Global Environment Facility

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April 30, 2007

Dear Council Member,

The World Bank, as the Implementing Agency for the project, ***Moldova: Environmental Infrastructure Project - under Strategic Partnership Investment Fund for Nutrient Reduction in the Danube River Basin and the Black Sea***, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with the World Bank procedures.

The Secretariat has reviewed the project document. It is consistent with the proposal approved by the Council in May 2003, and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the World Bank satisfactorily details how Council's comments and those of the STAP have been addressed. I am, therefore, endorsing the project document.

We have today posted the proposed project document on the GEF website at www.theGEF.org. If you do not have access to the Web, you may request the local field office of the World Bank or UNDP to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

cc: Alternates, Implementing Agencies, STAP

REQUEST FOR CEO ENDORSEMENT
UNDER THE GEF TRUST FUND

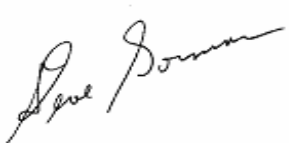
GEFSEC PROJECT ID: P074139
IA/EXA PROJECT ID: 1542
COUNTRY: Moldova
PROJECT TITLE: Environmental Infrastructure
GEF IA/EXA: World Bank
OTHER PROJECT EXECUTING AGENCY(IES): Agency for Construction & Territorial Development of Moldova (ACTD)
DURATION: 4 years
GEF FOCAL AREA: International Waters
GEF STRATEGIC OBJECTIVES: IW-1
GEF OPERATIONAL PROGRAM: OP8
COUNCIL APPROVAL DATE: (funding approved for the Black Sea/Danube Partnership Investment Fund for Nutrient Reduction in May 2003)
COUNCIL APPROVED AMOUNT*: N/A
CEO ENDORSEMENT AMOUNT*:$4.562 MILLION
EXPECTED AGENCY APPROVAL DATE: May 29, 2007
EXPECTED SUBMISSION DATE OF MID-TERM REPORT: December 15, 2009
EXPECTED GRANT CLOSING DATE: December 15, 2011
EXPECTED SUBMISSION DATE OF TERMINAL EVALUATION/ PROJECT COMPLETION REPORT: June 15, 2012

FINANCING PLAN ($)		
	PPG**	Project*
GEF Total		4,562,000
Co-financing	(provide details in Section d): Co-financing)	
GEF IA/ExA		3,208,000
Government		2,070,000
Others		60,000
Co-financing Total		5,338,000
Total		9,900,000
Financing for Associated Activities If Any:		

* For multi-focal area projects, indicate agreed split between focal area allocations
** May refer also to previous PDF grants
***Projects that are jointly implemented by more than one IA or ExA

FOR JOINT PARTNERSHIP***		
GEF PROJECT/COMPONENT ($)		
(Agency Name)	(Share)	(Fee)
(Agency Name)	(Share)	(Fee)
(Agency Name)	(Share)	(Fee)

Approved on behalf of the World Bank. This proposal has been prepared in accordance with GEF policies and procedures and meets the standards of the GEF Project Review Criteria for CEO endorsement.



Steve Gorman
Executive Coordinator
Date: April 26, 2007

Project Contact Person:
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Takao Ikegami, Team Leader
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1. **FINANCING** (for all the tables, expand or narrow table items as necessary)

a) PROJECT COST

Project Components/Outcomes	Co-financing ($)	*GEF ($)*	**Total ($)**
1-A. Wastewater/Sewer/PS/Water Supply	4,838,000	3,050,000	7,888,000
1-B Engineering Consultants & TA	470,000	1,012,000	1,482,000
2. Dissemination and Replication of CW		100,000	100,000
3. Institutional Strengthening		150,000	150,000
4. Project Management budget/cost	30,000*	250,000	280,000
Total Uses of Funds/project costs	5,338,000	4,562,000	9,900,000

*The GEF project will share the Project Implementation Unit with the IDA-supported Pilot Water Supply and Sanitation Project which provides a total of $450,000 towards management costs and has supported preparation activities during the preparation of the GEF project (no PDF-B funds were used)

b) **PROJECT MANAGEMENT BUDGET/COST**[1]

Component	Estimated Staff weeks	GEF($)	Other Sources ($)	Project Total ($)
Locally recruited personnel	194	207,480	25,000	232,480
Internationally recruited consultants*	0	0	0	0
Operating costs		23,400	0	23,400
Travel		0	4,800	4,800
Miscellaneous		19,120	200	19,320
Total		250,000	30,000*	280,000

* The GEF project will share the Project Implementation Unit with the IDA-supported Pilot Water Supply and Sanitation Project which provides a total of $450,000 towards management costs and has supported preparation activities during the preparation of the GEF project (no PDF-B funds were used).

c) CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	**Estimated Staff Weeks**	**GEF($)**	**Other Sources ($)**	**Project Total ($)**
Personnel				
Local consultants*	160	150,000	10,000	160,000
International consultants*	343	800,000	400,000	1,200,000
Total		950,000	410,000	1,360,000

d) CO-FINANCING

Name of Co-financiers (source)	Classification	Type	At Concept ($)	At Work Program ($)	At CEO Endorsement ($)*
IDA	IA	credit			3,208,000
Government of Moldova	government	cash			1,300,000
Soroca Municipality	local govt.	in-kind			770,000
Others (IDA-supported water sector strategy)	Govt/IA	cash			60,000
Total Co-financing					5,338,000

* Reflect the final commitment amount of co-financiers and attach documents from co-financiers confirming co-financing commitments. Describe any difference of final commitment compared to those expressions of interest at concept stage or at work program inclusion.

[1] For all consultants hired to manage project or provide technical assistance, please attach a description in terms of their staff weeks, roles and functions in the project, and their position titles in the organization, such as project officer, supervisor, assistants or secretaries.

2. RESPONSE TO REVIEWS

a) COUNCIL

n/a

b) GEF SECRETARIAT

Comments received at pipeline entry	Response
1. Is this one country (Moldova) or two countries (Ukraine)?	The project is only for Moldova as it was decided that single-country interventions were more effective than a bi-national project and because this GEF project is closely linked to the IDA-funded Pilot Water Supply and Sanitation project for Moldova. However, the Bank team is also working on a waste water treatment project in Odessa, Ukraine that will be strongly linked to the Moldova GEF project as well as an IBRD loan for water and sanitation.
2. Explain the different schedule with the infrastructure project	The IDA credit for Moldova was always planned ahead of the GEF intervention because in the first years of implementation it was to focus mostly on water supply and water utility management. The GEF concept took longer to prepare in part because of the need to agree with the government on the proper technology (constructed wetlands) and site (Soroca) to address nutrient reduction in a cost effective manner.
3. Moldova and Ukraine projects should jointly come under the partnership	Both projects will be funded by the Black Sea/Danube Partnership Investment Fund for Nutrient Reduction.
4. Link to new EU water directive should be included	The project supports the overall goals of the EU water framework directive and helps Moldova to move in that direction (Moldova is not bound to meet the EU WFD yet). For example, the project meets the design requirements of the EU standards for total Nitrogen removal (70%). Total Phosphorus removal achieved by the project is only slightly lower than the EU standards, because the CW is designed to reduce only bio-Phosphorus due to economic considerations.
Comments received in March 2007	**Response**
5. The size of the Constructed Wetlands (CW) should be indicated.	The dimension of CW is indicated in the footnote at page 18 of the Project Document.
6. Is the CW to be scaled up in future?	The project was designed in a manner that the remaining area of 4.5 ha could easily accommodate a growth in industrial and domestic wastewater in the future.
7. Does monitoring start during the first year?	Not really because the CW is expected to operate only in the end of the third year.
8. Financing ratio should be min. 1:1	The project has now a financing ratio of 1 (GEF) : 1.17 (non-GEF)
9. Replication should be well explained	IDA is financing a feasibility study for 10 towns and CW will be adopted as appropriate technology in the feasibility study.

