Biodiversity protection of the Issyk-Kul region	1996 - 2005	GTC - GRANT	State Forestry Agency	2 030 000
	National Action for Biological Security	2003 - 2004	UNDP - GRANT	MoE	225 000
	Development plan of Issyk-Kul	2003-2006	JICA - GRANT	State Commission on Architecture and Construction, Bishkek	No data
	Environmental protection through enhanced capacity of civil sector to implement projects in the area of biodiversity, international water protection and climate change mitigation	2002-2004	UNDP SGP/GEF - GRANT	UNOPS New York - NGO's	500 000
	West Tien Sian Biodiversity Project – Phase 2	2004-2005	EU-TACIS - GRANT	Central Asia Ministries of Environment	1 300 000
Protection of forest resources	KIRFOR- Forestry Sector	2004-2007	SDC&SECO - GRANT	State Forestry Agency	5 000 000
	JUMP - Juniper forests Management plans (to develop sustainable management process and tools for a better conservation of forest resources for the benefit of the local population)	2004-2007	EU/TACIS - GRANT	State Forestry Agency	1 284 417
Land degradation	Mountain Pasture Management in Suusamyr Valley (expected)	2004 - ?	UNDP/GEF	Not decided	1 035 000
	Community based rangeland management in Temir Village (expected)	2004 - ?	UNDP – GRANT	Not decided	213 000

Identification of Assistance Gaps and Identification of Potential DFES Pipelines

Among the five crucial problems of the sector listed under *Unsustainable Use of Natural Resources* (Chart 9), the *National Environmental Action Programme* (NEAP) identified three issues directly related to biodiversity:

- land degradation, mainly due to overgrazing;
- overexploitation of fragile forest resources; and,
- threat of irreversible biodiversity loss.

Regrettably, none of the three key listed problems was identified in the NEAP as an *action priority*, primarily due to the lack of state budget resources.

Biodiversity protection projects, funded by IFIs and listed in Table 16, show that the international community recognises the *key environmental problems* identified in the NEAP as important and urgent. In financial terms, most of the assistance goes to forest resources protection. The *2001-2005 National Forestry Programme* adopted by the Government declares that "forest protection and expansion has become one of the top economic, financial, environmental, and social aspects of state policy". Sixteen thousand hectares of forest are to be planted throughout the 5 years of the programme duration with an amount of 379.37 million soms assigned for it (*current expenditure* excluded). This is a considerable amount of resources. Given the country's financial capacity and the fact that 1 million hectares of land managed by the Forest Fund are allocated for afforestation, the resources available are insufficient.

In April 2004, the Kyrgyz Government adopted yet another forest-related strategic document – the *Concept of Forestry Development in the Kyrgyz Republic until 2025*. Plans listed in the paper provide for a reform of the funding system for the *GosLesSluzhba* (State Forestry Service) by establishing a Forestry Development Fund. The Fund shall provide grants to private entities for programme-defined purposes, nature conservation included. The main source of revenue of the Fund will come from payments from the use of forests. Financial sources of the Fund will be allocated solely for the development of the forest sector.

The unique value of the country's nature has been reflected in a number of large projects funded by foreign donors (Table 16). These projects support one of the NEAP-listed priorities on preventing the *threat of irreversible biodiversity loss.* The problem of limiting biodiversity losses was emphasised during the World Summit on Sustainable Development (Johannesburg, 2002), and during the 2004 IUCN World Congress. Two large projects focusing on the Issyk–Kul protected area, and encompassing the entire *oblast* area deserve special attention. It seems that the ***Improving Wastewater Collection and Treatment in the Coastal Villages and Cities of Lake Issyk-Kul*** project pipeline discussed as part of the *Water Management* priority area may serve as an excellent supplement to activities aimed at the protection of this sensitive ecosystem.

Broadly understood, *land degradation*, one of the major environmental problems of the Kyrgyz Republic and encompassing wind and water erosion processes, landslides, and desertification, has also been noted by foreign donors as a problem extending beyond the country's internal issues. UNDP is currently designing two projects aimed at soil protection, and particularly the protection of grazing land from overexploitation.

As a result of the first screening of the entry points for DFES, two main potential areas of work have been identified. These are:

2. Protection against land degradation; and,

3. Prevention of irreversible biodiversity loss.

Description of Project Pipeline 2: Protection against Land Degradation

This priority involves the implementation of projects targeting the planting of strips or stands of fast-growing trees, such as poplars and willows with the purpose of preventing landslides, water and wind erosion, increasing the soil moisture content, and establishing ecological corridors binding currently fragmented protected areas. Within the time-span of several years, such plant stand development may prove helpful in preventing anthropopressure in domestic forests. Within developed coastal strips of lakes and rivers, strips of trees and shrubs are effective biogeochemical barriers preventing surface pollution flows from agricultural land and from locations with no access to wastewater networks.

Geographical Location:

Whenever selecting the location of afforestation strips or zones it ought to be borne in mind that the function determines the location. For example, lake protection against surface pollution flow requires afforestation strips to be located horizontally across the land swell, between the bank and the village itself. A priority activity – following the analysis of land resources managed by the State Forestry Fund – ought to include zone demarcation in the vicinity of protected areas, water reservoirs, rivers, drinking water intakes, and human settlements.

Main Project Types:

In co-operation with the State Forest Service (SFS), tree and shrub planting projects could be organised in numerous locations across the country.

Project Size:

According to SFS data, the cost of planting one hectare of land in the Kyrgyz Republic totals USD 150-300. Therefore, it may be assumed that an average-sized project should cost USD 5 000.

Typical Project Owners:

Private individuals, co-operatives and NGOs. In some cases, small communities could be represented by their municipal authorities.

Justification for DFES Financing:

Given the major degradation of plant life and progressive desertification processes in the Kyrgyz Republic and neighbouring countries, the pipeline project, as suggested, will be of benefit for biodiversity as well as surface water protection. The pipeline will be hugely beneficial to a number of priority areas, such as forestry as well as protection and productivity growth of agricultural areas. A further benefit of major importance of the pipeline is its social aspect. The very simplicity of projects as well as the relatively small amounts of financial resources required enables the rural population to participate in project implementation. Thus, projects implemented as part of the pipeline will generate additional income. Moreover, project implementation provides an excellent opportunity for environmental awareness-raising.

Difficulties for DFES Financing:

Such projects usually face two types of problems. First, numerous projects will be implemented by individuals, small local communities, and non-governmental organisations. Such fragmentation is both an opportunity for business development, and a threat to the objective itself. Such projects are usually very difficult to service financially, and to assess in terms of actual performance measures. Administrative costs and technical assistance activities usually get little support by donors. Another problem could be the securing of local resources needed to extend proper care to plantation areas.

Description of Project Pipeline 3: Prevention of Irreversible Biodiversity Loss through Afforestation and Related Activities

The fundamental premises supporting the selection of this particular project pipeline include the following: protection and expansion of forest areas, preventing the overexploitation of fragile forest resources, biodiversity protection, prevention of water and wind erosion processes, landslide prevention, improving water retention, and improvement of microclimate conditions.

Geographical Location:

The entire Kyrgyz territory, starting with the surrounding protection zones of state preserves and national parks.

Main Project Types:

Preparation of considerable amounts of micorised planting material for local tree species, including nursery areas allowing for acclimatisation. Preparation of areas for planting; planting and tree care. A radical increase in forest area growth will require an increase in the plantation rate from the current 3 000 hectares annually to a minimum of 10 000 hectares. A single plantation area should not be smaller than several hundred hectares. This will require a minimum pipeline allocation of USD 1 500 000 per year. The amount is realistic, given the potentially available DFES funds. During the initial years, it would be necessary to establish 3-5 nurseries and at least one micorising station in the vicinity of the plantation areas planned.

Project Size:

GEF experience with such projects proves that under Kyrgyz circumstances the cost of a single typical plantation project should not exceed USD 150 000. Higher costs – though not higher than USD 500 000 – may well be expected in case of establishing a system of nurseries and micorisation stations.

Typical Project Owners:

State Forest Service (*GosLesSluzhba*) and their independent local units.

Justification for DFES Financing:

This pipeline is justified primarily by its global benefits and national priorities as stated in the NEAP. The pipeline is crucial to poverty reduction, since thousands of jobs will be created every year. Polish experience shows that in areas of high unemployment, one of the main opportunities for alleviating its social consequences is creating jobs to support State Forests. Hundreds of small private businesses have been set up, providing simple services in forests. It has been estimated that the work output required to care for and plant 1 hectare of forest land translates into 3 500 man-hours per year. This is equivalent to employing 2 full-time staff. In addition, the project pipeline is of particular importance to the global objective of climate protection through more intense GHG capture.

Difficulties for DFES Financing:

Thanks to the Kyrgyz-Swiss Forestry Sector Support Programme (KIRFOR) and JUMP projects, the State Forestry Service is well prepared from a management point of view to increase the project scale considerably. Moreover, there are no crucial counter-indications on behalf of potential donors.

Suggested Pipeline

Two project pipelines have been identified as part of the *Biodiversity Protection* priority area:

2. Protection against land degradation; and,

3. Prevention of irreversible biodiversity loss through afforestation.

Pipeline 2 seems to be of lesser importance to the international community, although a major Kyrgyz problem is simultaneously addressed. In addition, the servicing of a multitude of small projects and

ensuring credible monitoring may create major problems. Notwithstanding the above, project implementation as part of the pipeline may constitute a crucial factor in reducing poverty by creating numerous jobs, especially in small locations. Local community participation in projects such as prevention of erosion processes or eliminating threats (landslides) by planting tree and shrub strips may form a crucial environmental education component.

Pipeline 3 is decidedly more effective in meeting the criteria identified by the ToR, especially with regard to the regional and global environmental effects aspect. The Kyrgyz territory, located centrally in relation to the other Central Asian states (and 90% mountainous), is of key importance to water supplies and climate conditions, and rain precipitation in particular. A radical increase in afforested areas may serve to prevent desertification processes, also in neighbouring countries.

In conclusion, we recommend pipeline 3 to be included as a priority, whereas pipeline 2 ought to be considered in debate and consultation with the Kyrgyz environmental authorities.

3.2.3 Area 3. Climate Change: Identification of Promising Pipelines

An economy in transition, the Kyrgyz Republic is part of the Annex Two to the Kyoto Protocol on Climate Change, and is thus not legally obliged to reduce its GHG emissions. Authors of the First National Report on Obligations of the Kyrgyz Republic Stemming from the Climate Change Convention, published in 2003, consider GHG abatement possible at a level of 19 million Mg CO_2 as opposed to the forecasted 29 million tonnes by 2020. The report points out that such an ambitious target will require 4 fundamental objectives to be fulfilled:

- Improving energy efficiency;
- Increasing the share of gas in the overall fuel use structure;
- Increasing the share of renewable energy sources in the energy account; and,
- Establishing a consistent power policy.

GHG emissions of Kyrgyzstan in 1990 (the base year, as set in the Kyoto Protocol) amounted to 8.28 tonnes *per capita*; in comparison: 10 tonnes *per capita* in West Germany, and 7.7 tonnes *per capita* in Poland. By way of comparison, energy consumption in the early 1990s in Kyrgyzstan totalled 1.5 toe *per capita*, as against 2.2 toe *per capita* in Poland, and 4 toe *per capita* in West Germany. Most (79.4%) of GHG emissions in the Kyrgyz Republic were generated by the power sector. The economic transition period caused industrial production to plummet, followed by a drop in power consumption (down to 0.74 toe *per capita*). GHG emissions in 2000 dropped by 58% as compared to the base year. The power sector continues to hold a 74% share in GHG emissions. Unfavourable changes have been recorded in the fuel consumption structure, as coal use volumes grow, and more expensive carbohydrate fuels are neglected. Power and heating plants are top energy consumers (20.7%). The country's economy carries the burden of disproportionately high costs generated by two factors: the very high energy consumption rate, and energy losses. The so-called power "losses" trigger particular anxiety on the part of the Kyrgyz authorities. In 2001, they were 4.1 times higher (as per contractual fuel rates) than in 1999. This "loss" volume carries just 23 million m^3 of natural gas. Electricity "losses" totalled 4.802 million kWh in 2001 (35.2%). "Losses" have resulted from failures to pay for energy use, an inefficient enforcement system, and – to a lesser extent – an illegal power use.

All strategic documents developed by the Government as well as a number of papers commissioned by international institutions indicate the very difficult and tense power balance, unfavourable price levels for imported carbohydrate fuels, and huge financial losses incurred by the power sector preventing any restoration work within the sector. In 2001, the import of fuels and energy in the energy balance of the Kyrgyz Republic accounted for 40.4 %.

Concurrently, relevant policy documents lack unambiguous priorities in terms of environmental protection, such as power savings and direct introduction of renewable energy sources. The NEAP *action priorities*

provide only for reduction of dust emissions from heating installations. Regrettably, the Kyrgyz Republic has no strategy of developing renewable energy sources despite its tremendous potential in this field. The experience of a number of European Union member states proves that energy saving and the courageous introduction of renewable energy sources constitute the most efficient tool in the radical reduction of air pollution, climate protection, and improvement of economic efficiency.

Renewable Energy Sources

While renewable energy resources, as estimated by World Bank experts, could well cover 50.7% of the Kyrgyz demand, their share in the overall energy account is symbolic, totalling 0.15%. **Hydro-power plants** with their overall design capacity of 3 000 MW dominate the area of electricity generation. The Kyrgyz Republic has 5 large and 13 small hydro-power plants; their technical conditions require rapid modernisation, however. Although these facilities use a mere 11-15% of the Kyrgyz rivers' power potential, the construction of 60 small hydro-power plants with a total design capacity of 300 MW, as suggested by the World Bank ESMAP (Energy Sector Management Assistance Programme)[22] report, would cost USD 150 million, with another USD 150 million required to modernise the existing plants.

By 2002, 60 000 m^2 of heat-generating **solar panels** were installed in the country. The Kyrgyz Republic has about 2 600 hours/year of sunshine, translatable into 1 500-1 900 kWh/m^2/year. The country also claims two important industrial plants with a manufacturing capacity sufficient to cover approximately 30% of the former Soviet Union demand for crystalline silicon used in solid state devices in space and defence industries. The Orlovka plant produces single-crystal silicon, while the Tash-Kumyr plant (construction in progress) was designed to manufacture polycrystalline silicon. The Tash-Kumyr plant is currently producing silicon blocks for a foreign customer on a toll basis. According to data provided by the *Centre for Renewable Energy of the Kyrgyz Republic*, the cost of constructing 1 m^2 of a solar installation amounts to approximately USD 200. For example, a 134 m^2 solar installation was set up at Bishkek's First Primary School, with a total cost of 1 million soms. The Municipal Environmental Protection Fund supported the investment. The installation has been operating flawlessly for the past two years, generating hot sanitary water.

Different **biomass** types also carry a major and yet unutilised energy potential. Table 17 shows the theoretical energy potential of various biomass types.

Straw carries the greatest energy potential. The Kyrgyz Republic grows cereals on areas covering 648 000 hectares. Therefore, the annual straw crops may be about 1.8 million tonnes, which would yield approximately 25 000 TJ of energy. Straw could be used in small household boilers in rural areas. Two and a half million m^3 of animal waste generated per year are yet another type of potential power-generating biomass. When fermented, animal waste may generate biogas, as well as high-quality soil fertilising compost. Today, the Kyrgyz Republic has 15 biogas reactors of a capacity ranging from 5 to 250 m^3. As per the *National Programme on Biogas Production and Natural Fertilisers (*draft completed by the *Centre for Renewable Energy of the Kyrgyz Republic)*, it will be possible to construct 4 000-5 000 biogas reactors in the Kyrgyz Republic over the next 10 years, with a total cost estimated at USD 35 million. Biogas generated from the use of animal waste could cover 50% of the power demand of rural area households. Compost produced in reactors could increase the fertility of agricultural land by 30%.

[22] The Energy Sector Management Assistance Programme (ESMAP) is a World Bank managed, global technical assistance programme which helps build consensus and provides policy advice on sustainable energy development to governments of developing countries and economies in transition. ESMAP also contributes to the transfer of technology and knowledge in energy sector management and the delivery of modern energy services to the poor. ESMAP was established in 1983 under the joint sponsorship of the World Bank and UNDP as a partnership in response to global energy crises. ESMAP's mandate has evolved over time to meet the changing needs of its clients.

Table 17. Calculated Energy Potential of Biomass

Source	Estimate of Energy Potential			
	Technical		Theoretical Economic Potential [as a Share of Technical Potential]	Economic
	m^3 x 1000	TJ	%	TJ
Wood fuel	120	576	30	173
Wood waste industry	30	144	10	14
Other wood waste	20	96	10	9
Dry agriculture waste (straw)	5 400	25 200	15	3 780
Municipal waste	400	800	10	80
Biogas	200 000	4 187	15	628
Sewage, effluents	450	650	30	195
			Total	**4 879**

Source: Data compiled from different sources and calculated by the authors.

The World Bank's ESMAP Mission has estimated the potential of other renewable energy sources in the Kyrgyz Republic, such as **wind and geothermal sources.** They have found that these sources are of much lower value and importance in the Kyrgyz energy picture. **Wind data** indicate rather modest resources that could be commercially promising; however, the country's terrain is such that localised regimes of commercially interesting resources may well exist. **Geothermal sources** are also modest but could be viable for applications such as dairies, health spas, wool-washing, and other applications located near the source.

The above World Bank report notes that the main motivations for the Kyrgyz Republic to develop its renewable energy resources are to:

- capitalise on available, financially attractive renewable energy resources in the country;
- reduce the country's dependence on imported fossil fuels by using renewable energy in heating applications;
- provide electricity to rural areas and nomadic populations not connected to the electricity grid at a lower cost than a grid extension.

With the aim of developing and promoting renewable energy sources, in 1993, the *KUN* ("sun" in Kyrgyz) organisation was established through a Presidential Decree. More recently, *KUN* changed their institutional status – now they have become the *Centre for Renewable Energy of the Kyrgyz Republic*. Due to financial difficulties, however, their potential for effective work is very limited.

Current and Expected Work by Donors/Government and National Priorities

This section contains information on current and expected work by donors and international organisations and IFIs with contributions by the Kyrgyz Government within the climate change area. Two priorities have been identified: developing renewable energy sources and improving energy efficiency.

Table 18. Current and Expected Work by Donors/Government and National Priorities in the Area of Climate Change

National Priorities	Major Current and Planned Projects	Years	Funding Agency / Type of Fund	Implementation Agency	Budget (USD)
Renewable Energy Sources	Renewable energy driven pumps system in rural areas in Issyk-Kul and Narin	2003 – 2004	Nordic Trust Fund/UNDP/GRANT	?	220 000
	Renewable energy driven pumps system in rural areas in Issyk-Kul and Narin	2001 – 2004	GEF/GRANT	?	444 000
	Renewable energy driven pumps system in rural areas in Issyk-Kul and Narin	2001 – 2004	UNDP/GRANT	Ministry of Ecology and Emergencies	434 000
	Renewable energy driven pumps system in rural areas in Issyk-Kul and Narin	2003 – 2004	UNDP/GRANT	Issyk-Kul Region	210 000
	Renewable energy driven pumps system in rural areas in Issyk-Kul and Narin	2001 – 2004	UNDP/GRANT	Ministry of Ecology and Emergencies	429 000
	CAMP: A more sustainable use of renewable energy sources in Central Asia	2001 – 2006	SDC&SECO/GRANT	Centre for Development and Environment of the University of Bern	3 700 000
	Biogas (not yet launched)	2004	GEF/GRANT	Not decided	15 000
Energy Efficiency	Power and district heating rehabilitation project	1997 – 2005	World Bank/ LOAN	Ministry of Finance	20 000 000
	Modernisation of the power station and district heating system in Bishkek	1996 – 2000	Swiss Government/GRANT	OAO "Electro Station"	4 972 057
	Energy efficiency (not yet launched)	2004?	DFID UK/GRANT	Not decided	1 525 000

Identification of Assistance Gaps and of Potential DFES Pipelines

The projects shown in Table 18 are primarily funded from grants offered by organisations, international institutions, and governments, thus proving that the interest in reducing greenhouse gas emissions is considerable, although under the Kyoto Protocol, the Kyrgyz Republic is not obliged to reduce such emissions. The analysis of the projects in the two priority areas (*Renewable Energy Sources (RES)* and

Energy Efficiency) shows that foreign donors allocated an amount of USD 5.452 million exclusively in grants for the implementation of 7 projects related to *Renewable Energy Source* over the period 2001-2006. In the *Energy Efficiency* area, funds are massive (USD 26.497 million), most of them coming from a World Bank loan.

Despite the numerous financial and organisational problems in the energy market, and the lack of any strategy or tools to promote renewable energy sources, interest shown by donors is considerable. This becomes obvious from discussions held with representatives of the UNDP, the World Bank, the USAID, and the Swiss Economic Cooperation Office (SECO). It seems that the development of renewable energy sources – in rural areas with difficult access to the power grid in particular – provides an opportunity for obtaining financial assistance from donors.

The large-scale use of renewable energy sources in the Kyrgyz Republic may have a major impact on the efficient implementation of a strategy to develop the country by decreasing its dependence on fuel imports, and setting up a poverty fighting programme by establishing local power generation systems. Renewable energy sources are the most efficient tool of air protection and reducing GHG emissions. It is recommended that during Stage One of implementing *RES* projects the focus should be placed on simple technologies using easily accessible resources. A programme of small biogas facilities using animal waste is a good example of such technologies. A very successful World Bank-supported programme in this field is currently being implemented in Georgia.

Following our pre-feasibility assessment, and in light of recommendations contained in other reports, and the World Bank ESMAP Mission's report in particular, two project pipelines for DFES co-financing are recommended, both corresponding to the *renewable energy sources* priority area, namely:

4. Biogas production from animal waste; and,

5. Rehabilitation of existing and construction of new mini hydro-power plants.

Description of Project Pipeline 4: Biogas Production from Animal Waste

In 2004, the Kyrgyz Republic operated 15 biogas installations, with bioreactor capacity of 5-250 m^3. The relatively high fossil fuels prices are an incentive to seek alternative and easily accessible energy sources. There is no doubt that biogas production is of great interest and importance for the farming community in the Kyrgyz Republic. Information on this issue has been collected through a questionnaire filled in by government officials, *oblast* officials from the Issyk-Kul *oblast*; direct discussions with farmers owning a dozen to several dozen head of cattle. All have been unanimous in their interest in producing biogas for cooking and heating purposes. Notwithstanding the above, many pointed out problems with generating sufficient financial resources to complete the investment. A preliminary report by Japanese (JICA) experts claims that Kyrgyz rural areas carry tremendous potential for introducing biogas technologies.

The World Bank's biogas installation construction pilot programme in Georgia has proven to be hugely successful. Over the next years, several hundred small bioreactors will be built to provide energy to households – in some cases, individual families. An informal meeting with World Bank experts has confirmed the major opportunity of supporting a similar programme in the Kyrgyz Republic.

Geographical Location:

Entire Kyrgyz territory. For the pilot stage, villages located in the vicinity of woodlands are recommended as an area to start building bioreactors.

Main Project Types, Size Included:

Projects will mostly work on a household or household group scale. Biogas units would require waste from a minimum pool of 10 or more head of cattle. To this end, several families can group together to obtain the needed cattle-breeding waste to operate the installation. In addition, animal bones could also be used as

raw material for biogas installations. According to analysis made by the *Centre for Renewable Energy of the Kyrgyz Republic*, the cost of pilot biogas units vary by type, ranging from USD 420 to 3,200 per unit. Our calculations (Annex 9) show an investment cost indicator of USD 200/m^3/day. In other words, to reach a production of 50 m^3/day of biogas, an investment of USD 10 000 will be needed.

Typical Project Owners:

Private individuals.

Justification for DFES Financing:

The project pipeline will ensure a plethora of benefits; first, it may serve to ease the problem with the lack of access to energy for poor people living in rural areas; second, illegal tree felling could be reduced; and, finally, methane air emissions from manure will be reduced due to the anaerobic digesting. In addition, another positive effect of generating biogas from manure is the production of top-quality compost to fertilise fields and grazing meadows, and the replacement of heating losses endured today when burning *kiziak* in household stoves.

The analysis of the Georgian biogas generation programme, the interest of international institutions (World Bank, OECD), and of potential commitments to support a similar programme in the Kyrgyz Republic indicate that such a project pipeline could enjoy support from other institutions, in addition to potential DFES financing. Local energy sources lower the dependence on imported fuels and as such also contribute to peace and security in the region. In fact, this pipeline actually meets all five *eligibility criteria* (as identified in the ToR).

Difficulties for DFES Financing:

The main challenge in implementing this pipeline is the lack of sufficient financial resources. Experience shows that in different areas of the country, seeing the benefits of such installations, farmers themselves have built biogas plants from scrap materials. Although such installations produce biogas in quantities which satisfy the needs of their users, these installations are extremely dangerous to operate because of the risks of explosion. Building professional pilot installations however could serve as an excellent awareness-raising tool and could help increase the safety of the operations of such equipment.

Description of Project Pipeline 5: Rehabilitation of Existing and Construction of New Mini Hydro-Power Plants

When considering pipeline 5, the main source of information and data used in this analysis has been the World Bank ESMAP Mission's paper containing very good technical and economic data on small hydro-power stations, in particular. The Kyrgyz Republic's economically exploitable hydro-power has been estimated at 48 TWh/year. The current production amounts to 11 TWh. In the years 1950-1960, under the centrally planned economy, a vast number of mini hydro-power plants with capacity below 10 MW were abandoned, as they were deemed economically inefficient. During that period, the Soviet Union focused on building massive hydro-technical facilities; today everyone is aware how much more hazardous they are to the environment.

World Bank experts have identified 19 facilities with a reconstruction potential. Most facilities may be opened for operation quite rapidly, with the average cost of modernisation totalling USD 0.3-0.8 million per MW of design capacity. For comparison, the ESMAP mission identifies 4 new priority investments, with the investment cost ranging between USD 1.0-2.2 million/MW. Experts point out that many new and modernised projects are extremely attractive for potential investors, because of (i) easy access to the construction sites and cheap connections to existing transmission lines; and, (ii) favourable economic efficiency of the project (payback period < 13 years).

The sample *Karakol* priority project (east of Lake Issyk-Kul) would concern a small hydro-power plant of 4.5 MW of design capacity, with an investment cost of USD 6.7 million, and a payback period of 13 years.

The report emphasises the tourist values of the Issyk-Kul region and its potential for a dynamic economic growth coupled with an undeveloped industrial grid. The closest power source is located 500 km down River Narin. In addition, during a visit to the Issyk-Kul region, local residents mentioned that power supply cuts are frequent and unexpected, they cause major turbulence to agricultural farms, and seriously increase the costs of operating agricultural processing enterprises, as extra diesel-fuelled generators have to be used and maintained.

This pipeline would finance projects targeting the repair or construction of hydropower plants in the range of 500-1500 KW.

Geographical Location:

Entire Kyrgyz territory.

Main Project Types:

Projects ought to focus on the reconstruction of abandoned small hydro-power plants, and the construction of mini-hydropower plants, in particular close to villages and settlements, and to agricultural processing enterprises. This is very important, as small hydro-power plants thus located may feed isolated power circuits, facilitating community identification with the power plant as a facility owned locally, and making the collection process of energy fees much easier.

Project Size:

The project size will be determined individually, on a case-by-case basis. For modernised facilities, the average hydro-power plant design capacity totals 0.8-2.5 MW. Given the investment costs of USD 0.3-0.8 million per MW, this means that an average project would cost USD 0.5-2.0 million. In the case of new projects (ESMAP priority list), one needs to consider projects with a cost ranging from USD 6 to USD 14 million. Obviously, investment costs depend largely on access to the construction site, distance from roads and transmission lines. By proper adjustment of the DFES financial mechanism, the investment size could be easily limited to e.g. 1,000 kW of power, i.e. the capacity required for a major village of 150-200 houses.

Typical Project Owners:

Local private companies, local owners, municipalities, community organisations and NGOs.

Justification for DFES Financing:

The pipeline shows direct benefits with regard to those identified in the Comprehensive Development Framework. Such a pipeline meets its three fundamental priorities: sustainable development, development of rural areas and villages and secured development. The increase of energy production utilising the huge energy potential of the Kyrgyz rivers is the cheapest way of reducing the energy deficit on the domestic market. In addition, the increase of retention of water in the Kyrgyz territory is a key challenge to water supply of the remaining countries of Central Asia. It needs to be pointed out that not only do micro- and mini-hydro power plants ensure clean energy, but water retention as well – a problem of great importance to the entire Central Asian region, as the Kyrgyz Republic is a source area for 4 neighbouring regions, as discussed earlier. Issues of water distribution and of feeding water to rivers flowing out of the Kyrgyz territory have been a source of major problems in regional relations. Increasing water retention will definitely contribute to alleviating trans-boundary problems in the region. Therefore, this project pipeline has an unquestionable regional significance.

It is difficult to imagine the effective implementation of the National Poverty Reduction Programme (NPRS) priorities without ensuring undisturbed energy supplies. In the coming 10-15 years, the implementation of NPRS priorities will not be possible without a considerable increase in energy production. This pipeline also corresponds to the objectives set by the Millennium Development Goals and especially the WEHAB (Water Supply and Sanitation, Energy, Health and Environment, Agriculture and

Biodiversity) agenda. Finally, this pipeline has considerable potential to be complemented by the actions of other donors. The World Bank ESMAP report indicates that there is a great chance that the Bank will provide concessional loans to this sector in the future.

Difficulties for DFES Financing:

A serious problem for initiating this project pipeline is the lack of financial resources. As discussed earlier, the resources that could be raised though a potential DFES mechanism alone for the modernisation and/or reconstruction of abandoned micro-hydro power stations would be far from sufficient. During the ESMAP mission, 19 small hydroelectric projects of 120 MW total installed capacity and 530 GWh of mean annual production were reviewed with an investment cost of USD 146.1 million. Project owners would need to make an investment in the order of several million USD, and only then would it be possible to look for other sources of finance to complement the DFES contribution.

Suggested Pipeline

Two project pipelines have been identified as part of the *Climate Change* priority area:

4. Biogas production from animal waste; and,

5. Rehabilitation of existing and construction of new mini hydro-power plants.

It seems that project pipeline 5 meets eligibility requirements better than project pipeline 4, that is to say that successful project pipeline implementation depends primarily on financial assistance options, with DFES resources targeted at individual investments. It may well be assumed that project pipeline 4 (biogas), consisting of low capital investments mostly affordable also to individual households or groups of citizens, will manage to raise resources, even if from private sources only. Micro- or mini-hydro power plants, on the other hand, are definitely investments requiring more technical and financial input, and thus accessible to a narrower investor community.

3.3 Recommendation on the Most Promising Pipelines for Further Analysis

The main purpose of this chapter was to review the Kyrgyz national environmental priorities and potential preferences of the international community and suggest the 5 most promising project pipelines for inclusion for financing under a potential DFES mechanism. The analysis of the pipelines has been made in terms of (i) geographical location of eligible projects; (ii) main project types, including size, and financing needs; (iii) typical project owners; (iv) major risk factors; (v) justification of financing of recommended project portfolios through DFES, (v) environmental, social, economic benefits - local and the trans-boundary; (vi) contribution to poverty reduction efforts in the country. The analysis aims to identify projects which could achieve environmental benefits together with poverty reduction, local economic development and sustainable economic growth.

During the analysis, the pipeline opportunities have been screened against 14 criteria (9 major criteria and 5 sub-criteria) as identified in the project's Terms of Reference. The results of this screening are shown in Table 19 below. Each of the project pipelines has been assessed in terms of meeting a criterion, not meeting it or as "uncertain" where the project pipeline impact is not straightforward. As can be seen from the Table, ***Project pipeline 4: Biogas production from animal waste*** meets most of the criteria (13 out of 14). ***Project pipeline 3: Prevention of irreversible loss of biodiversity*** comes second in this ranking, with 10 out of 14 criteria met.

Not only do ***Project pipelines 3 and 4*** provide environmental benefits both to the Kyrgyz Republic and the regional/international community but they also contribute to the implementation of the National Poverty Reduction Strategy by creating additional job opportunities. For example, implementation of ***project pipeline 3*** (related to afforestation) can create 20 000 jobs annually for which small investments only are necessary. ***Project pipeline 4*** can also generate significant incomes for local communities.

As for ***project pipelines 1, 2 and 5***, analysis shows that these pipelines do not meet most of the criteria. ***Project pipelines 1 and 5*** in particular require huge investments which considerably exceed the potential revenue from a DFES scheme. In addition, the mobilisation of private and other domestic sources to support such pipelines is very unlikely. ***Project pipeline 2*** can be an interesting area for DFES co-financing but the existence of numerous small projects can create serious organisational problems for managers of the DFES funds, and administrative costs of managing such a pipeline could be significantly high.

In conclusion, on the basis of the above analysis, the first two most promising project pipelines that could be offered to potential creditors during individual negotiations as well as subjected to further detailed evaluation are:

- **Prevention of irreversible loss of biodiversity; and,**
- **Biogas production from animal waste.**

Table 19. Evaluation of the Proposed Project Pipelines with Regard to the Eligibility Requirements (Criteria) Defined in the Project's Terms of Reference

Criterion	Eligibility Requirements	Project Pipelines				
		1. Improvement of Wastewater Collection and Treatment in the Coastal Villages and Cities of Issyk-Kul Lake	2. Protection against Land Degradation	3. Prevention of Irreversible Loss of Biodiversity	4. Biogas Production from Animal Waste	5. Rehabilitation of Existing and Construction of New Mini Hydropower Plants
1	GLOBAL ENVIRONMENTAL BENEFITS AND FACILITATION OF THE FULFILMENT OF INTERNATIONAL ENVIRONMENTAL AGREEMENTS BY THE KYRGYZ REPUBLIC	?	+	+	+	?
2	REGIONAL ENVIRONMENTAL BENEFITS	-	+	+	-	+
3	CONTRIBUTION TO PEACE AND SECURITY IN CENTRAL ASIA BY ALLEVIATING REGIONAL AND CROSS-BORDER CONFLICTS RELATED TO THE MANAGEMENT OF SHARED AND TRANS-BOUNDARY NATURAL RESOURCES	-	-	-	+	+
4	FACILITATION OF THE ACHIEVEMENT OF WATER AND ENVIRONMENT-RELATED MILLENNIUM DEVELOPMENT GOALS	+	-	-	+	+
5	CONSISTENCY WITH COUNTRY ENVIRONMENTAL POLICY PRIORITIES (NEAP - key environmental problems)					
	unsustainable use of natural resources	+	+	+	+	?
	impact of pollution on human health	+	-	-	+	-
6	FACILITATION OF ACHIEVING POVERTY ALLEVIATION OBJECTIVES THROUGH (NPRS)					
	achieving sustainable growth	+	-	+	+	+
	generating sustainable local incomes	+	-	+	+	+
	job creation	?	+	+	+	-
7	REASONABLE ASSUMPTIONS ABOUT FINANCIAL LEVERAGE THAT CAN BE ACHIEVED WITH MATCHING GRANTS	-	+	+	+	-
8	POSSIBLE CO-FINANCING:					
	from foreign grants	+	+	+	+	-
	from private sources	-	-	-	+	+
	from other domestic sources (i.e. Environmental Funds)	-	+	+	+	-
9	POSSIBILITIES FOR REPLICATION	-	+	+	+	?

Note: [+] criterion met [-] criterion not met, [?] uncertain.

It needs to be noted that this first assessment should be further supplemented by a full economic and financial evaluation of (at least) the two most promising pipelines identified above. This full evaluation should include, among other things, analysis of the legal and regulatory framework of the sector, economic analysis and financial viability of the proposed project pipelines (including potential technologies, investment and O&M costs), potential role of markets and institutional constraints/opportunities, risks and assumptions, stakeholders' analysis, including private and public cost-benefits generated by the project, expected global benefits, public participation options, sustainability and replicability of the proposed project pipeline. Implementation modalities and budget requirements including financial options should also be analysed in detail. Additional aspects of the analysis can be considered depending on the type of the specific project pipeline.

Given the low level of revenue that can be realistically expected from potential DFES, it is only reasonable for the Kyrgyz Government to focus their attention on developing the first two most promising pipelines identified in this analysis. However, if the more optimistic scenario for the participation of more creditors materialises, other more investment intensive project pipelines can be considered. In any case, co-financing will be needed for the implementation of any of these project pipelines.

In addition, it is worth noting that even if the DFES do not materialise, the analysis of the project pipelines remains valid and could be used by the Kyrgyz Government in discussions with donors on developing donor support programmes in the country.