C) REVIEW BY EXPERT FROM STAP ROSTER (IF REQUIRED)

Richard Kenchington
RAC Marine Pty Ltd
PO Box 588
Jamison
ACT 2614
Australia

Scientific and technical soundness

The scientific and technical basis of the project is sound. It addresses the urgent and critical issue of reducing sewage and wastewater pollution of the Nistru River. The project complements the current GEF agricultural pollution control project to deliver reduction of nutrient pollution of the river which flows into the Black Sea. The design of this project and builds on and reflects lessons and experience in many similar projects in effective low cost/low technology urban wastewater treatment.

The technologies for constructed wetlands are established and effective and appropriate to the staff competence and current economic operational context of the Soroca Apa canal.

Given the estimate that less than 5% of wastewater treatment plants in Moldova are meeting effluent standards, a demonstration plant and staff capacity building for low cost water treatment are important in the national context. The linkage to a government project to repair seriously degraded sewerage and pumping infrastructure suggests that the project should achieve readily demonstrable outcomes that are replicable in Moldova and in similar situations elsewhere.

Global environment benefits and costs

The project will improve downstream water quality in the Nistru catchment area. The Nistru River flows into the Black Sea. The project has good prospects of achieving its objectives and leading to further national scaling-up delivering clear global benefits by addressing a component of nutrient pollution of the Black Sea. The design of the project is thus linked to the GEF supported Strategic Action Plan for the Protection and Rehabilitation of the Black Sea" (BSSAP).

The context of GEF goals and guidelines

The project clearly addresses the objectives of the integrated land and water multiple focal area. The measures to reduce pollution to the Black Sea and Nistru River relate to Operational Program 8, the Waterbody-based Operational Program. It addresses the objectives of providing a basis for achieving sustainability, improving human and environmental health and economic outcomes and it applies the guidelines with respect to incremental costs and the log-frame.

Regional Context

The project has high priority in the context of human and environmental health of Moldova and Ukraine because the Nistru catchment water body that is heavily used in both countries for drinking water production. The project is consistent with a Joint Memorandum of Understanding between Moldova and Ukraine on transnational water quality management and with Moldova's role in several cooperative agreements relating to the Black Sea and the Danube River.

Replicability

The project is based on established methods and it as it achieves success and develops operational capacities of apa canal staff it is likely to be replicated with a degree of urgency in order to enable Moldova to meet its targets under the Millenium Development Goals.

Sustainability

This proposal addresses an urgent priority of restoration and technological catch-up in water treatment after decades of deterioration. The Government of Moldova is committed through national policy and regional and international agreements to sustain and extend water treatment capacity and performance.

Contribution to future strategies and policies

As discussed above this project addresses core elements of national and regional policies and agreements. The constructed wetland to treat the waste of the current sewered population of 22,000 will occupy just over one third of the area of the site for the treatment plant. There is thus substantial capacity for expansion and for establishment of further and more advanced treatment facilities as needs and capacities develop.

Involvement of stakeholders

The project proposal reflects community support built through information, education and demonstration of the needs for and benefits of water treatment. Apparent current willingness to pay to support water quality benefits that accrue to downstream communities is an important and attractive feature of the proposal which also makes reasonable provision for further information dissemination, replication and communication. This augurs well for sustainability and extension.

Risk assessments

I am not familiar with the field operating situation but the assessment of modest risk appears reasonable and perhaps cautious in the light of the reported government and community support for addressing the issue of water treatment and water quality. I note that the GEF Agricultural Pollution Control Project is reported to be operating successfully. On this basis the risks seem to be reasonably discussed and I concur with the assessments

Costs

Subject to the qualification above, the amounts and relativities of funding proposed for the various components appear reasonable..

Conclusion

This is a soundly designed and important pilot project using tried and appropriate technologies to address an urgent public and environmental health issue in one of the poorest countries in Europe. It has government and community support and presents acceptable levels of risk. I recommend that it should

proceed.

Richard A Kenchington

11 February 2007

Attachment:

1. PAD document with minor edits in Word edit.

World Bank Response to STAP Reviewer Comments

The Bank team thanks Mr. Kenchington for his positive review of the project scope and design and agrees with the reviewer especially on the importance of the project replication potential given the large number of non-functioning wastewater treatment plants, and the project innovation aspect since while the technology is proven, it is the first project of its kind in Moldova. Successful implementation of this project would appeal donor community to increase its assistance in the water and wastewater sector in near future.

3. JUSTIFICATION FOR MAJOR CHANGES IN THE PROJECT, IF ANY[2]

N/a

4. REQUIRED ATTACHMENTS

a) Project Appraisal Document
b) Report on the Use of Project Preparation Grant
c) Confirmed letters of commitments from co-financiers (with English translations)
d) Agency Notification Template on Major Project Amendment and provide details of the amendment, if applicable.

[2] Provide justifications for any major amendments in the project, including an increase of project amount exceeding 5% from the amount approved by the Council. Justification for such amendments and the project document will be circulated to the Council for a four-week review period. For procedures to the approval for major amendments, refer to the Council paper: *Project Cycle Update: Clarification of Policies and Procedures for Project Amendment and Drops/Cancellations, GEF/C.24/Inf.5*

Document of
The World Bank

Report No: 38586-MD

PROJECT DOCUMENT

ON A

PROPOSED GRANT FROM THE
GLOBAL ENVIRONMENT FACILITY TRUST FUND

IN THE AMOUNT OF USD 4.562 MILLION

TO

MOLDOVA

FOR AN

ENVIRONMENTAL INFRASTRUCTURE PROJECT

APRIL 26, 2007

CURRENCY EQUIVALENTS
Exchange Rate Effective April 13, 2007

Currency Unit = Moldova Lei
MDL 12.9 = US$1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ACTD	Agency for Construction and Territorial Development
AS	Activated Sludge
BOD	Biological Oxygen Demand
BSAP	Black Sea Convention
CFAA	Country Financial Management Accountability Assessment
CSO	Customer Service Office
CW	Constructed Wetlands
DANCEE	Danish Cooperation for Environment in Eastern Europe
DO	Development Objectives
EAP	Environmental Assessment Program
EBRD	European Bank for Reconstruction and Development
FSU	Former Soviet Union
GEF	Global Environment Facility
GNP	Gross National Product
ICPDR	International Commission for Protection of the Danube River
IDA	International Development Association
IFR	Interim Un-audited Financial Report
IP	Implementation Progress
I-PRSP	Interim Poverty Reduction Strategy Paper
MAC	Moldova Apa Canal Association
MDL	Moldova Lei
MSIF	Moldova Social Investment Fund
MENR	Ministry of Ecology and Natural Resources
MDG	Millennium Development Goals
MOAG	Ministry of Agriculture
MOH	Ministry of Health
N	Nitrogen
NGO	Non-Governmental Organization
O&M	Operations and Maintenance
OECD	Organization of Economic Co-Operation and Development
OSCE	Organization for Security and Cooperation in Europe
P	Phosphorus
PIU	Project Implementing Unit
PSP	Private Sector Participation
PWSSP	Pilot Water Supply and Sanitation Project
SBR	Sequencing Batch Reactor
STAP	Scientific and Technical Advisory Panel
USAID	United States Agency for International Development
UNECE	United Nations Economic Commission for Europe
VAT	Value Added Tax
WWTP	Wastewater Treatment Plant

Vice President:	Shigeo Katsu
Country Manager/Director:	Paul G. Bermingham
Sector Manager:	Sumter Lee Travers
Task Team Leader:	Takao Ikegami