4. INSTITUTIONAL OPTIONS FOR GOVERNANCE AND MANAGEMENT OF THE POTENTIAL EXPENDITURE PROGRAMME

Creating the necessary institutional infrastructure to manage swapped resources is a key aspect of the successful design of a debt-for-environment swap. There are a number of institutional issues that the Kyrgyz Government will need to consider in choosing the institutional arrangement that will best fit international and national environmental and financial interests. Some of the major issues include:

- Choosing the swap model – including parties and time frame;
- Deciding on the use of an existing or establishing a new institution for expenditure management;
- Defining the rules of implementation of environmental projects.

As the above analysis shows, the potential DFES operations in the Kyrgyz Republic would be characterized by: (i) a long period of debt repayment which implies a prolonged period of disbursements for the implementation of environment projects; (ii) relatively small (hundreds of thousand of US dollars) annual flows of funds; (iii) a small expected scale of environmental projects, which means implementation of many such projects simultaneously. Obviously, institutional solutions have to account for these DFES characteristics. Whatever the final choice, the institution should be managed by domestic professionals thus also contributing to local capacity building which is a prerequisite for carrying out environmental protection on a sustainable basis.

4.1 Swap Implementation Models

The first institutional issue of swap implementation relates to participating parties. As discussed earlier, two general forms of debt-for-environment swaps, depending on the number of negotiating parties in a transaction, have been tried in the world so far:

- Bilateral (direct) swaps; and,
- Trilateral or multilateral swaps (through an intermediary).

In bilateral swaps, the main parties are the governments of creditor and debtor countries. In trilateral swaps, there is also an intermediary receiving funds from the creditor and assuming a responsibility for the implementation of environment projects in the debtor country together with the government of this country. In international practice, the intermediary role has been often played by international NGOs or international organisations, such as the World Wildlife Fund, the Conservation International (CI), the UNICEF and others. Usually, trilateral swaps are used when: (i) the creditor is a private company; (ii) transfers of money are not systematic and are organised on a case-by-case basis; (iii) environment projects are not associated with investments. Under trilateral schemes, the debtor country government assumes a somewhat reduced role and less domestic capacity for expenditure management is needed. Given the above conditions, choosing trilateral swaps is not a good option for the Kyrgyz Republic because:

- creditors in swap operations would be mostly governments;
- swaps are expected to be implemented over many years;
- the environmental projects to be supported may have a significant investment component; and,
- some domestic expenditure management capacity already exists in the country and could and should be further developed in order to implement DFES successfully.

For bilateral swaps, a special enabling clause in the agreement of the government with the Paris Club is usually required. In the case of the Kyrgyz Republic, such a clause was included in the 2002 agreement

and later reiterated in 2005. Thus, the DFES for the Kyrgyz Republic could be implemented on a **bilateral** basis involving no intermediaries between the creditor government and the government of the Kyrgyz Republic.

Both bilateral and trilateral swaps can be disbursed locally, either directly to specific projects agreed with a creditor, or can be transferred to an established financial institution, which selects projects under the supervision of relevant stakeholders, including creditors.

- **Swaps on a project-by-project basis** are transactions that tie individual swaps to specific projects selected and controlled by the creditor country and implemented by the debtor country.
- **Swaps through a domestic financial institution** are transactions that transfer money to a domestic financial institution, which manages the expenditure programme and project pipelines (including project appraisal and selection) according to procedures and criteria agreed jointly between the creditor and debtor countries.

The choice between the two options is not straightforward. It depends on the expected preferences of creditor countries, as well as on the size of the overall envelope of the swap transaction. Any successful transaction must be win-win for both parties.

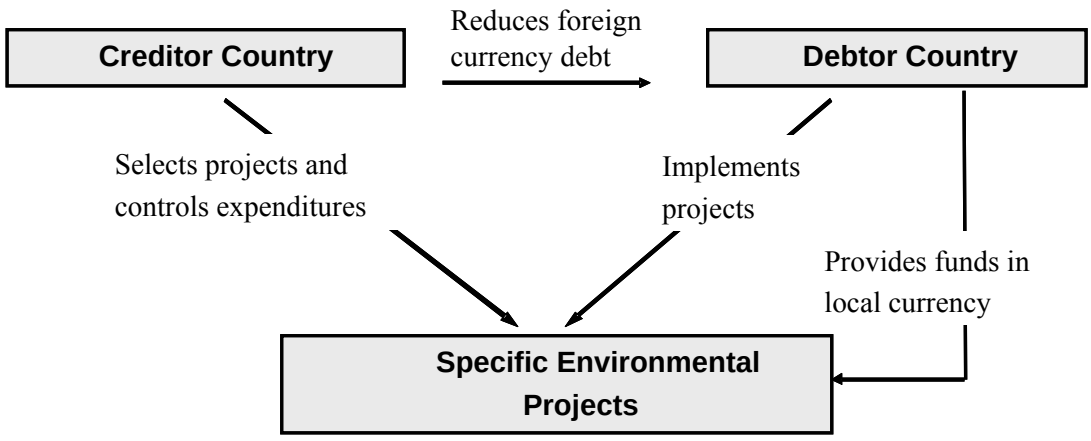
Creditors' preferences will be fully revealed only when negotiations actually begin. On the basis of international experience it can already be expected, however, that a project-specific swap may be attractive to some creditors for a number of reasons:

- It gives creditors stronger assurance regarding how exactly their money will be spent;
- It makes it easier for creditors to enforce tied procurement, hence to recuperate partly their financial losses by purchasing goods and services from creditors' suppliers;
- As an ad-hoc arrangement, it usually requires lower transaction and administrative costs. It does not involve a specialised institution to manage the project cycle. The function of overseeing the implementation of *a priori* agreed projects can be incorporated into the existing operations of government and/or non-government institutions at a low incremental cost. It can also be contracted out to short-term consultants.

Swapping debt for specific projects can be considered, if the value of the transaction is small, and tied procurement cannot be avoided. But in the latter case, the Kyrgyz government may want to decide, if the swap pays off at all.

The operational model of a bilateral swap on a project-by-project basis is presented in Figure 3 below.

Figure 3. Bilateral Swaps on a Project-to-Project Basis



The alternative option is to swap the debt through a specially established, local financial institution that would manage the whole project cycle (project identification, appraisal, financing and monitoring) under the rules and control agreed between the parties to the transaction. Project selection and procurement tends to be much more competitive in this arrangement. As experience shows, the option of establishing the financing institution to select projects on a competitive basis has several advantages:

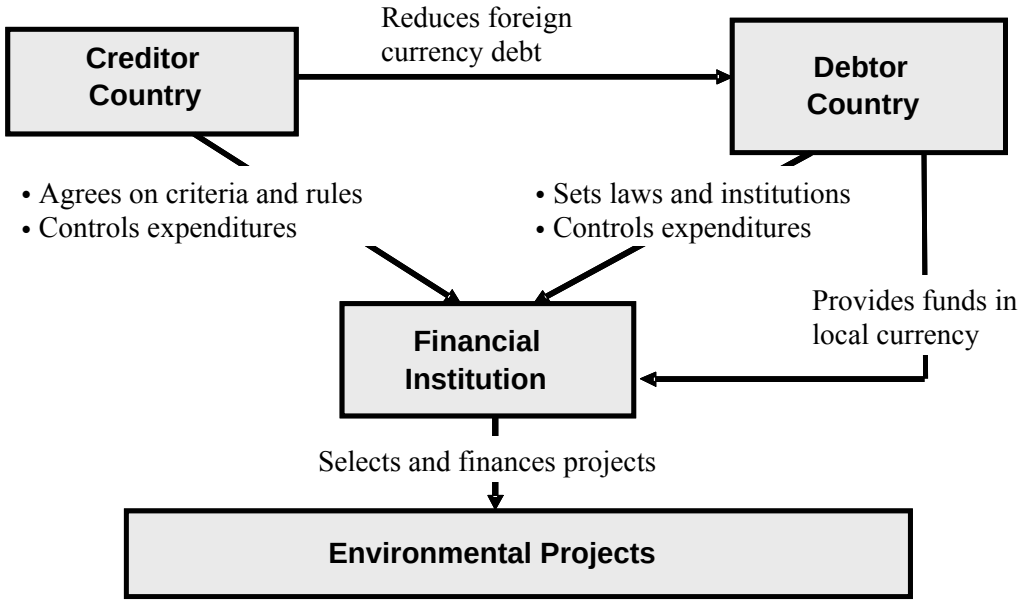
- The selection of projects on a competitive basis facilitates the more efficient use of the resources and increases the environmental benefits of the swap. In the absence of competition under the project-specific swap, suppliers from the creditor country tend to increase their prices, which may render many projects financially non-viable even with a significant subsidy.
- The establishment of a locally managed institution to administer swapped funds also increases the development benefits of the swap. When properly designed, it might contribute to the better management of local and global common goods not only by channelling resources to the right projects, but also by creating the necessary institutional infrastructure in the country.
- Having in place a transparent and credible institution, which effectively and efficiently selects and finances environmental projects, can attract additional financing from donor countries, international institutions, NGOs or other financing sources (grants, trilateral debt swaps, loans, etc.). There are many examples world-wide that good governance and effective expenditure management attract public and private finance.

However, the value added of transferring swapped funds through a financial institution must be weighed against the incremental transaction and administrative costs of setting up and operating this institution. We have estimated the transaction costs of establishing and the annual costs of running a debt-for-environment swap institution with regard to a threshold swap amount that would justify this option under the assumption that the average annual administrative costs should be a reasonably small portion (around 5%) of average annual expenditures, excluding start-up costs. We have concluded that swapping the debt of only France and Germany would not justify the establishment of a new permanent institution with a relatively sophisticated project cycle. If Russia and Turkey join, a local financial institution could become a viable option. Hence, different institutional options need to be considered.

The operational model of bilateral swaps through a local financial institution is presented in Figure 4 below.

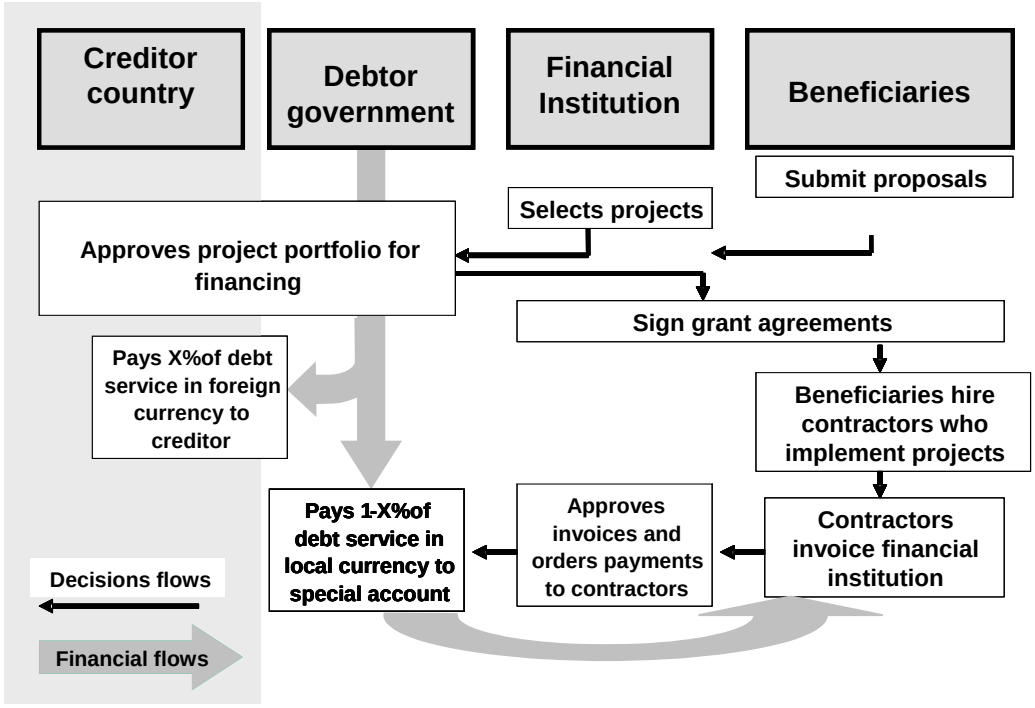
Given that (i) the aim of the DFES in the Kyrgyz Republic is to support the most cost-effective projects identified on a competitive basis and is not motivated by the need to implement a particular project only, (ii) swap resources are expected to be disbursed on an annual basis for a long period of time, and (iii) local capacity building is a crucial feature of the institutional set-up, the implementation of a DFES through a **local financial institution** is a recommended option while taking into account all considerations discussed above.

Figure 4. Bilateral Swaps Through a Local Financial Institution



In case of implementation of the DFES through a local institution, the swap operation scheme could be represented by Figure 5 below.

Figure 5. Annual Decisions and Financial Flows in Debt-for-Environment Swap in a Local Financial Institution



If administrative costs of setting up a local institution, with regard to the expected DFES revenue flows are too high, the Government may seek support from the international community (World Bank, UNDP) or seek other possible ways of integrating the management of the project cycle into other domestic (internationally-supported) institutions in the country.

4.2 Institution for Expenditure Management

If a decision is made to set up an institution to manage DFES resources, there are a number of choices that will have to be made at a later time. These include, among others, the choice of a suitable legal, cost-effective form and an appropriate life cycle of the institution.

4.2.1 Legal Status

Four main legal forms of locally established institutions have so far been used in various countries to manage debt-for-environment swaps. These are: the government agency, the trust fund, the public foundation, and the association. A short description of these forms is provided below.

The Government-Owned Agency (legal person in public law) would require a government (or presidential) Decree or a Parliamentary Act to be established. Many comprehensive environmental funds capitalised by earmarked environmental fees and fines in CEE and EECCA are (or have been) established in this way. Such an agency is usually set up jointly by the Ministry of Finance and the Ministry of Environment. The Ministry of Environment manages the project cycle while the Ministry of Finance executes the financing transactions through an escrow account in the Central Bank of the country or in the Bank of International Settlements.

The Trust Fund. Trust funds are instruments that are developed and used in the countries usually referred to as "common law" countries, i.e. essentially the current or former member countries of the Commonwealth and the United States, and are not applicable elsewhere, e.g. in the Kyrgyz Republic, which is a "civil law" country.

The Public Foundation. The functional substitute for charitable trusts in the countries, whose legal system is based on "civil law", is the "foundation". Foundations exist in most continental European countries and are widely used by major environmental institutions there. For example, the Polish debt-for-environment swap fund (the EcoFund) has the status of a public foundation defined in the Civil Code and in the special Law on Foundations.

The Association under Civil Law can be established by private individuals and institutions to serve specified public interest or the common interest of the interested parties. In contrast to the foundation, the association usually requires a collective effort of a larger number of parties. Sometimes, there is a required minimum number of people before a group can be considered an association. This can be a limiting factor for the institution managing debt-for-environment swaps. Too many decision-makers could dissipate responsibilities for decisions, compromise operational efficiency and increase transaction costs.

In the case of the Kyrgyz Republic, the selection of the legal form of the institution should be determined by its operational modalities and the laws in force. In accordance with the Kyrgyz legislation, to successfully operate environmental investment projects under a DFES scheme, the institution needs to:

- be non-commercial, as the goal of its establishment is debt relief and environmental improvements, and not profit-making;
- have the right to carry out an independent economic activity, including offering credits and grants to legal and physical persons in the country;
- have the right to receive funds from the government budget of the Kyrgyz Republic and possibly attract and spend grants of international organisations;

- be subject to independent audit of its activities;
- be managed jointly by the Kyrgyz Government, Governments of creditor countries, and possibly international organisations and/or Kyrgyz civil society organisations.

The Kyrgyz law recognises the following legal forms of non-profit organisations[23]: (i) The Public Association; (ii) The Association of Legal Entities; (iii) The Foundation; and (iv) The Agency[24]. Of the above legal forms of organisation, neither the Public Association nor the Association of Legal Entities can apply, because they do not fit into the principles of the formation of the institution. The Public Association is an association of individuals and, therefore, it is not appropriate. The Association of Legal Entities is a group of profit-making organisations grouped together for the purpose of coordinating their business activities. As far as one of the founders of the institution, as described below, must be the state, which is not a profit-making organisation, The Public Association as a legal form is not suitable for the institution, either. The Foundation is also not the form suitable for the institution. Pursuant to Article 162 of the Civil Code[25] of the Kyrgyz Republic, foundations are financed through non-governmental donations, whereas the institution is supposed to be financed using governmental funds generated as part of the external debt relief.

The Agency is the only legal form appropriate for the institution. Under the Kyrgyz Law, the Agency is an organisation created for the purpose of carrying out managerial, public, cultural and other non-profit functions. The founders give property to the agency, finance its operations, determine the governance structure and control the application of the assets given to the institution. The property given to the agency by the founders is the ownership of the founders. The agency is liquidated by the decision of the founders, and the property which remains after the liquidation must be returned to the founders.

One of the founders of the agency must necessarily be the state represented by the authorised state agency, since one of the sources of financing of the agency will be the funds of the government budget intended for the repayment of external debt. The Ministry of Finance of the Kyrgyz Republic (the "Ministry of Finance") or other agency authorised by the Government of the Kyrgyz Republic (the "Government") can act as a founder or one of the founders of the institution on behalf of the state. In accordance with the Law of the Kyrgyz Republic "On State and Non-State Debt" dated 21 September 2001, the authority to administer the public debt is conferred on the Ministry of Finance, the only agent of the Government administering state debt. The Ministry of Finance is authorised on behalf of the Government to keep records of state debt, plan necessary borrowings, develop the projects of borrowing programmes, provide sub-loans, control the allocation and repayment of loans, as well as the performance of other debt obligations related to loans. Pursuant to Article 8(4) of the above Law, the external loan must be obtained, repaid and discharged through the financial agent of the Government appointed in accordance with the laws of the Kyrgyz Republic. The procedure of attracting, distributing and repaying the external loan must be set forth by the respective decision of the Government. Accounting for the scope of activities of the proposed institution, the Ministry of Ecology and Emergencies could become another founder representing the state.

Apart from the state, the institution can be founded by international organisations, governments of creditor countries and local NGOs. However, the persons considering joining the institution as its founders should

---

[23] Pursuant to the Kyrgyz Law, a non-profit organisation is a volunteer, self-governing organisation formed by individuals and/or legal entities on the basis of common interests to satisfy their spiritual or other non-material needs for the benefit of its members and/or the entire society, the primary purpose of which is not to make profit, and the profit of which is not distributed among its members, founders and officers.

[24] In Russian «Учреждение».

[25] The first part of the Civil Code of the Kyrgyz Republic came into force on May 8, 1996 replacing the previous Civil Code of the Kirghiz Soviet Socialist Republic dated 30.07.1964. The second part of the Civil Code came into force on January 5, 1998.

take into account that pursuant to Article 164 of the Civil Code, a founder bears a secondary liability for the obligations of the institution, should the funds of the institution be insufficient to repay its debts.

Thus, the institution must be founded by the state represented by the state agency authorised by the Government. International organisations, governments of creditor countries and local NGOs can be involved as founders of the institution as well[26].

Under the Kyrgyz Law, any duly registered legal entity, including an agency, has the right to carry out independent business activities, including the offering of loans/grants and other financial aid, obtaining and spending grants from international organisations, and permitting independent audits[27]. The agency has the right to obtain funds from the government budget, if, as mentioned above, its founder (or one of the founders) is the state represented by its authorised agency. In addition, for the Government to have the right to transfer to the agency the state funds intended for the repayment of state debt to creditor countries or international organisations, an international agreement ratified by the Kyrgyz Republic is necessary. It is reasonable that the international agreement would set forth the goals, purposes and organisational principles of the institution. The international agreement is also necessary, because it will secure the right of the Government to fulfil its debt obligations to international organisations or creditor countries by making payments to the institution. Thus, the agency has the right to engage in all required activities.

The effective management of the institution can be ensured through the formation of a Governing Board comprised of the representatives of state agencies, creditor countries, international organisations and NGOs. The competence of the Governing Board, number of its members, voting procedure and other relevant issues will be determined in accordance with a Charter that needs to be developed. The members of the Governing Board will be elected by the founders. To prevent any discretionary decisions of the state in respect to the election of the members of the Governing Board, it is preferable that the issues of the formation, election, representation in the Governing Board as well as its competences be settled in the international agreement.

Theoretically, one option for the institutional arrangement could be an **off-budget ("extra-budgetary") fund**. As far as "extra-budgetary funds" are concerned (although the Kyrgyz Law does not give a definition of "extra-budgetary" funds) according to Article 30 of the Law of the Kyrgyz Republic "On Main Principles of the Budget Law" dated 21 September 2001, only the Social Fund, Mandatory Medical Insurance Fund, and funds formed out of voluntary donations and charity contributions are recognised as "extra-budgetary funds". Thus, it can be inferred that non-budgetary funds are the funds formed by the state and using the monies accumulated by the state and not accounted for in the state budget. The above Article 30 forbids creating non-budgetary funds other than those mentioned in the Law. Therefore, a non-budgetary fund is not an appropriate legal form for the institution.

Two examples of institutions currently operating in the Kyrgyz Republic may shed additional light on the existing legal form options. One is the **Republican Environmental Fund** (REF) of the Ministry of Ecology and Emergencies and the other is the Kyrgyz Republic's **Community Development and Investment Agency** (CDIA).

---

[26] The state can be a sole founder of the institution, but in this case, the state as a sole founder will have discretion to authorise any amendments to its charter and control the application of monies of the institution and will be deemed as a sole owner of the assets of the institution. To limit the discretionary powers of the state, it is necessary to execute the international agreement which would set forth the rules governing the formation, management and operations of the institution, as discussed below.

[27] As far as the institution will use the funds accounted for in the state budget, the audit of the institution, in addition to independent audits, will be conducted also by the Audit Chamber of the Kyrgyz Republic in accordance with the Law of the Kyrgyz Republic "On Audit Chamber". In accordance with the provisions of this Law, the Audit Chamber may conduct audits with regard to the efficiency of the use of governmental funds.

The Republican Environmental Fund was established in accordance with the Edict of the President of the Kyrgyz Republic No. 239 "On Local and Republican Environmental Funds in the Kyrgyz Republic" dated 21 July 1992 and the Law "On Environment Protection" dated 16 June 1999. Currently, the REF is operating on the basis of the Regulation on the Republican Environmental Fund of the Ministry of Ecology and Emergencies (MEE) approved by the Decision of the MEE Board dated 24 March 2003. The REF was established as a non-profit legal entity in the form of an agency. The REF is founded by the state represented by the MEE. The REF, which includes and is comprised of the local territorial environmental funds, is a state agency financed from the government budget, with the proceeds of non-tax payments made by legal entities and individuals as mandatory deductions for the purposes of environment protection.

The REF's highest governing body is the Management Board headed by the Minister of MEE. Members of the Management Board are elected by the Board of MEE. The REF in its activities, is accountable to and governed by the MEE. The REF's property is the ownership of the state represented by the MEE. The executive directorship headed by the Executive Director is the executive body of the REF. The Executive Director is nominated by the Minister of MEE and appointed by the Prime-Minister.

Previously, the REF's monies and property were formed out of mandatory payments received by the REF from the territorial environmental funds, which were not accounted for in the state budget and had the status of non-budgetary funds, as well as from donations of individuals and legal entities. Pursuant to the Law of the Kyrgyz Republic "On Amending the Law on Main Principles of Budgetary Law in the Kyrgyz Republic" dated 20 July 2004, the monies allocated to the environmental funds were accounted for in the state budget as non-tax payments (earmarked funds). Based on the foregoing, the REF, comprised of the local territorial environmental funds, is an institution financed from the state budget.

Thus, with respect to the institution under consideration, the form and experience of the REF cannot apply, as it suggests full and sole control of the state over the formation and operation of the REF and does not allow for a joint management via a Governing Board.

The Community Development and Investment Agency (CDIA) was established on the basis of the ratified Grant Agreements between the Government of the Kyrgyz Republic and the International Development Association and the Edict of the President of the Kyrgyz Republic No. 330 "On the Creation of the Kyrgyz Republic's Community Development and Investment Agency" dated 15 October 2003. CDIA was set up as a non-profit legal entity in the form of an agency. CDIA was founded by the Administration of the President, the Association of Self-Government Institutions of Villages and Settlements of the Kyrgyz Republic and by the public association "Counterpart–Sheriktesh"[28]. The main mission of CDIA is to help reduce poverty in rural areas and small towns in the country by providing financial and other support to local communities and communal organisations in the form of grants, and loans with the aim of improving rural and urban infrastructure and the development of small and medium enterprises.

The highest governing body of CDIA is the Supervisory Board which consists of seven representatives of state agencies, seven representatives of local self-government institutions, and seven representatives of local NGOs. The members of the Supervisory Board act on the *pro bono publico* basis (i.e. without being paid). The executive director, accountable to the Supervisory Board, is appointed for a term of four years, which is renewable for another four years for an unlimited number of times. The first Executive Director was appointed by the Edict of the President of the Kyrgyz Republic, the following Executive Directors are to be appointed by the Supervisory Board, by a simple majority of votes.

The funds and assets of CDIA are formed out of the proceeds of the state budget transferred to CDIA, grants, credits, loans, voluntary contributions from individuals and other sources not prohibited by law. The activities of CDIA may be subject to independent audit and auditors' reports are approved by the Supervisory Board.

[28] A daughter organisation of the "Counterpart Consortium" international NGO.

CDIA carries out its independent operations for which its Executive Director is responsible. According to the Charter of CDIA, any interference with its activities is forbidden. CDIA possesses the property given to it on the right of operative management.

In general, with respect to the formation of the institution in mind, the CDIA organisational and management structure is appropriate and can serve as a model.

Costs of running the institution. An important aspect when choosing the institutional arrangement is the operational cost of setting up and maintaining the institution. The institution should be staffed with competent professionals free of any vested interests and receiving competitive salaries. The rough estimates provided in Table 20 below are based on the assumption that the staff of the institution would consist of four people; the staff should be able to communicate effectively with their counterparts through web-sites, telephone/fax and in person; operations of the Supervisory Board would be covered by the founders, not by the institution. These estimates suggest that the creation of a separate institution could be costly consuming 10% or more of the expected annual amount of disbursements. Therefore, options of utilising existing domestic financial facilities (such as CDIA) could be considered in order to minimise administrative costs.

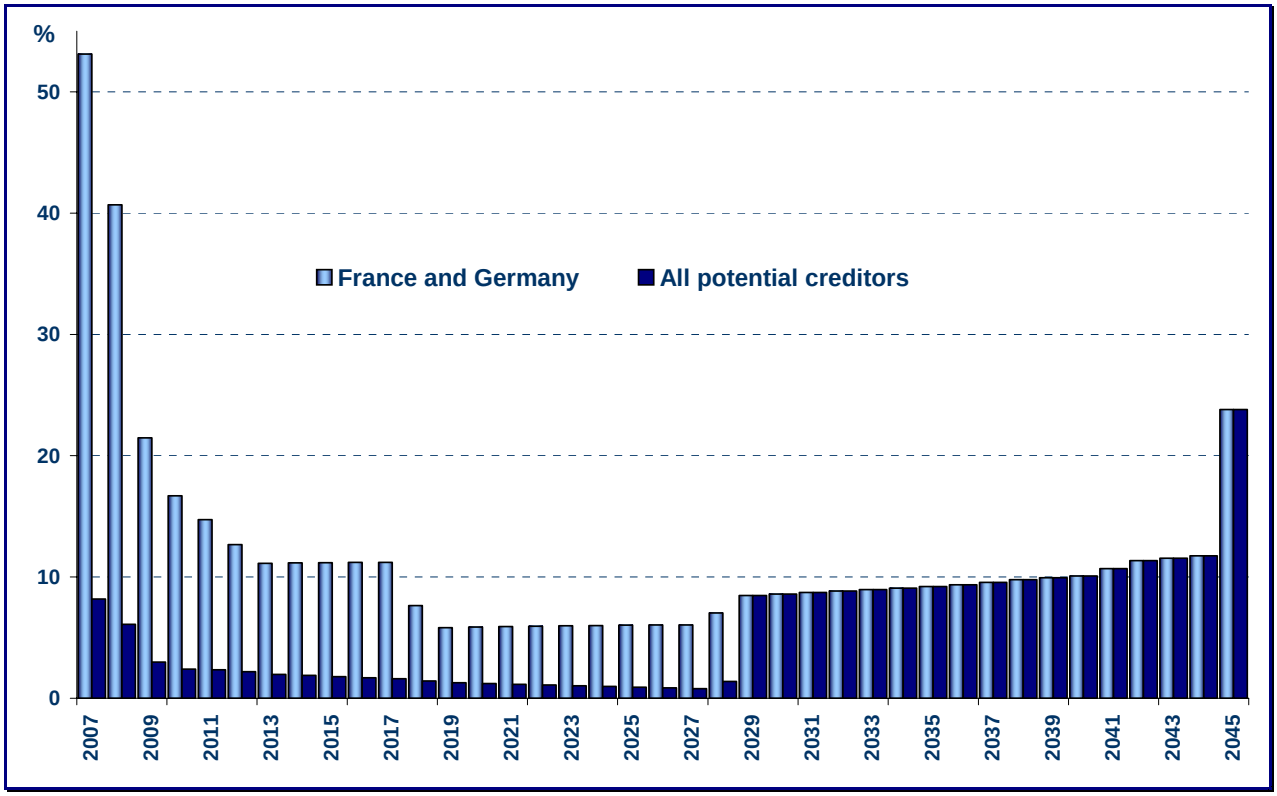
Table 20. Estimated Administrative Costs of the Institution

Item	Measurement Unit	Unit Cost, USD	Number of Units	Amount, USD
Start-up costs				
Office equipment (computers, copy machine, etc.)	Lump sum			2 800
Web-site development	Lump sum			200
Total				**3 000**
Recurrent costs (per annum)				
Salaries				21 600
Director	Man-month	700	12	8 400
Experts (2 people)	Man-month	400	2x12	9 600
Accountant	Man-month	300	12	3 600
Deductions to the Social Fund (24% of salaries)				5 184
Office space rent (60 m^2)	Month	600	12	7 200
In-country travel	Month	125	12	1 500
Communications	Month	100	12	1 200
Stationery and materials (cartridges, etc.)	Month	60	12	720
Total				**37 404**

The above estimates are based on costs reflecting the local prices of goods and services. It is assumed that the institution employs three specialists and is served by one professional accountant. Such an institution needs as a minimum USD 40.4 thousands in the first year of operations and about USD 37.4 in any subsequent year. If the case of the Polish EcoFund is taken as a benchmark, where the upper bound of the share of administrative costs in total expenditures is set at 5%, it seems that the potential Kyrgyz institution will not be able to keep this standard even with such minimum costs assumptions. Chart 10 below presents the share of institutional costs in available expenditures for two scenarios: (1) with the four potential creditors participating in the scheme and (2) only France and Germany participating in the DFES. When all creditors participate, the institution is financially viable from the outset of its operations, while with the participation of Germany and France only, external support will be necessary during the first few years of operation. Given that most likely the first swap will be arranged with one creditor only and it will take time

before other creditors join (if at all), the Kyrgyz Government should either seek support from the international community (World Bank, UNDP) or consider utilising existing institutional structures in the country.

Chart 10. Share of Institutional Costs in Available Funds from DFES with Different Creditors' Participation (%)



Source: Own calculations.

4.2.2 Life Cycle of the Institution

Another issue to consider in choosing the institutional arrangement for managing potential DFES resources is the life cycle of the institution. The following four main forms are used in international practice:

- The endowment fund, which is created by single discrete transfers of financial assets. These assets sit in a bank account as an endowment or are invested in other revenue generating assets (e.g. government bonds, stocks), and the institution can disburse only net income earned on these assets. To make these investments possible, mature financial markets are needed. Fund management requires a sufficient degree of sophistication in management and, therefore, is costly. The debtor usually has no control over the endowment, so political risks of debtor liabilities are low; hence, this is a convenient feature for trilateral swaps. However, such a form of fund usually provides relatively small amounts of money for environmental projects in comparison to the endowment.
- The sinking fund, which is created by single small transfers of assets; disburses both net income and principal. Management of this type of fund is simpler. It is also used mainly in trilateral swaps. Once initial capital is provided, this fund is not further replenished.
- The revolving fund, which is replenished by its own operations (loans to clients) or by new injections of funds. This form is suitable for larger swaps implemented over the debt service

period, so that the inflow of money is relatively smooth. The fund receives a new portion of resources each year. It is also simpler in management in comparison to an endowment fund. The Polish debt-for-environment fund is an example of a revolving fund. The Polish EcoFnd receives bi-annual transfers from the Ministry of Finance and knows the schedule of its core revenue several years in advance. Obviously, when new and additional funds are no longer added, the fund has a choice either to sink or to establish an endowment and live on the net income for perpetuity.

- The modular fund, which is a mix of all others. It allows for the existence of multiple accounts and different financing modes and "windows" in one institution. It has some endowment, some sinking, some revolving components depending on the creditor/investor/donor preferences. Obviously, this form is rather complicated in management.

It seems that in the Kyrgyz Republic's circumstances of bilateral swaps and a desired simplicity of management, a **revolving fund solution** is the most suitable institutional arrangement.

4.3 Governance and Management

Accountability to all stakeholders, and shielding from *ad hoc* political interference, will be crucial for the financial institution to gain credibility domestically and internationally. This can be achieved, among others, through objective, accountable, transparent and highly professional operations. Credibility to stakeholders and demonstrated ability to achieve stated objectives efficiently will also be decisive factors for its ability to leverage additional local and foreign financial resources.

Box 7: Minimum Criteria for Good Governance of the Financial Institution

Experience of the already functioning Funds suggests that the following requirements of the governance structure should be mandatory, if the institution is to become a credible partner both domestically and internationally:

- Written transparent procedures of decision-making;
- Well defined, expenditure programmes agreed with all stakeholders;
- Accountability, transparency, anti-corruption measures;
- Creditors' supervision and control embedded into the procedures and decision-making;
- Operational autonomy of the executive management;
- Objective, unambiguous and meaningful selection criteria (cost-effectiveness);
- Discretion subject to procedures;
- High qualifications and integrity of staff.

An essential factor for ensuring the accountability of the domestic financial institution will be the proper design of its governance structure and management system. It must enable all main parties to be involved in the key decision making processes, with balanced representation and voting power and with effective powers to oversee implementation of decisions. The organisational structure should allow creditor countries, the government of the Kyrgyz Republic and other internal and external stakeholders, such as NGOs, academic institutions, contributing donors, etc., to effectively incorporate their interests into an expenditure programme with appropriate checks and balances.

The governing or supervisory body of the financial institution should be a platform where a variety of vested interests of different stakeholders should be represented, checked and balanced to provide an efficient and credible outcome. Internationally-recognised good practices of public expenditure management show that for all governing bodies to be accountable there must be a clear division of responsibilities between the governing body and the executive body. In particular, responsibility for programming should be separated from the responsibility for selection of individual projects to be financed by the DFES resources.

The governing body should be held accountable for establishing strategic objectives, eligibility and appraisal criteria, "rules of the game" and for supervision. An executive body would be responsible for implementation of these established rules of the game in the day-to-day operations. There will always be a strong temptation for different political stakeholders represented in the governing body to cross the line between governing and managing daily operations, and in particular to influence decisions about selecting individual projects. International experience shows clearly that if this happens, the public fund becomes a battlefield of vested interest groups, losing transparency, credibility, efficiency and effectiveness.

The day-to-day management of the project cycle, in particular appraisal and selection of individual projects, should be vested with an operationally independent executive management unit, staffed with non-political professionals and held strongly accountable for their performance according to the rules established by the charter and by the governing body.

Annex 8 contains a more detailed proposal of the responsibilities, membership and voting system of a governing body, and the responsibilities of the executive management unit. Designing a financial institution to manage DFES expenditure in the Kyrgyz Republic along the lines of this proposal would increase the credibility of the Kyrgyz institutional arrangement to foreign and domestic stakeholders.

4.4 Project Cycle Management

A domestic financial institution would need to have an established project cycle with clearly defined stages, responsibilities, procedures and project selection criteria.

The typical stages of a project cycle of a public funding agency are:

- Identification of potential projects;
- Submitting applications;
- Appraisal and selection of submitted projects;
- Approval of selected projects;
- Contracting and financing (transfers of money);
- Monitoring and evaluation of projects and of post-implementation results.

Because of the underdeveloped market for environmental investments in the Kyrgyz Republic, good projects may not be easy to find. Hence, any institution managing an expenditure programme financed by a swap would have to be very proactive in the identification of eligible and promising projects in each priority area. Owners of these projects would need to be clearly informed about funding opportunities and conditions. Otherwise, they may not apply and the project pipeline could remain empty.

Some applicants may need assistance in preparation of their projects and in submitting good applications, especially in the first years of operations of the scheme. In principle, preparation of individual projects should not be financed from the swap. Assistance provided to some beneficiaries, and not to others, gives the former an unfair advantage over those who compete for support on their own. Such a situation may also distort the development of the market for independent consulting services in project preparation. Instead, technical training in project preparation and application for funding, open to all potential beneficiaries, could be organised and financed by the institution.