MOLDOVA
ENVIRONMENTAL INFRASTRUCTURE PROJECT

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IBRD Map No. 35332

MOLDOVA

ENVIRONMENTAL INFRASTRUCTURE PROJECT

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSSD

Date: April 26, 2007	Team Leader: Takao Ikegami
Country Director: Paul G. Bermingham	Sectors: Sewerage (100%)
Sector Manager/Director: Sumter Lee Travers	Themes: Pollution management and
Project ID: P074139	environmental health (P)
Focal Area: International waters	Environmental screening category: Partial
Lending Instrument: Specific Investment Loan	Assessment

Project Financing Data

[ ] Loan [ ] Credit [X] Grant [ ] Guarantee [ ] Other:

For Loans/Credits/Others:
Total Bank financing (US$m.): 0.00
Proposed terms:

Financing Plan (US$m)

Source	Local	Foreign	Total
BORROWER/RECIPIENT	2.130	0.000	2.130
Global Environment Facility (GEF)	1.550	3.012	4.562
GLOBAL ENVIRONMENT - Associated IDA Fund	1.865	1.343	3.208
Total:	5.545	4.355	9.900

Borrower:
Government of Moldova
Moldova

Responsible Agency:
Agency for Construction and Territorial Development (ACTD)
str. Cosmonautilor 9, bir. 600
MD 2012, Chisinau
Moldova
Tel: 22-86-08; 22-16-67Fax: 22-07-48; 21-06-60

Estimated disbursements (Bank FY/US$m)

FY	2008	2009	2010	2011					
Annual	0.500	1.780	1.780	0.502					
Cumulative	0.500	2.280	4.060	4.562					

Project implementation period: Start October 15, 2007 End: December 15, 2011 Expected effectiveness date: September 28, 2007 Expected closing date: December 15, 2011

Does the project depart from the CAS in content or other significant respects? ***Ref. PAD A.3***	[ ]Yes [X] No
Does the project require any exceptions from Bank policies? ***Ref. PAD D.7*** Have these been approved by Bank management? Is approval for any policy exception sought from the Board?	 [ ]Yes [X] No [ ]Yes [ ] No [ ]Yes [X] No
Does the project include any critical risks rated "substantial" or "high"? ***Ref. PAD C.5***	[X]Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation? ***Ref. PAD D.7***	[X]Yes [ ] No

Project development objective ***Ref. PAD B.2, Technical Annex 3***
The key development objectives of the project are: (i) improve the quality of sanitation services in Soroca; (ii) reduce the discharge of pollutants, including nutrients, from Soroca municipal sources that flow into the Nistru River and, subsequently, into the Black Sea; and (iii) demonstrate viable nutrient reduction strategies and technologies from municipal sources for the benefit of Moldova and Black Sea region.

Global Environment objective ***Ref. PAD B.2, Technical Annex 3***
Same as the Project Development Objective.

Project description *[one-sentence summary of each component]* ***Ref. PAD B.3.a, Technical Annex 4***
Component 1-A: Wastewater management in the Soroca municipality
Component 1-B: Engineering Consultant and TA
Component 2: Dissemination and Replication
Component 3: Institutional Strengthening
Component 4: Project Management

Which safeguard policies are triggered, if any? ***Ref. PAD D.6, Technical Annex 10***
Environmental Assessment (OP/BP/GP 4.01)
Projects on International Waterways (OP/BP/GP 7.50)

Significant, non-standard conditions, **if any**, for:
Ref. PAD C.7
Board presentation:
Not applicable.

Loan/credit effectiveness:
Not applicable.

Covenants applicable to project implementation:
Not applicable.

A. STRATEGIC CONTEXT AND RATIONALE

1. Country and sector issues

The Republic of Moldova is a small, landlocked country situated between the western border of Ukraine and the eastern border of Romania. The population of 4.3 million is predominantly rural with 60% of the population living in towns and villages of fewer than 10,000 people and approximately 20% living in the capital Chisinau. Moldova became independent in 1991 as part of the break-up of the Former Soviet Union (FSU) and its per capita GNP of US$ 720 makes it the poorest country in Europe. Independence was accompanied by the disruption of trade and budget subsidies, price shocks from liberalization of the economy, conflict with Transnistria in 1992 and a series of natural disasters. Since 2000, the economy has improved, fueled by remittances from those working abroad and the poverty rate has been halved from 70% to 35%. However, for those remaining in Moldova job opportunities are still limited.

The Nistru River (also known as the Dniester River), a transboundary river with a length of 1352 km, starts in the Ukrainian Carpathians, flows through Moldova and reaches Ukraine again near the Black Sea. More than 5 million people populate its basin. In the FSU, the water basin was managed as one system, but since 1991 Moldova and Ukraine have separately managed their respective parts. The Nistru River is the main source of drinking water for Moldova and for a significant part of Ukraine, including the City of Odessa. The Nistru is under environmental pressure from municipal and industrial point sources and from agricultural non-point sources. Nistru's pollution has an international dimension that affects Moldova, Ukraine and the Black Sea.

The wastes borne by the Nistru River ultimately discharge into the Black Sea and adversely impact its ecology. Moldova is one of 17 countries in the Black Sea basin, which covers about one third of continental Europe and houses 162 million people. Once a rich fishing ground and vacation site for millions of people, the Black Sea ecosystem has been overwhelmed by excess levels of nutrients from agricultural runoff and industrial and municipal wastewater discharges. Areas of the Black Sea have become eutrophied due to the nutrient loads and the loss of wetlands that once served as a filter.

The Government of Moldova strongly supports the GEF Environmental Infrastructure Project to fulfill its obligations under several international agreements to protect transboundary water courses from pollution. First, an agreement signed with Ukraine in 1995, calls on the signatories to cooperate in joint use and protection of transboundary water courses and transnational lakes. This agreement followed the spirit and intent of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes adopted in Helsinki in March 1992 and made effective in October 1996. Second, the Government of Moldova signed a *Joint Memorandum of Understanding,* dated April 1997, on cooperation with Ukraine for development of a transnational water quality management plan for the Nistru River Basin. Third, Moldova is a member of the Danube River Commission, an unofficial member of the Black Sea Commission and a party to many Black Sea/Danube cooperation agreements. Moldova and Ukraine have been working on a cooperative project under the auspices of the Organization for Cooperation and Security in Europe (OSCE) and the UN Economic Commission for Europe (UNECE).

The quality and reliability of Moldova's water supply and wastewater services are generally deficient. The existing wastewater facilities have insufficient capacity and have deteriorated after decades of little maintenance. It is estimated that only four out of the 100 existing wastewater treatment plants are meeting effluent standards. The quality of drinking water delivered to consumers is generally poor and service is intermittent. Approximately 80% of urban residents are connected to centralized water supply networks and 63% to sewerage. The coverage in small and medium-sized towns for water supply is about 60% and for sewerage about 35%.

The central authority responsible for the development and promotion of state policy for water supply utilities is the Agency for Construction and Territorial Development (ACTD). The Ministry of Ecology and Natural Resources (MENR) is responsible for environment and natural resources. The Ministry of Health monitors water quality through its Public Health Bureaus. The Ministry of Agriculture deals with agricultural non-point source pollution and with the design of rural water schemes that are locally operated. In small and medium sized cities, water and wastewater systems are operated by the semi-autonomous Apa Canals, which are responsible to their respective local governments and are represented at the national level by the Moldova Apa Canal Association (MAC). Other stakeholders are represented through the more than 100 national environmental NGOs that are officially registered in Moldova. ACTD was designated as the agency responsible for setting and implementing policy for water and sanitation services for both urban and rural areas under Decree No. 1406 dated December 30, 2005, which constitutes the Plan for Water Supply and Sewerage in Localities of the Republic of Moldova up to 2015.