Procedures and criteria for appraisal and selection of projects will be the cornerstone of credibility, accountability and transparency of the scheme to various stakeholders. Good international standards of project appraisal in the pubic sector will need to be followed, such as those contained in the OECD Good Practices of Public Environmental Expenditure Management. The principles and criteria of project appraisal and ranking should be defined in the institution's Charter and further specified in operational terms in documents approved by the governing board.

Appraisal cycles should have fixed intervals and deadlines for submitting applications by applicants and for making decisions by the institution. The frequency will need to be adjusted to the practical needs of the

project pipeline. Large, capital investment projects may need to be appraised in two stages – in the first stage, short and relatively simple applications should be screened against eligibility criteria in order to reject non-eligible projects early and save time and resources of both the fund and the rejected applicants. Applicants who pass this first eligibility test should be asked to prepare a more detailed application and submit all supporting documentation (e.g. feasibility studies, environmental impact assessments, environmental and construction permits, etc.).

On the basis of full and detailed project information, appraisal can be conducted by applying appraisal criteria to compare projects against one another or against some benchmark. Appraisal criteria should be few, relatively simple, measurable and objective. They should allow as little discretionary judgments, as practically possible. **Cost-effectiveness** (the ratio of the discounted, lifetime costs of the project to its physical environmental/social effects) should be a prominent appraisal criterion to ensure that maximum effect is achieved by the limited resources generated by the DFES. Beneficiaries would need to be requested to demonstrate the financial viability of their projects (with support by the DFES institution). Beneficiaries should also give reasonable assurance that they will not go bankrupt during the implementation phase and during the reasonably long period of project operation (or to give assurance of sustainability of environmental and social benefits in case of bankruptcy). During each appraisal session all projects under consideration should be ranked from the highest to the lowest score until their cumulative value exhausts all money set aside for a given appraisal session.

After appraisal and ranking are conducted by the executive body, the governing board (political body) should receive the entire, ranked project portfolio for final approval, with merit-based written justification of each project. It is advisable that the governing board have the right to veto individual projects, but not have the right to modify the sequence of projects on the ranking list or to add new projects by-passing technical appraisal.

Contracting and disbursement. After approval of projects by the governing board, actual financing to the beneficiary would be provided on the basis of a contract negotiated with and signed between the latter and the appropriate party on the government side. It is advisable that disbursement of larger amounts for investment projects should be made after the project has been implemented, and only upon original invoices issued by the implementing firm/contractor, which in most cases will be different from the beneficiary. Making advance payments should be avoided in principle, and if applied, must involve strict safeguards against diverting money by beneficiaries to purposes other than those agreed in the contract.

Project monitoring and evaluation. The role and responsibilities of the financial institution managing DFES should also include monitoring of implementation of projects and ex-post evaluation of results achieved. The institution should retain the contractual right to terminate the agreement and instruments to revoke funds, if the guarantee does not comply with the terms and conditions agreed in the contract.

The financial institution should produce annual financial reports according to international accounting and reporting standards. Activity reports should also be prepared annually to allow for a fair assessment of performance of expenditure. Financial reports will need to be regularly audited by international independent chartered accountants as well as international organisations.

Regardless of the legal form of the institution, the project cycle should be managed according to written, transparent procedures. Project appraisal criteria should be objective, transparent and unambiguous. Cost-effectiveness should be a key quantitative basis for appraisal and selection of projects. Subjective, discretionary elements in project selection should be subject to procedures. For larger investment projects, a two-stage appraisal should be used.

4.4.1 Disbursement Mechanisms

Because of external benefits and common goods provided by the projects to be supported under the debt-for-environment swap scheme, financing will need to be provided on terms more favourable than those available on the market. "Soft" financing can be provided in a variety of forms, such as direct grants, low interest loans, high risk loan guarantees or equity with low expected return and higher accepted risk.

From the point of view of financial sustainability of the domestic institution, it would be attractive to use **direct loans** to disburse its resources. Loans could provide some return on assets to replenish the fund. Moreover, loans to projects that have potential to generate financial revenue can give project owners incentives to implement projects quickly and efficiently.

However, the use of loans, loan guarantees or equity financing would require significant capacity to manage associated risks. The needed capacity could be built within the institution by establishing a loan department with at least two to three experienced credit analysts to analyse the creditworthiness and collateral of borrowers. Capacity can also be bought on the market by contracting out credit analysis to commercial banks for a fee (and for some risk share). Without up-front capacity, a loan portfolio usually quickly turns into a stock of worthless assets. Effective lending would also require a critical mass of legal and institutional infrastructure in the country for arbitrage and contractual settlements, to say nothing of a minimum level of maturity of financial markets. All these conditions are still under development in the Kyrgyz Republic.

Before loans are considered in any form, all risks will have to be identified and mitigated. In addition, a detailed market analysis will have to determine if eligible beneficiaries will actually be willing to take loans to finance environmental projects eligible under the DFES. More risky instruments, such as loan guarantees or equity investments should not be envisaged for the debt swap institution at all, except in a very distant future, but then the rationale for such an institution to be located in the public sector will need to be reconsidered.

A **direct grant** is the most transparent form of government financing, the least risky and the easiest to manage. In the European tradition of public finance, it is also considered the most market-friendly form of government financing, because it does not compete with financial products provided by the private financial sector. Therefore, a lower risk strategy would be to launch the DFES institution as a revolving fund disbursing grants only. During the first few years of operation, it could accumulate experience with financial management, contracting, project appraisal and implementation monitoring. This would provide time to better understand the situation on the environmental investments market, typical funding needs of projects and risks. Should conditions allow, the governing body could consider introducing other disbursement instruments, such as soft loans or interest subsidies.

To maximise its environmental effectiveness, the financial institution should use its limited resources to mobilise additional finance for environmental improvements. This could be done by providing matching grants covering only a limited portion of the project financial needs. The share of grant in the eligible project cost (the rate of assistance) may be different for different projects, depending on the priority area, type of project (e.g. its capacity to generate revenues), and type of beneficiary. Criteria for determining the maximum rate of grant should be relatively simple and transparent. Temptations to use sophisticated and costly models (e.g. incremental cost as used in GEF grants) should be cautiously treated and considered after sufficient experience and capacity is accumulated in-house. Annex 7 contains a simple matrix of a possible differentiation of rates of grant, for illustrative purposes.

Following on from the above analysis, it is obvious that **grants** constitute the most suitable form of disbursements in the conditions of the Kyrgyz Republic with its infant financial market and practical impossibility to make any guarantees by any public institution. As institutional capacity and financial markets develop, other financial products can be considered. A DFES institution should never finance

100% of project costs. Co-financing should always be required to achieve financial leverage and additionality.

4.4.2 Procurement Rules

A grant agreement between the institution and beneficiaries should always include a clause on the procedure to purchase goods and services financed by the swap resources.

Competition and **non-discrimination** for any party are the recommended rules of procurement. These are seen as tools that can help achieve transparency and cost-effectiveness in purchasing goods and services financed by the swap.

Some creditors may insist on limiting competition in procurement to their own suppliers (e.g. purchase of equipment produced only in the creditor country). However, this would most likely increase project costs significantly. This implies some trade-offs between efficiency and the incentives to creditor countries to make swap transactions.

The Kyrgyz Republic should at least insist on allowing competition between domestic and creditor country firms. Otherwise development objectives of the scheme would be jeopardised. Moreover, if more than one creditor agrees on a swap, the government may propose procurement procedures similar to those of the Polish EcoFund, where competition is open to both Polish firms and firms from all countries participating in the swap (OECD, 1998). This so-called *geographical distribution* rule - widely applied in the European Community (EC) programmes - offers every participating donor a possibility to recapture (in the form of contracts) some share of the funds foregone. Even though this is not a perfect solution, geographical distribution of contracts is a more efficient alternative than tied procurement, and it has proved viable in EC practice (Tomasz Zylicz, 1992).

In conclusion, bilateral swaps managed through a local financial institution are the best institutional arrangement for the Kyrgyz Republic. The final choice, however, will depend on actual negotiated swaps and subsequent resources generated. If the swap amounts are too small, the Kyrgyz Government may consider implementing individual projects instead but this should be a second-best option. As the probability of having only one or two swaps is very high, and in order to minimise costs, the Kyrgyz Government may consider using existing domestic institutional arrangements with a proven track record and open a DFES "window" there. If more swaps are negotiated, an individual institution may need to be set-up to better account for the specific concerns of creditors and potential donors. Whatever the choice of the institutional arrangement, however, it is important that the institution is managed by local staff, selects projects for financing on a competitive basis and builds capacity of both managers and applicants as the best way to ensure sustainability of environmental protection in the country.

5. CONCLUSIONS AND FURTHER ACTIONS

The DFES mechanism is relevant for the Kyrgyz Republic, particularly given the significant needs for environmental financing and the fact that environmental expenditure is not a priority in the Public Investment Programme or in other sources. Therefore, arranging a DFES could help address some of the most serious environmental challenges in the country.

With the 2005 Paris Club arrangement, the Government of the Kyrgyz Republic committed itself to not seeking further treatment from the Paris Club. With no room for further debt relief, the government may be interested in additional options to limit the debt burden through debt swap operations.

Given the limited scope of public expenditures on environment, DFES is the recommended instrument to apply. It is worth mentioning the positive spill-overs of the DFES operation, namely the possibility to foster economic development and alleviate poverty.

The results of the feasibility study show that the amount available through a potential DFES would be limited and spread over time. With a 20% conversion rate, the available funds are estimated in the range of USD 70-600 thousand annually with the participation of two of the creditors: Germany and France[29] (Germany's contribution will be about 90% of this amount). This estimate should be compared with the level of public investment in the environment, which amounted to about USD 900 000 in 2003. If Russia and/or Turkey join the programme, this would significantly increase the amount available for DFES. This second scenario, however, is less realistic, given the lack of debt-for-environment swap experience these countries have and their potentially different preferences (debt-for-equity swap). A positive track record may generate new swap opportunities in the future, in particular with neighbouring countries (China, Uzbekistan).

Although the potential amount seems to be modest, the resources could significantly contribute to supporting environmental projects. Given present economic conditions, such projects stand little chance of getting financing through regular budgetary decision-making, despite having been identified as priorities. Assuming that additional donor support could be raised, these numbers could further increase. There is also a chance of increasing available funds though co-financing from the budget (some switch in the PIP priorities would be necessary) or using privatisation funds (in line with the debt reduction strategy).

Special attention should be paid to macroeconomic issues. The debt repayment problems were caused mainly by macroeconomic developments – the USD stock of debt rose by less than programmed. Instead, the USD GDP was far below projections and the size of the PIP and current account deficits were higher than forecast. Case studies stress the importance of macroeconomic risks for the success of DFES, therefore potential developments in GDP, balance of payments and public investments should be strictly monitored.

The experience of countries successfully implementing DFES schemes shows that irrespective of the institutional set-up for managing DFES resources, creditors should be convinced that the country will have institutional capacity to manage foreign expenditure in a transparent, effective and efficient manner in accordance with good international standards. For this purpose, a well-developed and justified expenditure

[29] Indeed, such a low level of financial flows might be a disincentive for creditors, who might consider that transaction costs associated with setting and monitoring the swap are relatively too high.

programme based on transparent and robust project selection criteria and implementation rules and procedures should be developed.

Establishing a credible expenditure programme that responds to priority concerns of both creditors and the Kyrgyz government will be essential to gain support for a debt-for-environment swap. The proposed programme should be narrowly focused on a few priorities and demonstrate how a solid pipeline of projects could be prepared and supported to meet its objectives. A review of the Kyrgyz environmental priorities and creditors' preferences suggests that the most promising priority areas could be those which aim at:

- Reducing pollution of regional waters;
- Protecting biological diversity; and,
- Reducing emissions of greenhouse gases which affect the global climate.

Within each priority area, preliminary identification of project opportunities has been conducted with a view to identifying the types of projects that could achieve environmental benefits together with poverty reduction, local economic development and sustainable growth and international security goals. In addition, particular attention has been paid to projects which aim at solving problems common to the entire Central Asian region, such as soil degradation, erosion and desertification.

Given the potential DFES resources, the 2 most promising pipelines identified during the analysis are:

1. Biogas production from animal waste, and;
2. Prevention of irreversible biodiversity loss.

Taking into account the possible size of the swap, additional sources of financing would be required to support any larger project pipelines. Therefore, careful selection of the most cost-effective projects, and requirements to co-finance projects from other sources, would need to be the cornerstones of project selection in order to make a real difference in any of the priority areas listed above.

The Kyrgyz authorities still have to reflect on the most appropriate institutional set-up to manage, monitor and report on the expenditure programme. Alternative tools and procedures have to be assessed and discussed with creditors that will take into account the nature of the programme and the institutional capacity in the country. As a starting point, the Kyrgyz Government is considering using existing institutional arrangements in the country in order to save on administrative costs. Finally, swapping debt for specific projects may also be considered if the value of the swap is small. However, in such a case, the Kyrgyz Government will need to decide if the swap is worthwhile at all. In general though, even if a swap does not materialise, the proposed pipeline can be used in discussions with donors when preparing donor support programmes for the Kyrgyz Republic.

Preparation for real transactions and financial transfers under the debt-for-environment swap scheme is not going to be short, easy and cheap. However, several internal and external circumstances work in favour of the Kyrgyz Republic. The country has some "swappable" debt structure and is in an enabling economic situation and debt management cycle. The government has undertaken the right steps so far, and there is a commitment to such a solution not only in the Ministry of Ecology and Emergencies, but in other government agencies as well, and most importantly the Ministry of Finance which will be leading negotiations with creditors.

The international community seems to be supportive of Kyrgyz efforts in its preparatory activities. Debt-for-environment swaps were identified as a promising area of international co-operation on environment and poverty reduction by the OECD Global Forum for Sustainable Development in April 2002. The Kyrgyz Republic is covered by the International Initiative to Promote Poverty Reduction, Growth and Debt Sustainability in Low-Income CIS Countries, in the framework of which it can be raised. Debt-for-environment swaps stand as a prominent objective in the East-West Partnership, EECCA Environmental

Strategy, which was endorsed by Environment Ministers during the "Environment for Europe" Ministerial Conference in Kiev in May 2003.

Co-operation within the framework of the OECD/EAP Task Force has already begun, and this pre-feasibility study is its first result. A seminar held in Bishkek on 28 June 2005 marked the beginning of the process of multi-stakeholders' consultations conducted by the Kyrgyz government in order to be better prepared for possible bilateral negotiations. The United Nations Development Programme (UNDP) is already supporting the Kyrgyz Government in its efforts. The World Bank has expressed interest in some form of assistance.

In order to be effective, the preparatory process will need a strong, dedicated leader. The Ministry of Finance, supported by and working closely with the Ministry of Ecology and Emergencies, could provide this leadership.

Some of the major milestones in the preparatory process that the Kyrgyz government may wish to take into consideration are outlined in Table 21 below. As the process unfolds, a more detailed planning and budgeting should be prepared and the planning completed.

Table 21. Major Milestones in the Preparatory Process for Debt-For-Environment Swap

Action	Timing	External Cost (Euro)	Financing
1. Launch a process of official multi-stakeholder national and international consultations, using a pre-feasibility study as a background document.	28 June 2005		OECD
2. Apply for technical assistance to donors or international institutions (e.g. World Bank, OECD, UNDP) for the next steps in the preparatory process.			
3. Make official intervention during the Yerevan Conference of Ministers of Environment and Finance/Economy.	November 2005		OECD
4. Conduct additional analysis (expenditure programmes, institutional issues).			
5. Agree within the Kyrgyz government on the initial position in negotiations with potential creditors.			
6. Launch informal consultations with targeted creditor countries (Germany, France, Russia, Turkey).			
7. Begin formal negotiations with the first creditor(s).	September 2005		
8. Sign first memorandum(s) of understanding with selected creditor(s).			
9. Introduce provision for a debt-for-environment swap into the consolidated balance of financial resources and main directions of budgetary policy established by the Ministry of Finance and the National Bank of the Kyrgyz Republic, as a preparation of the next year's budget.			
10. Prepare feasibility study with business plan, detailed institutional design and investment opportunities analysis.			
11. Sign first swap agreement(s).			
12. Adopt enabling legal and regulatory framework including the charter of financial institution.			
13. Include debt for environment and development swap into the next year's Budget Law.			
14. Establish a financial institution (or other appropriate institutional arrangement), office, equipment, recruit staff.			
15. Train staff, develop detailed project cycle manual, internal operational documents, software and other operational tools.			
16. Start project cycle – first project identification period, information campaign, training for applicants.			
17. First application period.			
18. First appraisal session.			
19. First financing agreements and beginning of implementation of first projects.			
20. First disbursements on projects.			

6. REFERENCES

Andrews, D., *et al.* (1999), "Debt Relief for Low Income Countries. The Enhanced HIPC Initiative", *Pamphlet Series,* No. 51, IMF, Washington.

CAREC (Regional Environmental Center for Central Asia) (2001), *Regional Environmental Protection Action Plan for Central Asia*, CAREC, Almaty.

Center for Renewable Energy of the Kyrgyz Republic (2004), *Gosudarstviennaja programma po polucheniju biogaza i organicheskih udabrienij v KR*, (draft) (Draft State Programme for Biogas Production and Organic Fertilizers), Center for Renewable Energy of the KR, Bishkek.

Childress, M., *et al.* (2002), *Resources and Profitability of Agricultural Enterprises in Kyrgyzstan,* CASE Kyrgyzstan, Bishkek.

Cottarelli, C. and P. Doyle (1999), "Disinflation in Transition 1993-97", *Occasional Paper,* No. 179, IMF, Washington.

Devarajan S., V. Swaroop, H. Zou (1996), "The Composition of Public Expenditure and Economic Growth", *Journal of Monetary Economics*, Vol. 37.

GEF (Global Environmental Facility) (2002), *The Challenge of Sustainability, An Action Agenda for Global Environment*, GEF, Washington.

GEF (2003), *Klimat i okruzhajushaja sreda – Projekt Globalnogo Ekologicheskogo Fonda i Programmy OON* (Climate and Environment – Project of the GEF and the UN Programme), GEF, Washington.

Government of the Kyrgyz Republic/World Bank (1995), National Environmental Action Programme, Government of the Kyrgyz Republic/World Bank, Bishkek.

Government of the Kyrgyz Republic (2001), *Postanovlenie Pravitelstva Kirgizskoj Respubliki ot 19 iunia 2001 goda N 284 O srednesrochnoj Strategii sokrashchenija vneshnego dolga* (Decree of the Government of the Kyrgyz Republic N 284 on the Mid-Term External Debt Reduction Strategy of 19 June 2001), Government of the Kyrgyz Republic, Bishkek.

Government of the Kyrgyz Republic (2001), *Gosudarstviennaja Programma Les na 2001-2005 godu, Postanavlienije No 715 Pravitielstva Kirgizskoj Respubliki,* (State Programme on Forests for 2001-2005, Decree No 715 of the Government of the Kyrgyz Republic), Government of the Kyrgyz Republic, Bishkek.

Government of the Kyrgyz Republic (2001), *Kompleksnaya osnova razvitija Kirgizskoj Respubliki do 2010 goda* (Comprehensive Development Framework of the Kyrgyz Republic until 2010), Government of the Kyrgyz Republic, Bishkek.

Government of the Kyrgyz Republic (2003), *First National Communication of the Kyrgyz Republic under the UN Framework Convention on Climate Change,* Government of the Kyrgyz Republic, Bishkek.

Government of the Kyrgyz Republic (2005), *Otchiot ob ofizjalnoj vnieshniej pomoshchi Kirgizskoj Respubliki za 2002-2004 godu* (Report on Official Development Assistance to the Kyrgyz Republic for 2002-2004), Government of the Kyrgyz Republic, Bishkek.

Government of the Kyrgyz Republic, *National Poverty Reduction Strategy 2003-2005, Expanding the Country's Capacities, Comprehensive Development Framework of the Kyrgyz Republic to 2010*, Government of the Kyrgyz Republic, Bishkek.

Helbling, T., A. Mody, R. Sahay (2004), "Debt Accumulation in the CIS-7 Countries: Bad Luck, Bad Policies or Bad Advice?", *Working Paper,* No. 04/93, IMF, Washington.

IMF (International Monetary Fund) (2001), IMF Approves in Principle Three-Year, US$93 Million PRGF Arrangement for the Kyrgyz Republic, *Press Release*, No. 01/49, November 30, 2001, IMF, Washington.

IMF (2002), Joint Press Release of the World Bank, Asian Development Bank, European Bank for Reconstruction and Development, and the International Monetary Fund, Ministers Endorse International Initiative for Seven Poor Countries of the Commonwealth of Independent States, *Press Release*, No. 02/23, April 20, 2002, IMF, Washington.

IMF (2004), *Kyrgyz Republic: Poverty Reduction Strategy Paper Progress Report*, IMF, Washington.

IMF (2005), Kyrgyz Republic - Ex Post Assessment of Longer-Term Programme Engagement February 2005*, Country Report,* No. 05/32, IMF, Washington.

IMF (2005), Kyrgyz Republic: 2004 Article IV Consultation and Request to Extend the PRGF Arrangement - Staff Report; Staff Supplement, Public Information Notice and Press Release on the Executive Board Discussion; and Statement of the Executive Director for the Kyrgyz Republic, February 2005, *Country Report,* No. 05/47, IMF, Washington.

IMF (2005), Kyrgyz Republic: Statistical Appendix, February 2005, *Country Report,* No. 05/31, IMF, Washington.

IPG (Interagency Planning Group) (2000), *The Current Situation and Capacity Building Needs of Environmental Funds in Africa, Preliminary Assessment.* IPG on Environmental Funds, by Meelissa Moye with Ruth Norris, IPC, New York.

JICA (Japanese International Cooperation Agency) (2004), *Technicheskoje sotrudnichestvo po ispolzovaniju biogazovih tehnologii v Kirgizskoj Respublike* (Technical Cooperation on Utilising Biogas Technologies in the Kyrgyz Republic), JICA, Tokyo.

JICA (2004), *Study on Integrated Development Plan of the Issyk–Kul Zone in the Kyrgyz Republic*, JICA, Tokyo.

Kyrgyz Republic (2001), *Letter of Intent, Memorandum of Economic Policies, Technical Memorandum of Understanding*, November 16, 2001, Bishkek.

Kyrgyz Republic (2003), *Letter of Intent, Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding*, December 15, 2003, Bishkek.

Mathieu P. (2004), *The Sustainability of Public External Debt in the Five Highly-Indebted CIS Countries* (A Background Paper for the CIS-7 Initiative).

Ministry of Ecology and Emergencies of the Kyrgyz Republic (2004), *Nazionalnyj Doklad o sostajanii okruzhajushchej sredy Kirgizstana 2001 – 2003* (National Report on the State of Environment of Kyrgyzstan 2001 – 2003), Ministry of Ecology and Emergencies, Bishkek.

Ministry of Ecology and Emergencies of the Kyrgyz Republic, *Nazionalnyj Plan ohrony okruzhajushchej sredy Kirgizskoj Respubliki* (National Environmental Action Plan), Ministry of Ecology and Emergencies, Bishkek.

Ministry of Finance of the Kyrgyz Republic (2004), *Medium-Term Budget Framework 2005-2007 of the Kyrgyz Republic*, March 2004, Ministry of Finance, Bishkek.

Ministry of Finance of the Kyrgyz Republic (2004), *Report on the Status of the Governmental External Debt of the Kyrgyz Republic as of December 1, 2004,* Ministry of Finance, Bishkek.

Ministry of Finance of the Kyrgyz Republic, Investment Policy, http://www.minfin.kg .

Moye M. (2001), "Overview of Debt Conversion", Debt Relief International Ltd, *Publication*, No.4.

National Statistics Committee of the Kyrgyz Republic (2004), *Dannyje po ekologicheskich investizijah* (Data on Environmental Investments), National Statistics Committee, Bishkek.

Odling-Smee J. and J. Linn (2001), *Armenia, Georgia, the Kyrgyz Republic, Moldova, and Tajikistan: External Debt and Fiscal Sustainability*, IMF/World Bank, Washington.

OECD (Organisation for Economic Co-operation and Development) (1998), *Swapping Debt for the Environment: The Polish EcoFund*, OECD EAP Task Force, Paris.

OECD (2003), *Good Practices of Public Environmental Expenditure Management in Transition Economies*, OECD EAP Task Force, Paris.

OECD (2005) *Debt Swap for Environment and Development in Georgia: Pre-Feasibility Study, Institutional Options*, OECD EAP Task Force, Paris (Forthcoming).

Paris Club (2002), *Agreed Minute on the Consolidation of the Debt of the Kyrgyz Republic, March 7, 2002*, Paris Club, Paris.

Paris Club (2002), The Paris Club and the Kyrgyz Republic Agree to a Debt Restructuring, March 7, 2002, *Press-Release*, Paris Club, Paris.

Paris Club (2005), *Agreed Minute on the Consolidation of the Debt of the Kyrgyz Republic, March 11, 2005*, Paris Club, Paris.

Paris Club (2005), The Paris Club Reduces the Kyrgyz Republic's Stock of Debt, 11 March 2005, *Press-Release*, Paris Club, Paris.

Regional Environmental Reconstruction Programme for South Eastern Europe under the Stability Pact (REReP) (2003), *Review and Assessment of the Bulgarian National Trust Ecofund,* GTZ, Berlin.

Sala-I-Martin X. (1996), "Transfers, Social Safety Nets and Economic Growth"*, Working Paper,* WP/96/40, IMF, Washington.

State Forestry Fund of the Kyrgyz Republic (2003), *Jedinovremiennyj otchiot Gosudarstviennogo Lesnovo Fonda Kirgizskoj Respubliki – 2003* (2003 Executive Report of the State Fortestry Fund of the Kyrgyz Republic), State Forestry Fund, Bishkek.

State Forestry Service of the Kyrgyz Republic (2004), *Informazija o miezhdunarodnih prajektah lesnogo hozijaistva Kirgizskoj Respubliki* (Information on International Projects in the Forestry Sector of the Kyrgyz Republic), State Forestry Service, Bishkek.

UNCTAD (United Nations Conference on Trade and Development) (1992), *Conversion of Official Bilateral Debt*, GE.92-55494, UNCTAD, Geneva.

UNDP (United Nations Development Programme) (1998), *Debt for Environment Swaps for National Desertification Funds: An Introductory Guide, http://www.undp.org/seed/unso/concepts&programs/pub-htm/swap-eng.pdf* .

UNSO (UNDP's Office to Combat Desertification and Drought) (1997), *Mobilizing Resources for National Desertification Funds trough Debt-for-Environment Swaps*, UNSO.

World Bank (1995), Kyrgyz Republic – Energy Sector Review*, Report*, No 14036 – KG, World Bank, Washington.

World Bank (1995), National Environmental Action Plan, *Report,* No. 13990-KG, World Bank, Washington.

World Bank (1996), Power and District Heating Rehabilitation Project, *Report,* No. 15145-KG, World Bank, Washington.

World Bank/ESMAP (Environmental Sector Management Assistance Programme) (1997), Kazakhstan and Kyrgyzstan: Opportunities for Renewable Energy Development, *Report*, No. 16855, World Bank, Washington.

World Bank (1999), Kyrgyz Republic Water Supply and Wastewater Sector Note, *Report,* No. 19487-KG, World Bank, Washington.

World Bank (2004) *Global Development Finance*, World Bank, Washington.

Zylicz, T. (1998), "Debt-For-Environment Swap as a Game: The Case of the Polish EcoFund"*, Nota di Lavoro,* 69.98, Fondazione Eni Enrico Mattei, Milano.

Zylicz, T. (1992), "Debt-For-Environment Swaps: the Institutional Dimension", *Beijer Institute Discussion Paper*, Stockholm.

Web-Sites

Bulgarian Trust Ecofund: www.ecofund-bg.org

GEF: www.gef.org

IMF: www.imf.org

Ministry of Finance of the Kyrgyz Republic: www.minfin.kg

OECD: www.oecd.org

Paris Club: www.clubdeparis.org

Polish EcoFund: www.ekofundusz.org.pl

7. ANNEXES

ANNEX I: THE KYRGYZ REPUBLIC – MAIN MACROECONOMIC INDICATORS

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Population (1000 inhabitants), end of period	4 525	4 595.9	4 661	4 731.9	4 806.1	4 867.4	4 907.6	4 946.5	4 984.4	5 037.3	---
GDP real growth (annual % change)	-19.8	-5.4	7.1	9.9	2.1	3.7	5.4	5.3	0.0	6.7	7.1
Industrial gross output (% change, real terms)	-23.5	-24.7	3.9	39.7	5.3	-4.3	6.0	5.4	-10.9	17	3.7
Unemployment (% labour force, end-year)	4.1	5.7	7.8	5.7	5.9	7.2	7.5	7.8	6.0	9.0	---
Consumer price index (% annual average)	1 807	143.4	132	123.4	110.5	135.9	118.7	106.9	102.1	103.1	104.1
External debt (end of period; % GDP)	---	51.1	66.6	79.5	90.6	134.4	124.6	109.6	110.7	102.3	95.8
External reserves (million USD)	97.9	113.8	127.5	195.9	188.6	248.8	261.1	285.2	316.7	389	565.2
Current account (million USD)	-84.4	-234.7	-424.7	-138.4	-363.9	-184	-77.6	-26.5	-44.3	-77	-72.2
Current account/GDP (%)	-8	-16	-23	-8	-22	-15	-6	-2	-3	-4	-0.4
Trade balance (million USD)	-86.1	-122	-251.7	-15.2	-220.7	-88.6	4	30.3	-74	-133.5	-112.6
Total government expenditure (excluding net lending) (%GDP)	---	29.7	24.8	25.4	29.3	20.8	25.4	22.8	24.8	24.5	24.5
General government deficit (%GDP), Cash Surplus/deficit including PIP	---	-17.3	-9.5	-9.2	-9.5	-11.9	-9.2	-5.0	-5.4	-5.2	-4.5

Source: National Statistics Committee, National Bank of the Kyrgyz Republic, IMF.
Note: Unemployment rate on survey data, besides officially registered unemployed.
'---' Denotes lack of data.

ANNEX II: 2002 AGREEMENT WITH THE PARIS CLUB ON DEBT RESTRUCTURING

On March 7, 2002 the Kyrgyz Republic agreed with Paris Club creditors on external debt restructuring. This agreement followed the IMF's approval of the Kyrgyz Republic's arrangement under the Poverty Reduction and Growth Facility on December 6, 2001.

The stock of the Kyrgyz Republic's public sector debt was estimated to be US$ 1.5 billion as of the end of 2000. The stock of debt owed to Paris Club creditors was estimated to be US$ 449.7 million as of November 30, 2001. Paris Club creditors' stock of debt was divided into US$ 225.6 million in ODA claims and US$ 224.15 million in non ODA claims.

As in the other agreements with the Paris Club the cut-off date was set for the Kyrgyz Republic at August 31, 2001. The cut-off date is a concept used for the sole internal purpose of the Paris Club agreement. It is defined during negotiations between a debtor country when meeting with Paris Club creditors and is not changed in subsequent Paris Club treatments. Credits granted after the cut-off date are not subject to future rescheduling.

The agreement consolidated roughly US$ 99 million due on loans, credits and consolidations contracted by the Kyrgyz Republic before the cut-off date. This amount consisted of principal and interest falling due from December 6, 2001 up to December 5, 2004. The share of ODA loans was equal to US$ 23 million.

The rescheduling was conducted according to the following terms:

ODA credits were to be repaid over 20 years, with 10 years of grace, at interest rates at least as favorable as the concessional rates applying to those loans;

Commercial credits are to be repaid over 20 years, with 5 years of grace with progressive repayment, at the appropriate market rate;

Moratorium interest on the consolidation is capitalized up to 50% for the first year, 60% for the second year and 70% for the third year.

The agreement was expected to reduce debt service due to Paris Club creditors during 2002, 2003, 2004 from US$ 101 million to US$ 5.6 million, which consists mainly of payments of interest on the rescheduled amounts.

The agreement included a clause allowing each creditor, on a bilateral basis, to undertake debt for nature, debt for aid, debt for equity swaps or other local currency debt swaps.

The Kyrgyz Republic is committed to seeking comparable treatment from its other public and private external creditors.

Creditors agreed in principle to consider a concessional treatment of the stock of the external debt upon successful implementation of the IMF programme and the Paris Club agreement, and approval of an appropriate follow-up medium term arrangement with the IMF.

Table II.1: The Kyrgyz Republic Payments According to the 2002 Paris Club Agreement

	ODA	Non-ODA
December 6, 2008		1.80%
June 6, 2009		1.87%
December 6, 2009		1.95%
June 6, 2010		2.01%
December 6, 2010		2.09%
June 6, 2011		2.19%
December 6, 2011		2.27%
June 6, 2012		2.35%
December 6, 2012		2.45%
June 6, 2013		2.54%
December 6, 2013	5%	2.64%
June 6, 2014	5%	2.75%
December 6, 2014	5%	2.85%
June 6, 2015	5%	2.96%
December 6, 2015	5%	3.08%
June 6, 2016	5%	3.21%
December 6, 2016	5%	3.33%
June 6, 2017	5%	3.47%
December 6, 2017	5%	3.61%
June 6, 2018	5%	3.75%
December 6, 2018	5%	3.90%
June 6, 2019	5%	4.06%
December 6, 2019	5%	4.22%
June 6, 2020	5%	4.39%
December 6, 2020	5%	4.56%
June 6, 2021	5%	4.75%
December 6, 2021	5%	4.93%
June 6, 2022	5%	5.13%
December 6, 2022	5%	5.34%
June 6, 2023	5%	5.55%

Source: Paris Club, Press-Release: The Paris Club and the Kyrgyz Republic Agree to a Debt Restructuring and Agreed Minute on the Consolidation of the Debt of the Kyrgyz Republic, March 7, 2002.

ANNEX III: 2005 AGREEMENT WITH THE PARIS CLUB ON EXTERNAL PUBLIC DEBT REDUCTION

On March 11, 2005 the Kyrgyz Republic agreed with Paris Club creditors on a reduction of its public external debt. The agreement follows the IMF's approval of the Kyrgyz Republic's arrangement under the Poverty Reduction and Growth Facility on February 23, 2005. Paris Club creditors granted a comprehensive debt treatment under the Evian Approach with conditions similar to London terms. The participants agreed that the treatment set forth in Agreed Minutes is sufficient to enable the government of the Kyrgyz Republic to fully service its debt to the participating creditor countries. The government of the Kyrgyz Republic commits not to seek further treatment from the PC once the terms set forth in these Agreed Minutes are implemented.

The stock of debt owed to Paris Club creditors (Turkey included) was estimated to be US$ 555.1 million as of February 1, 2005. Paris Club creditors' stock of debt is divided into US$ 306.3 million in ODA claims and US$ 248.8 million in non ODA claims (source: Paris Club creditors).

The agreement cancels the equivalent of US$ 124 million due on loans and credits contracted by the Kyrgyz Republic before August 31, 2001 (cut-off date) and of debts previously rescheduled in 2002 by the Paris Club. Moreover, it reschedules US$ 431 million. The rescheduling shall be conducted according to the following terms:

Commercial credits are to be cancelled by 50%, the remaining 50% shall be repaid over 23 years of which 7 years of grace at the Appropriate Market Rate. The first payment shall be made on September 1, 2012 and the last one on March 1, 2028. However, the creditor countries have a choice and may apply an option of 100% of debt repayment on commercial credits (option 2 in Table III.1.b below).

ODA credits are to be repaid over 40 years of which 13 years of grace at interest rates at least as favourable as the concessional rates applying to those loans. 100% of the principal on debts shall be repaid in semi-annual instalments, the first one to be made on September 1, 2018 and the last one to be made on March 1, 2045.

To take into account the capacity of payment of the Kyrgyz Republic, moratorium interest due under this agreement shall be capitalized at 85% in 2005, 75% in 2006, 70% in 2007 and 65% in 2008. Those interest amounts shall be repaid over 23 years of which 7 years of grace.

On a voluntary and bilateral basis each creditor may also undertake debt for nature, debt for aid, debt for equity swaps or other local currency debt swaps.

The alternative option is available for creditors that are not in a position to include maturities of non-previously rescheduled debt falling due after March 1, 2005.