In 1997, the European Bank of Reconstruction Development (EBRD) approved a loan of USD 22.75 million to replace sections of the Chisinau water network, and later the Danish Cooperation for Environment in Eastern Europe (DANCEE) approved a loan to finance water supply systems in three rural villages. In 2003, the World Bank approved a US$ 12 million IDA Credit for the Pilot Water Supply and Sanitation Project targeting the cities of Balti, Cahul, Orhei, Soroca, and Stefan Voda. With the exception of these three projects, Moldova has not received any significant investment financing and now runs the risk of not meeting its targets under the Millennium Development Goals. Wastewater investments are lagging even further behind because the emphasis has been to first rehabilitate existing water supply systems to make production and consumption more efficient.

The key sector issues include weak Apa Canals that cannot collect sufficient revenue to pay for adequate operations and maintenance let alone for investment; excessively politicized tariff setting; and a lack of proper regulation. The Government is cognizant of the sector flaws. In order to update its sector development strategy, the Government organized a strategy workshop on October 26, 2006 that gathered all national stakeholders and many international agencies. The Workshop adopted a resolution that, among other matters, appealed to all external financial agencies to assign high priority to the water and wastewater sector given the fact that so little was invested over the last decade.

The Trans-boundary Diagnostic Analysis, carried out on the basis of a pollution source inventory for the Black Sea Environmental Program, reveals that Moldova accounts for about 2% of the total nutrient load into the Black Sea. Agriculture accounts for the bulk of Moldova's emissions of nitrogen and phosphorus, and municipal wastes are second in importance. The EU Nitrate Directive notes that investments dedicated to urban wastewater treatment will have a limited impact on reducing nutrients if agricultural nutrient loads are not reduced. The reduction of agricultural-source nutrients is the global environmental objective of the ongoing GEF-funded Moldova Agricultural Pollution Control Project (US$4.95 million, 2004). Now, Moldova wishes to complement those efforts by focusing on reducing nutrient loads from urban areas. The proposed project would pioneer the effort to reduce municipal N and P emissions. The project's impact is expected to be multiplied through the replication of its appropriate, low-cost wastewater treatment technology.

2. Rationale for Bank involvement

The Bank's Country Assistance Strategy (CAS) has identified poverty reduction, economic growth and public sector reform as Moldova's key challenges. The CAS assigns priority to the protection of the country's ecology and rich biodiversity from mismanagement of land resources, land-based pollution and impacts of the tourism industry. The proposed project would target pollution from the town of Soroca that contributes to the environmental degradation of a stretch of the Nistru River running 550 km downstream of Soroca before entering the Black Sea. The project is consistent with the CAS for Moldova

and the country's National Water Action Plan. The project also complements the Bank's GEF project for Agricultural Pollution Control (US$4.95 million, 2004), the objective of which is to reduce agricultural discharges of nutrients into local water bodies and ultimately into the Black Sea.

The Bank's support through sector work and the Pilot Water Supply and Sanitation Project (PWSSP) is assisting the improvement and reform of Moldova's water and sanitation sector. The Bank's active involvement aims at reversing water quality deterioration, and the threat to public health and environmental quality. The proposed GEF project would leverage the Bank's ongoing initiatives by (i) expanding and strengthening the physical and sector objectives of the PWSSP; (ii) improving the probability of obtaining donor commitments; and (iii) assisting Moldova in addressing transboundary environmental problems with Ukraine and the regional pollution of the Black Sea.

3. Higher level objectives to which the project contributes

The higher level objectives of the project are to (i) reduce the nutrient load of the Nistru River by reducing organic pollution from the Soroca municipal sewer system, and (ii) improve the water quality of the Black Sea.

The project objectives comply with GEF eligibility criteria and its Operational Strategy for International Waters, as well as for the Water body Based Operational Programme-8 (OP-8) through (i) the focus on addressing specific impairments of the water body, such as reducing eutrophication or toxic substances on inland waters; and (ii) support for the learning process for countries to work cooperatively and collectively in addressing imminent threats to their transboundary water resources.

GEF support is justified by the expected reduction of nutrients discharged to a tributary to the Black Sea; by the demonstration and replication effect of the proposed interventions; and by the training and awareness-raising impacts of the project. The proposed project will help prioritize environmental concerns as identified in the Transboundary Diagnostic Analysis, the Black Sea Strategic Action Plan and a definitive study that was conducted under the GEF project.

Moldova, as one of the 17 signatories of the GEF Strategic Partnership, would contribute to meeting the objectives through the Soroca wastewater treatment project in a number of ways. Specifically, the project would directly support the objectives of the Black Sea/Danube Strategic Partnership-Nutrient Reduction Investment Fund through: (a) its reduction of nutrient loads on the transboundary Nistru River and on the Black Sea; and (b) its potential for replication of its nutrient reduction that would benefit Moldova, the neighboring Ukraine, and other countries within the Strategic Partnership. The potential replication could be substantial given that Moldova alone has 100 existing wastewater treatment works of which only four meet their effluent standards. The demonstration effect from a successful Soroca project with its appropriate technology would offer a low cost alternative to the rehabilitation of many of the existing plants that are based on high-cost and energy intensive technologies. In particular, the towns of Criuleni, Otaci, Rezina, and Soldanesti on the Nistru River lack wastewater treatment as do the towns of Calaraşi and Ungheni. These six are potential candidates for the technology used for the Soroca project.

The dissemination and replication of the Soroca project's experience will be facilitated by Moldova's membership in the Istanbul Commission to which the outcome of the project will be reported. Through this mechanism, the Soroca technology could catalyze investment projects in other member states whose effluents and nutrient loads reach the Black Sea. Soroca is a good example of one of the three types of project that can be financed by the Investment Fund: that of wastewater treatment in communities and industries, for reduction of nutrient discharges. The Soroca project also complies with the Investment Fund emphasis on monitoring and evaluation of nutrient reductions from individual projects.

The project will also link to the GEF Black Sea Regional project, Danube Convention-supported dissemination activities and the GEF-funded IW Learn initiative. In this regard, the project will include: setting up a Project website consistent with the GEF IW: LEARN guidance, participation of project staff in IW: LEARN activities, participation in GEF International Waters portfolio conferences, and participation in Black Sea coordination meetings.

B. PROJECT DESCRIPTION

1. Lending instrument

The lending instrument would be a grant from GEF to the Government of Moldova through the Ministry of Finance to the Soroca water and wastewater Apa Canal.

2. Program objective and Phases

NA

3. Project development and global environmental objectives and key indicators

The overall project development and global environmental objectives of the proposed project are to: (i) improve the quality of sanitation services in Soroca; (ii) reduce the discharge of pollutants, including nutrients, from Soroca municipal sources that flow into the Nistru River and, subsequently, into the Black Sea; and (iii) demonstrate and disseminate through feasibility studies and workshops, cost-effective and affordable technologies for municipal wastewater treatment for the potential benefit of similar projects for Moldova's existing wastewater treatment plants, for those towns in Moldova that have no wastewater treatment, and for the countries that drain into the Black Sea.

The key indicators are:

- The reduction of biological and nutrient wastes discharged from Soroca; and
- The number of events for dissemination and replication of CW technology pioneered in Soroca.

Monitoring and performance indicators will include:

- the volume of wastewater effectively treated before and after the project completion (m3/year);
- the reduction of pollutants (including suspended solids, BOD and P and N nutrients), calculated as the difference between the pollutants discharged before and after the project (tons/year); and
- the number of proposed replications of the low-cost wastewater treatment technology in feasibility studies planned for Moldova and its neighboring countries.