Table III.1: Repayment Schedule of Non-ODA Debts According to the 2005 Paris Club Agreement

Table III.I.a

Non ODA Option 1		Non ODA Option 2		
				0
		2006	1	0
				0
		2007	2	0
				0
		2008	3	0
				0.23
		2009	4	0.25
				0.27
		2010	5	0.28
				0.3
		2011	6	0.32
				0.34
		2012	7	0.36
September 1, 2012	0.28			0.38
March 1, 2013	0.38	2013	8	0.41
September 1, 2013	0.48			0.42
March 1, 2014	0.58	2014	9	0.46
September 1, 2014	0.7			0.48
March 1, 2015	0.82	2015	10	0.51
September 1, 2015	0.94			0.54
March 1, 2016	1.08	2016	11	0.57
September 1, 2016	1.22			0.6
March 1, 2017	1.36	2017	12	0.63
September 1, 2017	1.52			0.67
March 1, 2018	1.7	2018	13	0.7
September 1, 2018	1.86			0.74
March 1, 2019	2.06	2019	14	0.78
September 1, 2019	2.26			0.82
March 1, 2020	2.42	2020	15	0.87
September 1, 2020	2.68			0.91
March 1, 2021	2.92	2021	16	0.96
September 1, 2021	3.18			1.01

Table III.I.b

Non ODA Option 1		Non ODA Option 2		
March 1, 2022	3.44	2022	17	1.07
September 1, 2022	3.7			1.12
March 1, 2023	4	2023	18	1.18
September 1, 2023	4.3			1.24
March 1, 2024	4.64	2024	19	1.3
September 1, 2024	4.98			1.37
March 1, 2025	5.34	2025	20	1.44
September 1, 2025	5.72			1.51
March 1, 2026	6.12	2026	21	1.59
September 1, 2026	6.63			1.67
March 1, 2027	7.09	2027	22	1.75
September 1, 2027	7.55			1.84
March 1, 2028	8.05	2028	23	1.93
				2.02
		2029	24	2.12
				2.23
		2030	25	2.34
				2.45
		2031	26	2.57
				2.7
		2032	27	2.83
				2.97
		2033	28	3.12
				3.27
		2034	29	3.43
				3.59
		2035	30	3.77
				3.95
		2036	31	4.14
				4.34
		2037	32	4.55
				4.77
		2038	33	5.01

Source: Paris Club, Press-Release, The Paris Club Reduces the Kyrgyz Republic's Stock of Debt and Agreed Minute on the Consolidation of the Debt of the Kyrgyz Republic (March 10 and 11, 2005).

ANNEX IV: UN DRAFT RESOLUTION: RENDERING ASSISTANCE TO THE POOR MOUNTAIN COUNTRIES TO OVERCOME OBSTACLES IN SOCIO-ECONOMIC AND ECOLOGICAL AREAS

At the 38th meeting, on 7 December 2004, the representative of Kyrgyzstan, on behalf of Albania, Azerbaijan, Belarus, Georgia, Honduras, Kazakhstan, Kyrgyzstan, Nepal, Tajikistan and Turkmenistan, introduced a draft resolution. Subsequently, Afghanistan, Bolivia and Costa Rica joined in sponsoring the draft resolution, which reads as follows:

"The General Assembly,

"*Recalling* its resolution 53/24 of 10 November 1998, by which it proclaimed 2002 the International Year of Mountains,

"*Recalling* also its resolutions 55/189 of 20 December 2000, 57/245 of 20 December 2002 and 58/203 and 58/216 of 23 December 2003,

"*Recalling* also the United Nations Millennium Declaration adopted on 8 September 2000,

"*Recognizing* the socio-economic and ecological challenges often faced by the poor mountain countries, where, for the most part, the territory is located in alpine regions difficult to access,

"*Underlining* the fact that there remain key challenges to implementing socio-economic development and eradicating poverty in mountain regions,

"*Stressing* the need to create international economic conditions reflecting the higher vulnerability of mountain regions,

"*Noting* that the continuing debt and debt-servicing obligations of developing countries, in particular the poor mountain countries, constitute an element that adversely affects their development,

"1. *Recommends* the donor countries and invites the Bretton Woods institutions to take appropriate debt relief measures for poor mountain countries through such actions as debt relief and, as appropriate, debt cancellation;

"2. *Requests* the Secretary-General to submit a report on the implementation of the present resolution to the General Assembly at its sixtieth session."

Source: United Nations, General Assembly, A/59/483/Add.8, 16 December 2004.

ANNEX V: KEY STEPS IN IMPLEMENTING A DEBT-FOR-ENVIRONMENT SWAP

Although there is no single recipe for implementing DFES, some general principles may be relevant. The following steps may be distinguished:

- Raise awareness among fund stakeholders, including government officials and donors, regarding the debt-for-environment swap mechanism and its potential benefits;

Typically, the key ministries are the Ministry of Finance and the Central Bank. It is also possible that some other ministries play an important role i.e. Ministry of Environment. Debt swap proposals are usually submitted to the relevant ministry in a counterpart country, therefore it is crucial that at the very initial stage all decision-makers and technical staff have a good understanding of the mechanism. Hence, donors should be contacted, particularly those who are also creditors and might be in a position to arrange a bilateral swap through a creditor sponsored bilateral debt conversion programme. If the debt is to be purchased with donor funding, it is also possible that a donor will need to authorise use of donor funds in the debt swap.

- Designate a coordinator/manager of the institution and/or Board of Trustees to be responsible for coordinating design and implementation of a debt-for-environment swap at the national level;
- Conduct feasibility research and design the financial structure of a debt-for-environment swap. When an institution has been officially established, the proceeds of a debt swap could be channelled through it;

The objective of the feasibility study is to analyse the financial terms of potential swaps and evaluate related costs and risks. It should also analyse ways that these costs and risks can be reduced. Costs may include: the purchase price of the debt, fees for financial advisors and the administrative cost of preparing the swap. Potential risks may include non-payment of the debt conversion proceeds by the debtor government and erosion of the value of the proceeds through inflation and depreciation of the national currency.

- Raise funds from donors for purchasing debt and/or seek debt donations;
- Submit proposals and negotiate terms for a potential swap with creditors/donors and the Government;

Debt swap can be negotiated by debtor governments either on a case-by-case basis or according to a set of guidelines which define eligible investors and purposes and set priorities.

- Execute "closing" of the debt swap transaction through cancellation of the debt and payment of debt swap proceeds, as detailed in legal agreements signed by parties to the debt swap.

Source: UNDP (1998).

ANNEX VI: EXAMPLES OF DEBT SWAPS WORLD-WIDE

Country	Start Year/ Time Period	Domestic Participants (Governments and Established Funds)	Creditors	Facilitator, Accelerator, Donor	Face Value of Debt Relief (USD)	Available Funds (USD)	Expenditure from Available Funds
Bolivia	1987	Government	n.a.	Conservation International (CI), USAID, Government	0.65 million	0.25 million	n.a.
Bolivia	1992	Government	n.a.	CI, WWF, J.P. Morgan	11.5 million	2.76 million	n.a.
Brazil	1992	n.a.	n.a.	CI	2.2 million	2.2 million	n.a
Bulgaria	1995	National Trust Ecofund (NTEF)	Switzerland	IBRD (or WB)	CFr 23,5 million	started with 7.5 million in 1996.	NTEF agreed to finance and implement 21 projects totalling US$ 36.5 million from which NTEF-contribution would be US$ 6.67 million.
Colombia	n.a.	Government, Ecofondo	n.a.	USAID, CIDA (Canadian International Development Agency), Government, local and international NGOs, TNC (The Nature Conservancy) , WWF-US	n.a.	18 million	34 grants to NGOs totalling USD 1.95 million (1994)
Costa Rica	1988	Government, Central Bank, Banccoop, National Parks Foundation, Natural Resources Conservation Fund	n.a.	CI	n.a.	5.4 million	n.a.
Ecuador	1987	Fundacion Natura of Ecuador	n.a.	WWF	n.a.	n.a.	n.a.
Ghana	1991	n.a.	n.a.	CI	n.a.	1 million	n.a.
Guatemala	1993	n.a.	n.a.	CI	n.a.	1.9 million	n.a.
Madagascar	1990	Government	n.a.	WWF	4.5 million	n.a.	n.a.
Madagascar	1991-1994	n.a.	n.a.	CI, WWF	n.a.	3.48 million	n.a.
Mexico	1991-1996	n.a.	n.a.	CI	n.a.	3.84 million	n.a..
Panama	1992	n.a.	n.a.	CI	30 million	n.a.	n.a

Country	Start Year/ Time Period	Domestic Participants (Governments and Established Funds)	Creditors	Facilitator, Accelerator, Donor	Face Value of Debt Relief (USD)	Available Funds (USD)	Expenditure from Available Funds
Peru	1993-1995	Government, FONCODES (Social and Poverty Fund), PROFONAMPE (Protected Areas Fund), NGOs	Canada, Germany, Finland, Switzerland	NGOs	over 230 million (20-25% of which must be paid for environmental purposes)	50 million	n.a
Philippines	n.a.	Government, Foundation for the Philippine Environment	n.a.	USAID, Bank of Tokyo; WWF, USAID, "Philippine Business for Social Progress", NGOs, academia	n.a.	22 million	157 grants to NGOs and academic institutions totalling USD 3.5 million (1992-1994)
Philippines	1993	Government, Foundation for the Philippine Environment	n.a.	WWF, IBRD/GEF	19 million	17.7 million	n.a
Poland	1990	n.a.	n.a.	WWF	0.05 million	n.a.	n.a. (goal: Mazurian Lake conservation)
Poland	1990	Government	Finland	n.a.	n.a.	n.a.	n.a. (goal: up to 30% grant for import of Finnish environmental protection equipment)
Poland	1992-2010	EcoFund	France, Italy, Norway, Switzerland, Sweden, USA	WWF, Friends of the Earth, other International and Polish NGOs	571 million	571 million	grants (since 2001 also soft loans) for capital investment projects in priority areas: GHG emission reduction (including renewables and energy efficiency), transboundary air emissions, protection of biodiversity and international waters.
Senegal	1993	Government	Argentina	UNICEF	24 million	n.a	Senegal agreed to pay UNICEF the CFA equivalent of USD 11 million over three years to support UNICEF projects

Note: n.a. – Non-applicable.

ANNEX VII. POSSIBLE RATES OF GRANT IN ELIGIBLE PROJECT COST

Table VII.1. below illustrates possible options for the range and type of co-financing provided to different recipients for different types of projects. It is expressed as a share of the grant in the project costs. Eligible costs will need to be defined in the Charter of the institution that will manage the potential DFES resources. The table below serves only to indicate how the rates of the grant can be differentiated and presented. Values are presented for illustrative purposes only.

Table VII.1. Possible Options for the Range and Type of Grant Co-Financing Provided to Different Recipients for Different Type of Projects (As a Share of Eligible Project Cost)

Project Area / Recipient	Biodiversity			Climate Change			Water Resource Protection			Capacity Building		
	I*	II	III	I	II	III	I	II	III	I	II	III
Central Government	0%	75%	75%	0%	50%	75%	0%	50%	75%	0%	75%	85%
Local Authorities	0%	75%	75%	0%	50%	75%	0%	50%	75%	0%	75%	85%
Utilities (e.g. vodokanals, district heating companies)	0%		75%	0%		75%	0%		75%	0%		85%
Budgetary Institutions (e.g. schools, hospitals)	0%	85%	75%	0%	50%	75%	0%	50%	75%	0%	85%	85%
Non-Governmental Organisations	0%	85%	75%	0%	50%	75%	0%	50%	75%	0%	85%	85%
Private Sector	0%	50%	75%	0%	50%	75%	0%	50%	75%	0%	50%	85%
Private Sector: SMEs, small farmers, community groups	25%	50%	75%	25%		75%	25%		75%	25%	50%	85%

** I – potentially commercial; II - cost-recoverable; III - non-commercial.*

ANNEX VIII. GOVERNANCE AND MANAGEMENT STANDARDS OF A FINANCIAL INSTITUTION

The **responsibilities of the governing body (e.g. Governing Board)** should include:

- Approval of second order regulations;
- Defining the strategic plan of the financial institution and general policies and administrative guidelines;
- Approval of an annual operating plan and budget;
- Approval of fundraising policies and any new revenue additions;
- Final approval of the portfolio of projects recommended for funding by the executive director on behalf of the executive management unit;
- Approving project implementation and monitoring reports and annual reports submitted by the executive unit;
- Calling upon external regular audits by independent chartered accountants;
- Regular performance evaluation, appointing and dismissing of the executive director and the members of the executive management unit (upon the proposal by the director);
- Determining the remuneration of the executive management unit.

The two main considerations in designing the governing board are its **membership** and **voting system.**

Governing Board members may consist of persons representing the Kyrgyz government, including the ministries of finance and environment, the parliament, non-governmental organisations, public opinion leaders, scientific institutions, governments of creditor countries that agree to negotiate a swap with the Kyrgyz Republic, and donor countries and organisations that agree to contribute grant financing to the institution. Creditors and donors who make significant contributions to the institution would be represented with voting rights. This will be important for winning the credibility of potential contributors, but international experience also shows that care must be taken that the institution is not excessively driven by creditor/donor interests to the detriment of efficiency and local ownership (IPG, 2000). If any external third party, e.g. international non-governmental institution will be willing to arrange a trilateral swap with the Kyrgyz Republic through the institution, it may be represented in the governing board as well. All members of the Governing Board will be appointed individually for a fixed term (e.g. three years). The framework composition of the governing board and the principles of appointment and dismissal will be set up in a Charter (to allow for the first Governing Board meeting), and specific rules will be laid out in the secondary regulations, adopted by the Governing Board. The Governing Board will meet regularly (e.g. at least two times a year). Non-regular meetings may be called for in special cases.

The **Executive Director and the Executive Management Unit** will be the executive body of the institution, responsible for the management of the daily activities of the institution. Their main responsibilities may include:

- Project cycle management, including project identification, appraisal and selection;
- Preparation of a portfolio of selected projects to be submitted to the governing body for consideration and final approval;
- Conclusion of grant agreements for projects approved by the governing body;
- Disbursement and monitoring of expenditure;
- Ensuring proper and timely completion of projects by grant recipients;

- Preparation of annual reports and evaluation of completed projects.

The executive director should be a strong leader with a high reputation in the country and abroad. She/he should not be a political appointee in the sense that her/his appointment should be linked to personal qualifications, and the security of her/his job should be linked to performance rather than to the changes in the political landscapes in the Kyrgyz Republic. The staff of the executive unit should consist of highly qualified professionals recruited competitively, strictly on a merit basis. They should cover the key expertise needed to achieve the institution's objectives in an efficient way. As the institution develops, the staff should include an accountant, financial analyst, technical officers for each of the priority spending areas and one to two support staff. Legal counselling may be either hired in-house or out-sourced to independent lawyers.

ANNEX IX: PROJECT PIPELINE: BIOGAS PRODUCTION FROM ANIMAL WASTE

Chart IX.1: Relation of Investment Costs and Daily Production of Biogas to the Number of Animals

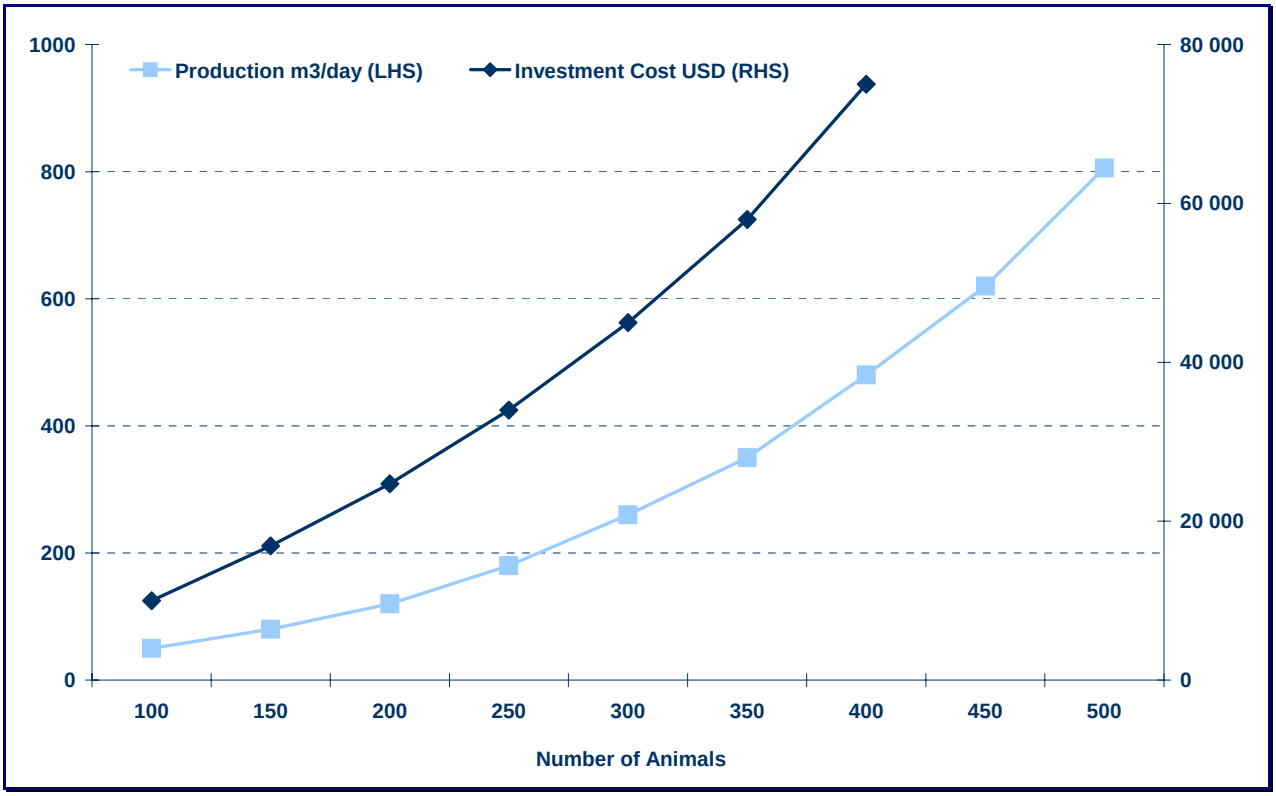
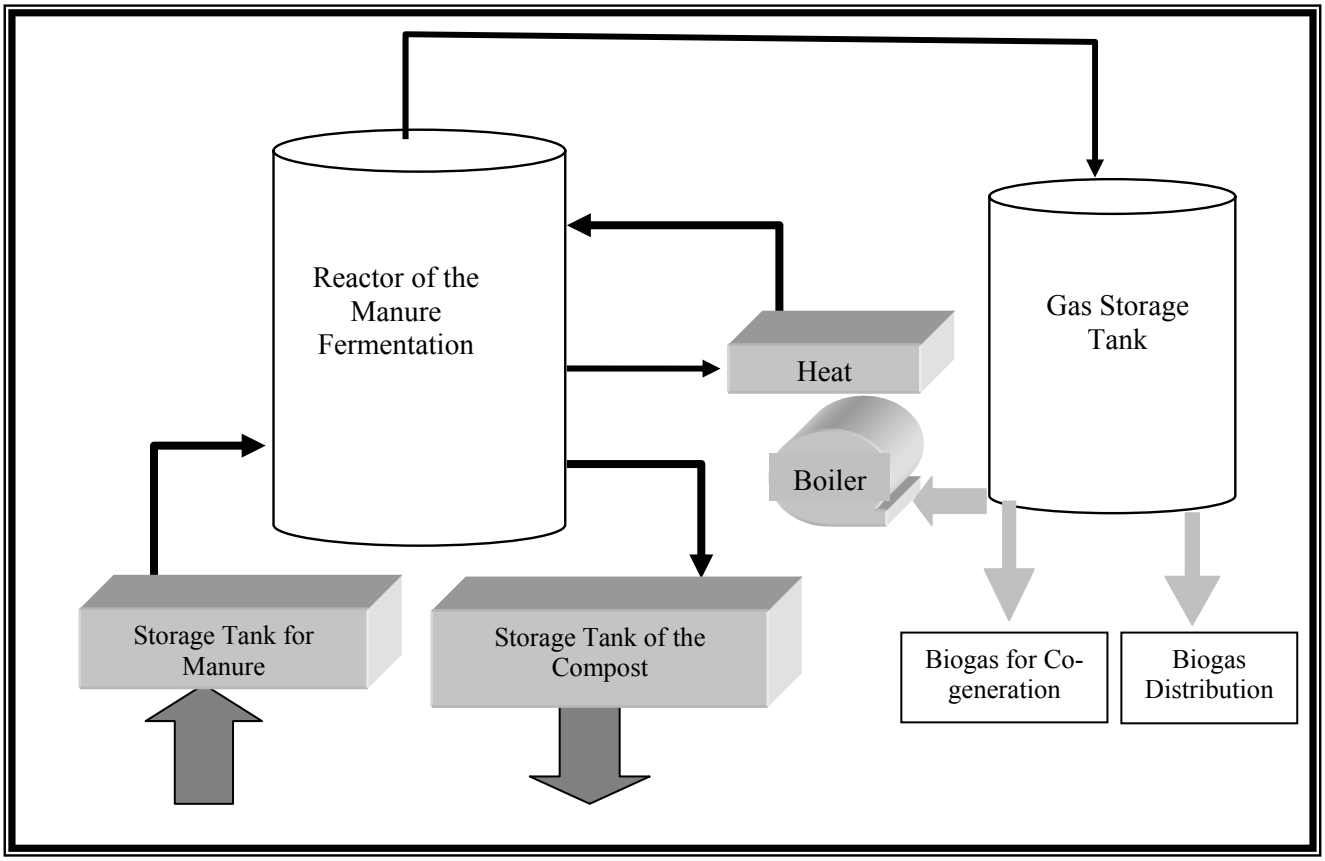


Chart IX.2: Schematic Diagram of Biogas Installation



Picture IX.1. Private Biogas Installation near Bishkek

PICTURE: PRIVATE BIOGAS INSTALLATION NEAR BISHKEK

ANNEX X: LIST OF OFFICIALS/INSTITUTIONS INTERVIEWED

Aidaraliev Asylbek A. – Adviser to the President of the Kyrgyz Republic, Extraordinary and Plenipotentiary Ambassador, Academician of the National Academy of Sciences

Albanova Asel T. – Head of Division for Cooperation with International Financial Organisations, Ministry of Economic Development, Industry and Trade of the Kyrgyz Republic

Apasov Riesbek T. – Deputy Head, Agrarian Policy, Economics, Foreign Relations and Investments Department, Ministry of Agriculture, Water Resources and Processing Industry of the Kyrgyz Republic

Asanbekov Tilek – Chief of State Inspection Activities Administration, Ministry of Ecology and Emergencies of the Kyrgyz Republic

Ashyralieva Aidai – Programme Associate, United Nations Development Programme

Azarbayejani Gholam H. – Coordinator, Regional Public Debt Project for Azerbaijan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan, International Monetary Fund

Azhigaliyev Yerken – Regional Environmental Management Officer, International Fund for Agriculture Development

Baigonchokov Mirlan K. – Head of Public Investment Programme Department, Ministry of Finance of the Kyrgyz Republic

Baihodjoev Muratbek – Advisor to the Prime Minister of the Kyrgyz Republic, Minister Extraordinary and Plenipotentiary

Bakiev Jusupbek S. – Director of the Republican Environmental Fund

Bekkulova Djiparkul – Chief of Ecological Strategy and Policy Department, Ministry of Ecology and Emergencies of the Kyrgyz Republic

Bokonbaev Kulubek J. – President of the "Kyrgyz Ecological Fund" NGO

Borboev Ashirali M. – Head of Environmental Protection and State Ecological Expertise Department, Ministry of Ecology and Emergencies of the Kyrgyz Republic

Burhanov Aitkul – Deputy Chairman of the Chief Forester, State Forestry Service of the Kyrgyz Republic

Chokoev Zair – Head of Foreign Currency Division, National Bank of the Kyrgyz Republic

Cukrowski Jacek – MDG Advisor, Poverty Reduction and Economic Development Practice Policy Support and Programme Development, United Nations Development Programme

Dairov Ysmail – Manager of the Environmental Policy Programme, Regional Environmental Centre for Central Asia

Djangaracheva Mira – Project Manager, United Nations Development Programme

Djoldosheva Dinara – Country Officer, World Bank Office for the Kyrgyz Republic

Domashov Ilia - Coordinator of Sustainable Development Programme - "BIOM" Ecological Movement

Dushebaev Bekbo D. - Deputy Director of the Republican Environmental Fund

Dzokaev Zoldoshbek S.- Director, “Ecology” Tokmok State Enterprise

Edgaro Edward M. – Adviser, Investment Round Table, Public Association

Grisa Ennio – Programme Leader, Kyrgyz-Swiss Forestry Support Programme

Januzakov Kanat Ch. – Deputy Minister, Ministry of Ecology and Emergencies of the Kyrgyz Republic

Kabanova Irina A. – Specialist of the National Statistics Committee of the Kyrgyz Republic

Korotenko Vladimir – Chairman of the “BIOM”Ecological Movement

Li Evgenij A. – Expert of the Comprehensive Development Programme Secretariat, Presidential Administration of the Kyrgyz Republic

Mamatbekov Bekbo D. – Deputy Director, Government of the Kyrgyz Republic, State Energy Agency

Obozov Alaibek – Director of the Center of the Problems of Renewable Energy Application

Rustembekov Omor – Director of the Department of Ecology and Nature Management, Ministry of Ecology and Emergencies of the Kyrgyz Republic

Sato Shinsuke – Environmental Science & Engineering Department, Overseas Consulting Administration

Satybekov Bakytbek E. – Deputy Director of Public Debt Department, Head of the Public Debt Management Division, Ministry of Finance of the Kyrgyz Republic

Schafernaker Andrzej – Country Director, USAID Enterprise Development Project, Competitive Advantage for Central Asia

Skuratowicz Jerzy – United Nations Resident Coordinator

Sultankulova Aigul – Head of the Legal and Investment Programmes Department, State Energy Agency of the Kyrgyz Republic

Surappaeva Venera – Head, Department of Monitoring and International Cooperation, State Forestry Service of the Kyrgyz Republic

Takenov Zharas – International Senior Programme Officer on Environment, United Nations Development Programme

Tashybekov Turuzbek A. – Deputy Chairman, National Center for Mountain Regions Development of the Kyrgyz Republic

ANNEX XI: PROJECT'S STEERING COMMITTEE MEMBERS

	NAME	*POSITION*
1	**Kanat Chynybaevich DZHANUZAKOV**	First Deputy Minister of Ecology and Emergencies, Co-Chairman
2	**Emirlan Toromyrzaevich TOROMYRZAEV**	First Deputy Minister of Finance, Co-Chairman (or a nominated representative)
Members of the Steering Committee		
3	**Talantbek Choyubekovich KUSHCHUBEKOV**	First Deputy Minister of Foreign Affairs (or a nominated representative)
4	**Sabyrbek Aydarkanovich MOLDOKULOV**	First Deputy Minister of Economic Development, Industry and Trade (or a nominated representative)
5	**Barataly Turanovich KOSHMATOV**	Deputy Minister of Agriculture, Water and Processing Industry (or a nominated representative)
6	**Aytkul Mustafaevich BURHANOV**	Deputy Chairman of the State Forestry Service (or a nominated representative)
7	**Bekbo Dzhumadylovich MAMATBEKOV**	Deputy Head of the State Energy Agency (or a nominated representative)
8	**Asylbek Akmatbekovich AYDARALIEV**	Head of the National Centre of Development of Mountain Regions under the President of the Kyrgyz Republic, Member of the National Academy of Science of the Kyrgyz Republic (or a nominated representative)
9	**Nelly PETKOVA**	Project Manager, EAP Task Force, Non-Member Countries Division, Environment Directorate, OECD

ANNEX XII: GLOSSARY OF MAJOR TERMS

Additionality: New investment generated through debt conversion. Debt-equity swaps can be used to promote foreign investment in priority sectors of the economy and to stimulate privatisation or non-traditional exports. Debt-for-aid/environment swaps can attract additional donor assistance.

Agreed Minute: Participating creditor countries and the debtor country usually sign an Agreed Minute at the end of a negotiation Paris Club session. This is not a legally binding document, but a recommendation by the heads of delegations of Participating creditor countries to their governments to sign a bilateral agreement implementing the debt treatment. When there are only a few creditors concerned, the Paris Club agreement is exchanged through mail between the Chair of the Paris Club and the government of the debtor country, and is called "terms of reference". In some cases, the multilateral debt agreement has also been called "memorandum of understanding".

Bilateral (Official) Debt: Loans owed to bilateral creditor governments. Official Development Assistance (ODA) loans are typically owed to aid agencies. Publicly guaranteed loans (mostly export credits) are owed to export credit agencies (ECAs).

Charter: A legal document similar to Articles of Incorporation or a Deed of Trust, but used specifically in the case of an entity which is established by an act of the country's legislation or an executive decree of its President, King, etc. (as opposed to an entity which is set up solely by private individuals or groups in civil society).

Commercial Credits: (i) Credits granted by a bank or a supplier to a debtor country for importing goods and services. When these credits are guaranteed by the appropriate institution of a Paris Club creditor, they are included in the claims treated in the context of the Paris Club. (ii) Non-ODA credits are sometimes referred to as commercial credits.

Concessional Debt: Applies to any credit whose grant element is higher than 25%. The grant element reflects the credit terms of a credit operation: interest rate, the maturity and grace period. The grant element of a loan is measured by giving the loan a present value on the basis of an actualisation rate, conventionally fixed by the OECD at 10% for the whole period of the loan.

Consolidation: Change of the terms of debt payment obligations. This can be implemented either though a change of the terms of the existing debt ("rescheduling"), or through the exchange of the debt for a new instrument (notably, through "refinancing").

Contingent Liabilities: Contingent liabilities are obligations that have been entered into, but the timing and amount of which are contingent on the occurrence of some uncertain future event. They are therefore not yet actual liabilities, and may never be if the specific contingency does not materialise.

Cut-off Date: When a debtor country first meets with Paris Club creditors, the "cut-off date" is defined and is not changed in subsequent Paris Club treatments and credits granted after this cut-off date are not subject to future rescheduling. Thus, the cut-off date helps restore access to credit for debtor countries facing payment difficulties.

Debt-for-Aid/Development Swap: The cancellation of external debt in exchange for funding for development projects (child development, education, health, conservation/environment, etc.) in the debtor country. Also often called debt-for-development.

Debt-for-Equity Swap: The cancellation of external debt in exchange for equity investment in a domestic company or privatised public enterprise.

Debt-for-Nature (Environment) Swap: The cancellation of external debt in exchange for local currency that is used to finance conservation or environmental protection projects.

Debt Reduction, DR: In the context of a concessional treatment, creditors may usually choose among a number of options to provide the required debt reduction in net present value. When the creditor chooses the "DR" option, the net present value reduction is achieved through a cancellation of part of the claims.

Debt Swap (Conversion, Exchange): The cancellation of external debt, typically at a discount from face value, in exchange for payment in local currency or another asset (bonds, privatised public assets, etc.). The terms "conversion", "exchange" and "swap" are used interchangeably.

Discount from Face Value: Percentage of reduction from the face value of debt. The inverse of the discount is the purchase price or the redemption price. Also referred to in colloquial terms as the "haircut".

Domestic Debt: Debt owed to residents of the country concerned.

Eligible Debt: Debt that may be treated in the context of a Paris Club agreement.

Endowment Fund: A fund which invests its capital and uses only the income from those investments to finance its activities.

Emerging Markets Debt Market: Also called the secondary debt market for trading of commercial debt owed by developing country governments. Emerging markets refers to low-and middle-income countries that are pursuing political and economic reforms and a more complete integration into the global economy.

Exit Rescheduling: An exit treatment is the last rescheduling a country normally gets from the Paris Club. The aim is that the debtor country will not need any further rescheduling and will thus not come back for negotiation to the Paris Club.

Face Value: The original amount of loans owed under a loan or other credit agreement, prior to debt rescheduling or reduction. Also referred to as the nominal value of debt.

Flow Treatment: A standard Paris Club agreement provides a way of tiding a debtor country through temporary balance of payments difficulties during a given period of time. This is referred to as a flow treatment, as opposed to a stock treatment.

Foreign Debt (= External Debt): Debt owed to non-residents of the country concerned.

Goodwill Clause: Clause by which Paris Club creditors agree to consider further debt relief for a borrower's debt servicing obligation falling due after the expiration of the consolidation period under a previous rescheduling agreement. The willingness is conditional upon the complete implemenmtation of all previous bilateral agreements as well as the debtor's continuation of its arrangement with the IMF.

Heavily Indebted Poor Countries (HIPC) Debt Initiative: Launched in 1996, the HIPC initiative is an agreement by the international community to help poor countries with good policy performance to escape from unsustainable debt burdens by providing comprehensive debt relief. The enhanced HIPC framework, agreed in 1999, lowers the qualifying criteria, speeds up the delivery process and creates an explicit link to poverty reduction. About 36 countries are HIPC eligible, mostly in sub-Saharan Africa.

Inflationary Effect: A side effect produced by the release of large amounts of currency into the local financial market. If the amount of money increases in a country, people have an easier or cheaper access to money and therefore tend to buy more (increased demand). If the demand for goods and services increases, prices increase, if prices increase, salaries tend to go up, if salaries go up, prices follow, etc. and this generates inflation.

Internal Rate of Return (IRR): The discount rate which would give a zero net present value for the investment.

Moral Hazard: The possibility that the signal or expectation of possible future government support may induce an undesirable change in behaviour by management of an enterprise or bank, for example by engaging in more risky activities because some of the potential losses are seen as being effectively underwritten by the government.

Multilateral Debt: Debt owed to multilateral organizations, such as the World Bank, regional development banks, and other multilateral and intergovernmental agencies. Excluded are loans from funds administered by an international organisation on behalf of a single donor government (these are classified as loans from governments).

Net Present Value (NPV): The net present value (NPV) of debt is a measure that takes into account the degree of concessionality. It is defined as the sum of all future debt-service obligations (interest and principal) on existing debt, discounted at the appropriate market rate. Whenever the interest rate on a loan is lower than the market rate, the resulting NPV of debt is smaller than its face value.

Non-Paris Club Creditors: Debt owed to bilateral creditors that are not members of the Paris Club of creditors.

ODA Credits: "Official Development Assistance" ("ODA") credits are defined by the OECD as credits with a low interest rate and aimed at development.

Official Creditor: This covers a) official bilateral creditors (governments or their appropriate institutions), including Paris Club members; b) multilateral creditors (international institutions such as the IMF, the World Bank or regional development banks).

Paris Club: The Paris Club is an ad hoc group of official bilateral creditors that meet once a month to negotiate rescheduling agreements with debtor countries. The French Treasury serves as the Secretariat for the Paris Club.

Participating Creditor Countries: The creditor countries that sign an Agreed Minute. They are members of the Paris Club or other official creditors.

Primary Balance: The overall balance excluding interest payments.

Purchase Price: The price in percentage terms paid to purchase debt from a creditor. The purchase price is the inverse of the discount from face value.

Redemption Price (Rate): The price in percentage terms at which debt is converted into another asset.

Refinancing: Creditor countries may choose to apply the terms of a Paris Club agreement either through a refinancing (they make a new loan that is used to repay the existing debt) or though a change of the terms and conditions of the existing debt (rescheduling).

Rescheduling: (i) Consolidation, change of the terms of debt payment obligations; (ii) when opposed to concessional treatment, non-concessional consolidation; (iii) when opposed to deferral or reprofiling, the part of a consolidation with the longer terms of repayment (iv) when opposed to refinancing, consolidation through a change of the terms and conditions of the existing debt.

Revolving Fund: A fund that provides for the receipt of new resources on a regular basis – such as proceeds of special taxes designed to pay for conservation programmes – which can replenish or augment the original capital of the fund and provide a continuing source of money for specific activities.

Round-Tripping: Re-conversion of local currency debt conversion proceeds into hard currency for illegal gain. By converting a debt, you help the indebted country to save hard currency. But if you change the debt conversion proceeds that you have received in local currency back into hard currency, the initial beneficial effects of the debt conversion on a country's balance of payments disappears. You have made a "round trip".

Secondary Debt Market: A market for trading discounted developing country debt instruments owed to commercial creditors. Also called the emerging markets debt market.

Sinking Fund: A fund that disburses its entire principal and investment income over a fairly long fixed period, e.g., 10 years or more.

Stock Treatment: As opposed to standard flow treatments, some Paris Club treatments apply not only to the payments falling due in a particular period of time, but to the whole stock of debt from which those payments fall due. The intention of any agreement which deals with the stock of debt in this way is to provide a country with a final treatment by the Paris Club called an exit rescheduling.

Sovereign Debt: Debt owed by governments or by publicly owned agencies.

Three-Party Debt Swap: Debt conversions involving negotiations between a debtor government, an investor and a creditor.

Trust Fund (also referred to as a "trust"): A legal structure by which money or other property is held, invested, and spent by a board of trustees or board of directors exclusively for a specific charitable purpose, as defined in a charter or deed of trust. Note: In common law countries, trust funds can also be established for specific individual beneficiaries, and be administered by an individual trustee, rather than by a board of trustees. A trust fund in this general sense can take one of several different legal forms, depending on the legal system of the country involved.