4. Project components

The Soroca municipality was selected because: (i) the Government has assigned high priority to treating Soroca's waste water that is presently discharged untreated into the Nistru river that separates much of Moldova and Ukraine, and the Government wishes to honor its international commitment with Ukraine; and (ii) Soroca has improved its water supply system under the PWSSP under which participating Apa Canals are committed to collect tariffs to cover its operations and maintenance costs.

The project consists of the following components:

Component 1-A: Wastewater management in Soroca (US$7.89 million).

This component would finance: (i) the rehabilitation of wastewater collection system, necessary sewerage pressure pipelines and the construction of wastewater treatment facility using constructed wetlands technology for the municipality of Soroca; and (ii) six months' operations of the facility in order to train the Apa Canal staff in the proper operations and maintenance of the facility.

Component 1-B: Engineering Consultant and TA **(**US$1.48 million).

This component would support: (i) Engineering services for WWTP and sewer network design, procurement, supervision support, and a six months' operational assistance for WWTP; and (ii) Feasibility studies for 10 towns and pre-feasibility studies for an additional 5 towns, including replication of constructed wetland system in the studies.

Component 2: Dissemination and Replication Component related to Constructed Wetlands (US$0.10 million).

This component targets the dissemination of experience and knowledge obtained from operation of the new Soroca WWTP. This is considered of particular importance due to the pioneering character of this GEF project, which could prove exemplary to many other WWTPs in Moldova and in Ukraine. To this end, the new operation building at the WWTP will include facilities suited for seminars and workshops. The annual water monitoring workshops would expand in scope and participation with the growing data base and with the progress of treatment of the Soroca wastewater. The first annual workshop in year 3 would likely mainly have Moldovan participation; the second annual workshop in year 4 might have Moldovan and Ukrainan participation, and possibly wider international participation in coordination with the Istanbul Commission.

Component 3: Institutional Strengthening Component (US$0.15 million).

This component would finance: (i) the development of a communication strategy and capacity building for media campaign and community and civil- society outreach to prepare for the necessary increase of a sewage treatment surcharge; and (ii) Apa Canal staff training for operational efficiency improvements.

Component 4: Project Management (US$0.28 million)

This component would support management and implementation of the project, including auditing services, by PIU in the ACTD.

5. Lessons learned and reflected in the project design

The lessons learned from similar projects that have been incorporated in the project design include:

- Creating client ownership at all levels of Government by preparing the project in close collaboration and implementation with the local stakeholders. Total commitment by the Ministry, Apa Canals and Municipal Governments is necessary to ensure that preparation and implementation proceed smoothly;
- Setting realistic and prudent efficiency improvement targets, including a basis for sound financial projections. Under the PWSSP, a Financial Action Plan was agreed upon, with a specific collection increase program that will be updated and monitored bi-annually. This will be extended to the GEF project;

- Selecting a treatment technology that will be appropriate for the staff competence of the Soroca Apa Canal and that will keep the necessary sewage treatment surcharge within the limits of affordability and willingness-to-pay of the Soroca population who needs to pay for the costs of operations and maintenance to ensure sustainability;
- Establishing a sound institutional framework to ensure that the project is sustainable. A clear definition of project responsibilities and processes was established under the Pilot Project and will also be followed under the GEF project; and
- Implementing effective monitoring and evaluation mechanisms to measure project impacts and disseminate and scale up the lessons learnt into subsequent projects.

6. Alternatives considered and reasons for rejection

- *Project Implementing Unit.* Generally, there is a preference to avoid establishing a separate project implementation unit, because it may affect permanent capacity building in line ministries and Apa Canals. However, a well-functioning PIU now exists for the ongoing Pilot Water Supply and Sanitation Project, and the intent is to build on that proven capacity and have that PIU implement the GEF project. The PIU is well integrated within the ACTD and is staffed by Moldovan nationals who are likely to stay within the sector and work on similar future activities.

C. IMPLEMENTATION

1. Partnership arrangements

N/A

2. Institutional and implementation arrangements

Institutional Arrangements. The PIU, funded under the Pilot Water Supply and Sanitation Project (PWSSP), would implement the GEF project under the overall responsibility of ACTD. This seamless transition will help in accelerating the implementation of the GEF project. The PIU is legally registered and reports to the Agency. The PIU consists of a Project Director, Procurement Officer, a Sanitary Engineer, Civil Engineer, a Water Quality Specialist (part-time), Financial Specialist, and Accountant Cashier (part-time). In addition, a Steering Committee based within ACTD would assist to provide policy guidance regarding project implementation. The PIU, in coordination with the Apa Canal, would be responsible for all aspects of project financial management and disbursement.

Procurement Arrangements. The Procurement Officer hired and trained under the PWSSP would be assigned to the GEF project. This would ensure that procurement is timely and efficient in accordance with the Bank's guidelines. The PIU would have overall responsibility for project implementation, including procurement actions, in coordination with the Soroca Apa Canal.

Disbursements. Disbursements from the Grant will be made based on transaction based disbursement methods (i.e., from the Designated Account with reimbursements made based on Statements of Expenditures (SOEs) and full documentation, and direct payments from the Credit Account). The Government will establish, maintain and operate, under terms and conditions acceptable to the Bank, a separate Designated Account denominated in a freely convertible and stable currency. The Bank and the client, using the Bank's criteria for Designated Account (DA) banks, will evaluate the extent to which

local commercial banks meet the requirements and the client will select a bank, subject to the Bank's approval. The PIU will use a local project account for the counterpart contributions to the Project.

Flow of Funds. Project funds will flow from: (i) the Bank, either via a single Designated Account which will be replenished based on SOEs and full documentation as appropriate; (ii) Direct Payment method as well as Special Commitments may be used; and (iii) the Government, via the Treasury at the Ministry of Finance (MOF), on the basis of payment requests prepared by the PIU. The Government will authorize the State Agency, through the PIU, to use the grant proceeds. There will be one single Designated Account for the whole project implementation. An Implementation Agreement will be signed between ACTD and the Soroca Apa Canal, which shall state that the Soroca Apa Canal is responsible for the implementation and management of Component 1, for which the PIU will execute the payments as well as for Components 2, 3, and 4.

FINANCING PLAN (US$ MILLION)

	Component	GOVERNMENT	IDA	GEF	TOTAL
1-A	Wastewater Management in Soroca	0.770		3.050	3.820
	Sewer Network and Pumping Station	1.360	0.445		1.805
	Water Supply System Rehabilitation		2.263		2.263
1-B	Engineering Consultants & TA		0.470	1.012	1.482
2	Dissemination and Replication of CW		-	0.100	0.100
3	Institutional Strengthening		-	0.150	0.150
4	Project Management		0.030	0.250	0.280
	Total	2.130	3.208	4.562	9.900

The IDA contribution of US$ 3.21 million refers to the contribution to the GEF project from the PWSSP that is expected to be completed by December 31, 2007. The expenditure corresponds to investments for urgent rehabilitation of the Soroca water supply system and sewer network and pumping stations, feasibility study and PIU incremental operation cost. Completion of all components under the GEF project is expected by December 15, 2011. The government contribution is committed in association with Decree # 947. The government will allocate a total amount of US$ 1.30 million during FY2008 to FY2011, in accordance with the disbursement projection for each year. The Soroca Municipality will provide the land for the WWTP free of charge ($0.77 million value equivalent).

3. Monitoring and evaluation of outcomes/results

The monitoring and evaluation of outcomes and results during implementation would follow standard Bank practice and be carried out in conjunction with the PWSSP that has a proven capacity for producing pertinent and timely monitoring data. The project outcome indicators are listed in Annex 3 and comprise the levels of BOD, Suspended Solids and nutrient concentrations of the incoming and outgoing wastewater flows. The Project Implementation Unit would collect and present data and reports for review by Bank supervision missions. Discussions during supervision related to institutional capacity building, financial viability, technical reviews and site visits would provide an effective means of monitoring progress.

4. Sustainability and Replicability

The sustainability of the GEF project is closely linked to the operational effectiveness of the PWSSP, which has among its objectives: (i) targeting funding to least-cost investments that reduce energy and other operating costs; (ii) promoting financial viability of the Apa Canals by improving efficiency and increasing revenues to cover operating and maintenance costs; (iii) training operational staff; and (iv) informing consumers on the importance of paying for services.

The GEF project will train the staff from Soroca Apa Canal to reduce operating costs and undertake preventive maintenance of the planned WWTP. The Soroca WWTP will be the first municipal WWTP with nutrient removal capacity in the Moldova Nistru River Basin. The Soroca municipality and the Apa Canal plan to organize a conference on wastewater management for regional information transfer at the Soroca WWTP site. With these activities, the project will support the establishment of partnerships between cities and towns of the region and will also provide a model to enable implementation of successful processes.

The financial contribution and effort from the Moldovan side is considerable against the background of the country's 2004 per capita GNP of USD 720, making it the poorest country in Europe. The central Government has agreed to budget USD 1.30 million for the project, apart from the IDA contribution of USD 3.21 million that is repayable. At the local level, the Soroca municipal authorities and the Apa Canal have agreed to charge a surcharge to pay for the incremental costs of operating the wastewater treatment plant. This surcharge is estimated at USD 0.10 per cubic meter of wastewater and will be collected by the Soroca Apa Canal.

5. Critical risks and possible controversial aspects

Risk From Outputs to Objective	Risk Rating	Risk Mitigation Measure
Public unwilling to adequately pay for services.	S	The treatment technology has been selected to have low operations and maintenance costs in order to minimize the necessary surcharge on the water tariff. Implementation of public awareness program and improved service under the Pilot Project would help to ensure stakeholder willingness to pay. Furthermore, the public attach great importance to having appropriate wastewater treatment. However, the Soroca Apa Canal is under financial pressure although they have managed to increase the collections percentage from 94% in 2002 to 97% in 2006. The Soroca municipality has also supported its Apa Canal by paying for the PWSSP debt service directly from its budget.

The wastewater treatment plant, based on Constructed Wetlands technology, may fail to adequately treat wastewater, especially to remove nutrients, because of the lack of trained operators in the Soroca Apa Canal.	M	The proposed designs have been used elsewhere, are generally robust, and there is international experience with them. They may be readily modified if required. The risk is primarily an operating risk and will be mitigated by requiring the contractor, supervised by the design and supervision consultant, to operate the plant for six months, while training the staff of the Soroca Apa Canal to operate and maintain the plant properly.
From Components to Outputs		
Limited human and financial resources of recipient Apa Canals to adequately operate the constructed systems.	M	Public awareness campaigns, staff training and better service in order to improve operations, billings and collections and the financial situation. Choice of simple and robust technology should mitigate the risk effectively.
Capacity to implement projects.	M	The PWSSP PIU has the proven experience as evidenced by its success of implementing the Pilot Water Supply and Sanitation Project (PWSSP) and the GEF project will put additional emphasis on training and technical assistance to ensure local operating capacity.
Overall Risk Rating	M	The project risks are manageable because the GEF project is intimately linked to the PWSSP, being implemented satisfactorily by, among other Apa Canals, the Soroca Apa Canal, supported by the PWSSP PIU. However, it is necessary to extend and replicate the financial covenants for Soroca under the PWSSP to the GEF grant agreement in order to ensure sufficient cash collections to pay for operating costs.

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

6. Grant conditions and covenants

- The recipient shall allocate as a counterpart contribution to the project a total amount of US$ 1.30 million during FY2008 to FY2011, in accordance with the disbursement projection for each year.
- Except as the World Bank shall otherwise agree, the Recipient shall take all measures necessary to ensure that the Soroca Apa canal shall maintain for each fiscal year, a ratio of cash operating expenses to cash operating revenues not higher than 90%.
- Within three (3) months of the end of the preceding fiscal year, the Recipient shall, on the basis of forecasts prepared by Soroca Apa Canal and satisfactory to the World Bank, review whether the Soroca Apa Canal would meet the requirements set forth in paragraph (a) in respect of such year

and the next following fiscal year, and shall furnish to the World Bank the results of such review upon its completion.

D. APPRAISAL SUMMARY

1. Economic and financial analyses

Economic

Economic cost/benefit analysis is difficult to apply to environmental projects such as the proposed GEF project because there is no market for the output of the project and, as a consequence, benefits cannot be valued reliably. Water quality protection will benefit not only the population of Soroca but also those who live downstream from the primary sources of pollution that the project will mitigate. The downstream communities comprise Rezina, Ribnitsa, Dubasari, Criuleni, Grigoriopol, Tighina, Vadul-lui-Voda, Tiraspol, Slobozia, Dnestrovsk, Olonesti, and Odessa with a combined population of 1.4 million. The length of the Nistru River downstream of Soroca is 550 km with high and low flow rates at Soroca of respectively 334 and 145 m^3/second. Many of the benefits, such as better quality of life, lowered risk of disease, and improved public health, are such that monetary valuation is tenuous. They are therefore classified as intangible (although important) benefits.

Given the impracticality of assigning a monetary value to the benefits, the economic analysis has been limited to ensuring that the expected benefits are produced at the least cost to the economy. This analysis comprises a number of steps:

- The demand for basic water supply services are projected based upon present demand. These evaluations are then used for projecting the volume of expected wastewater. It is positive that water consumption and production have become more efficient under the PWSSP since this will enable a more accurate projection of future demand, and since the wastewater treatment can be more economically designed. The method of making projections helps to ensure that the expected water consumption patterns are reasonably efficient. In an on-site survey conducted in Soroca, a substantial share of the respondents stressed that they wish more resources could be invested in wastewater treatment, confirming the value that the population assigns to the proposed project;

- Different technical alternatives were then analyzed to find the lowest cost option of collecting, treating and safely disposing of the wastewater from the project. In particular, the project attempts to minimize the costs of collecting and treating wastewater by analyzing alternatives for phasing of collection and treatment capacity, rehabilitating and upgrading existing facilities and introducing low cost treatment. Such calculations exclude non-economic costs such as taxes, subsidies and other transfer payments. The cost comparison was done in constant prices that exclude the effect of general price inflation;

- The annual costs in economic terms of each alternative were then made comparable by discounting them by the opportunity cost of capital, producing a present-value sum of the economic costs;

- The alternative with the lowest present value sum was then selected. In the particular case, the least-cost alternative is immediately apparent since the selected technology of "Constructed Wetlands" has both the lowest investment and the lowest operations and maintenance costs of the next best alternative.

Additionally, an environmental cost effectiveness analysis is possible on the basis of the monitoring indicators such as the annual reduction of nutrient discharges of nitrogen and phosphorus, the average operating cost of the process to reduce nutrients, the annual reduction of BOD discharges, and the average operating cost of the BOD reduction. The exploration of low cost treatment options is particularly relevant because of the potential for lowering operating costs, and in particular energy costs.

Financial

The Soroca Apa Canal has been the beneficiary of a USAID Grant (under the auspices of the Pilot Project) which funded an analysis by the Urban Institute and proposed measures for strengthening the Apa Canal's financial performance. The analysis covers the 2001-2003 period and projected the financial situation of the Soroca Apa Canal for the 2005-2008 period. The analysis concluded that the Apa Canal had incurred negative operating results due to delayed tariff increases and important water losses that exceeded 60% of production. However, cash shortfalls have been met from the budget of the Soroca. The PWSSP-financed rehabilitation and meter installation is now expected to improve the financial situation of the Apa Canal. Furthermore, Section 4.03 under the Development Credit Agreement for the PWSSP (Credit number 3763 MD) specifies that "the Borrower shall take all measures necessary to ensue that each Participating Apa Canal (including the Soroca Apa Canal) shall maintain in the fiscal year ending on December 31, 2006, a ratio of total operating expenses to total operating revenues not higher than 100%, decreasing to 90% by the fiscal year ending on December 31, 2007, and, thereafter, maintain said ratio for each of its fiscal years." The latest available situation indicates that the Soroca Apa Canal has a working ratio of about 1.12, i.e. is not in strict compliance with this covenant. As part of negotiations for the GEF grant agreement, this financial covenant will be extended but allow for contributions from the Soroca municipal budget to be accounted as revenue in accordance with the World Bank Water Sector Board of financial sustainability. With this modified financial covenant, the Soroca Apa Canal could comply with a working ratio of 1.00 which would ensure that sufficient revenue will be made available for operating and maintaining the wastewater treatment works that the GEF grant will finance.

2. Technical

This project would address an issue of importance to Moldova: improving wastewater management and treatment, inter alia to address transboundary river pollution. This would complement the ongoing activities of the Pilot Water Supply and Sanitation Project and would reduce Black Sea nutrient loads.

At the present time, most wastewater is discharged into rivers with little or no treatment. Out of the one hundred existing treatment plants, only four are functioning satisfactorily and as a consequence most effluents do not comply with discharge standards. None of the existing plants are designed to reduce nutrient loads. This fact indicates the scope for replicating the technology of the proposed Soroca low-cost wastewater treatment technology. The cost of improving the situation nation-wide is high and given the tight budget situation, amelioration progress is slow. As the supply of potable water improves, awareness for the need to protect the environment is rising.

The Soroca Municipality is located on the west bank of the Nistru River facing Ukraine on the east bank of the river. When there was a common government on both sides of the river, Soroca's wastewater was sent to a treatment plant located on the river's east bank, which is now part of Ukraine. From 1980 until pipe failure in 1991, Soroca's wastewater was being pumped to the WWTP on the Ukrainan side through a steel pipe of 400 mm diameter and 6.3 km length. Construction began in 1996 on a new pipeline crossing the Nistru River but construction was never completed because of its cost, substantial risks inherent in under river crossing pipeline and due to political uncertainties. Thus, the sewage treatment

works on the Ukrainan side are no longer operable and Soroca's wastes are discharged, untreated, into the river. Instead the project would provide wastewater treatment and nutrient removal by constructing wetlands 4.5 kilometers outside Soroca. It would also rehabilitate the water supply network, sewers and sewage pumping stations within the municipality and provide monitoring equipment.

Based on the economic least-cost analysis the Soroca Apa Canal and ACTD have chosen Constructed Wetlands (CW) system[1] for wastewater treatment technology. This low-cost technology was developed during the past two decades and has proved particularly favorable for small cities/communities, where sufficient land is available. Additionally, a CW is within the capacity of Apa Canal staff to operate after adequate training. Not least, it reduces overall operation cost compared to conventional activated sludge systems to about 10-20% while providing satisfactory nutrient removal. Since the cost of operating an activated sludge system would have increased the present domestic water tariff by about 170%, this was considered unacceptable, and thus CW offers a highly favorable alternative. The 10 hectares of land available for the new WWTP are more than sufficient to accommodate the new works there. In sum, the proposed treatment system with CW is well adapted to the conditions in Soroca, and could develop to an exemplary model for future wastewater treatment in many other small cities throughout Moldova.

The sewer system in Soroca is about 40 years old and received little or no maintenance for many years. Wastewater concentrations are found to be low. Consequently, there is substantial groundwater infiltration into the sewers at present, which renders any pumping and treatment unnecessarily expensive. Several sections of the sewer system are near collapse. About 40% of Soroca's population is still not sewered and require investment into new sewer lines. To address these pressing issues, a two-stage approach is agreed:

- Urgent rehabilitation measures, as suggested by the Soroca Apa Canal. These measures improve just some of the most apparently damaged elements of the present sewerage. Much of the damage is apparent to the public, not just to Apa Canal staff. Hence, these measures are not only beneficial as such, but also help foster the public awareness of the ongoing activities.
- Rehabilitation of sewer network. Under this item, a more systematic approach would be adopted: (i) development of a sewer database and hydraulic sewer model; (ii) priority ranking of rehabilitation/extension measures; and (iii) implementation according to assigned priorities. These activities thus show the way forward, and start off with some of the most urgent ones.

3. Fiduciary

Procurement:

The grant will be implemented by the PIU under the overall responsibility of ACTD. The PIU would be responsible for carrying out all procurement activities in a manner consistent with WB procurement guidelines.

[1] CW is a system, where wastewater – after prior mechanical treatment – filters through about 0.5 – 1.0 m of planted, constructed soil layer. While passing this layer it is cleaned by a wide range of microorganisms that develop and multiply under these conditions. The treated wastewater is collected underneath, and then discharged into the recipient river. The proposed CW would be two-stage system, which is superior than one stage system in terms of nitrogen removal and the land requirement. The proposed area requirement is about 5.5 ha including 25% of additional area for mechanical pre-treatment, access road, operational building, etc. CWs are little mechanized, need very little electric energy, and they are robust, yet still highly effective with regard to removal of organics and nutrients. Public acceptance is generally high, since seen from outside CWs give a rather "green" impression, which is in no way reminiscent of any possibly bad reputation that wastewater treatment might be associated with.

The nature of the grant is such that it requires close coordination among PIU, ACTD and Soroca Apa Canal. The PIU procurement specialist has good experience in carrying out Bank-financed procurement. However, as a result of the findings and recommendations of the Country Procurement Assessment Report (CPAR), dated June 2003, the PIU is operating in a high risk country in respect of its public procurement system. In light of these shortcomings, the procurement risk for these implementing agencies is considered "medium". This medium risk will be mitigated through: (i) Prior Review - intensive and close supervision and major works contracts will be prior reviewed; (ii) Post Review - one in six contracts will be post reviewed; (iii) Complaints - all complaints by bidders will be diligently addressed and monitored in consultation with Regional Procurement Manager's office; (iv) Publication of Advertisement and Contracts - all publications of advertisement and contracts, including results of awards, will be monitored as per the Bank's Procurement Guidelines; (v) Training - project launch workshop and intensive procurement training for PIU and ACTD staff will be conducted periodically; (vi) Procurement Plan and Thresholds - the procurement plan will determine the prior and post review thresholds including packaging of contracts based on construction capacity in Moldova; (vii) Fiduciary Staff - if required, additional staff (Procurement Specialist) will be hired to assist the PIU to implement the project; and (viii) Contractors, Suppliers and Consultants Payment - payment to contractors, suppliers and consultants will be monitored to ensure timely payment.

Financial Management

The financial management functions of the Project will be handled by the PIU, and the PIU will be responsible for the flow of funds, accounting, reporting and auditing of the Project.

The financial management arrangements of the Project Implementation Unit (PIU) have been reviewed periodically as part of previous project supervisions for PWSSP and have been found between marginally satisfactory to satisfactory. An assessment of the financial management arrangements for the Environmental Infrastructure Project was undertaken in January 2007. The financial management arrangements of the Project are acceptable to the Bank, as they meet the minimum fiduciary requirements. The overall FM risk for the project is moderate.

The 2003 Country Financial Management Accountability Assessment (CFAA) in Moldova concludes that the financial accountability framework in Moldova is weak and requires substantial strengthening. The key weaknesses identified include: (a) budget framework process is fragmented, (b) inefficient cash management, (c) weak internal control and internal audit, and (d) inadequate external audits.

Specific procedures are developed by the project to secure proper financial accountability of this project and to minimize project financial management risks; these procedures are detailed in Annex 7. Additional financial management arrangements in the project will include the audit of project financial statements by an independent auditor acceptable to the Bank, in accordance with terms of reference acceptable to the Bank.

The banking sector in Moldova is relatively weak. However, the PIU will open the project's Designated Account in a commercial bank, acceptable to the Bank, whose financial status and statements are reviewed on an ongoing basis by the Bank.

4. Social

The project would build upon previous municipal experience with community involvement in sector improvements and involve mechanisms established under the linked PWSSP, which included the strengthening of the Customer Service Office (CSO) of the Apa Canal. Consultation with community groups by the CSO has already been used to (i) represent user perspectives, and (ii) identify investment

priorities. The CSO in collaboration with community groups would play a role in public education campaigns, using a variety of media and such other means as schools, health clinics and newspapers.

There are no land acquisition or resettlement issues. The former pressure sewer pipeline that runs from the pumping station to the treatment site will be replaced. The pipe runs under an existing access road, and the right of way is secured by the municipality. The route runs through an open area, and no structures or trees are located near the alignment. The now-abandoned sewerage pond system was located on 10 hectares of land. This is sufficient space for the proposed receiving station and the constructed wetlands. The land is to be transferred from Egoreni Commune to Soroca Municipality based on a Local Council Decision issued by the Egoreni Commune on March 30, 2007. This area is owned by Egoreni Commune and it is open land with no squatters and no informal use.

Social development outcomes would be monitored through the continuous use of the instruments used during identification and appraisal. The results of the initial assessments would be reviewed during supervision missions to determine key elements to be tracked during the course of project implementation to indicate outcomes and user satisfaction. Focus groups would be the primary survey instrument. The monitoring process would take place annually and if budget permits, then biannually. Sustainability of the process would be promoted through the continuation of the process by the CSO.

The social assessment conducted under the PWSSP has also helped to confirm the key stakeholders whose participation in the proposed project is essential. The Agency for Construction and Territorial Development, the Ministry of Environment and Natural Resources, the Ministry of Health, and the Ministry of Agriculture are the four major Government stakeholders. The local municipal administration, the Apa Canal, and the NGOs serving as surrogate water user associations constitute the primary local stakeholders.

Extensive public consultation, including public polls and hearings in conjunction with the preparation of the Environmental Assessment for the proposed project, has provided additional validation of the results initiated under the PWSSP and confirmed continuing community and stakeholder values and concerns. The target groups included the local administration in Soroca, public health and environmental inspectors, water consumers living in different parts of the municipality, representatives of ethnic communities including Roma communities, NGO, and representatives of local business operators. The findings indicated that most people had heard about the proposed project, felt it would significantly benefit water quality in the Nistru, and would have a positive effect on the economic development of the region as well as their personal well-being.

5. Environment Environmental Category: B

The wastewater from Soroca Sewage was once treated at upriver ponds before being discharged into the Nistru River. Some time ago, this approach was discontinued and sewage was piped across the river for treatment down river in Ukraine. This second approach has also been discontinued, and the raw, untreated sewage is currently directly discharged into the river.

The project would rehabilitate the existing pumps and sewage lines and install constructed wetlands to treat the wastewater through a low-cost, robust technology. No negative impact is foreseen that cannot be addressed by the mitigation plans being prepared under the EA and its associated EMP. Except for minor disruption, which would be mitigated according to the EMP, during the rehabilitation and construction at the former pond sites, the impact on natural habitats would be positive. It is not expected that the natural habitats along the river banks will be disturbed. Recreational areas downstream would benefit from the project as well.

The long-term impacts of the project are clearly positive both in terms of local and global benefits. Although the project would have no significant negative environmental effects, an EA with EMP has been prepared by the government in collaboration with local consultants. All work would be executed either within existing facilities or on the publicly held land formerly used for the treatment ponds. Bidding documents would specify requirements for keeping work sites pollution-free, returning sites to their original conditions and minimizing dust, noise and related work nuisance.

Since the city of Soroca is of some historic note, the EA includes a provision for chance archaeological finds for pipe rehabilitation. The site for the receiving station and the constructed wetlands is 4.5 kilometers from the city. The project would not affect indigenous people. No dams are in the project scope.

6. Safeguard policies

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP/GP 4.01)	[X]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[X]
Pest Management (OP 4.09)	[ ]	[X]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[ ]	[X]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[X]
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	[ ]	[X]
Forests (OP/BP 4.36)	[ ]	[X]
Safety of Dams (OP/BP 4.37)	[ ]	[X]
Projects in Disputed Areas (OP/BP/GP 7.60)*	[ ]	[X]
Projects on International Waterways (OP/BP/GP 7.50)	[X]	[ ]

The investments proposed under the project trigger the following safeguard policies: OP/BP 4.01 on Environmental Assessment and OP/BP/GP 7.50 on Projects on International Waterways.

EA and EMP

The proposed project is classified as environmental assessment category B in accordance with the Bank's Operational Policies. The environmental impact of the project is mostly expected during the construction stage of the proposed investments including rehabilitation of sewerage network and constructed wetland facility. The EIA, including an EMP, for the project has been carried out. The EIA public consultation meeting held in the premises of the Mayor's Office in Soroca on June 6, 2006 discussed the overall project goal and the four possible treatment options applicable to Soroca WWTP. About 25 people attended the meeting representing NGOs, local environmental agencies, academia and local authorities but no major concerns were raised. Participants expressed their support for the proposed project investments and assured of their constant participation during the project implementation. The revised EIA report, including the final treatment option, has been publicly disclosed (in Romanian) at the PIU office in Chisinau, and announced locally in the "Monitorul Oficial al Republicii Moldova" on February 23, 2007. Furthermore, a brief public information session was held in Soroca on March 14, 2007 to inform citizens and NGOs about the selected constructed wetland solution. The revised EIA has been disclosed in Washington, DC on March 15, 2007. The final EMP will be revised once the detailed design for the proposed constructed wetland facility is available.

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on any disputed areas*

International Waterways Exemption to OP/BP 7.50

It has been assessed that the project falls within the exceptions to the notification requirement under paragraph 7 (a) of the Policy. According to paragraph 7 of OP 7.50, there are exceptions to the Bank's requirement that the other riparian states be notified of the project. According to paragraph 7(a) of OP 7.50, the exception applies: "For any ongoing schemes, projects involving additions or alterations that require rehabilitation, construction, or other changes that in the judgment of the Bank (i) would not adversely change the quality or quantity of water flows to the other riparians; and (ii) would not be adversely affected by other riparians' possible water use. This exception applies only to minor additions or alterations to the ongoing scheme; it does not cover works and activities that would exceed the original scheme, change its nature, or so alter or expand its scope and extent as to make it appear a new or different scheme.

In case of doubt regarding the extent to which a project meets the criteria of this exception, the executive directors representing the riparians concerned are informed and given at least two months to reply. Even if projects meet the criteria of this exception, the Bank tries to secure compliance with the requirements of any agreement or arrangement between the riparians."

The project team has assessed the project components in the context of and in relation to OP 7.50. The OP 7.50 applies to the project as the city of Soroca and is located on the Nistru River, which is an international waterway as defined by paragraph 1(a) of OP 7.50 and the project related to water and sewerage. Since the project will have a significant positive impact on reducing sewage discharges, following clearance by the Legal Department, the team requested an exemption from the Office of the Regional Vice President. The request was approved by this Office on March 2, 2007. In addition, because the preparation of the proposed GEF project has been done in close coordination with the Ukraine authorities, there should be full acceptance of the project from the two riparian states. It should be noted that all the signatories of the Black Sea Commission will be routinely informed of the project since Moldova is a signatory of the Black Sea Commission.

7. Policy Exception and Readiness

The project does not require any exceptions other than the one highlighted under paragraph 6 above from Bank policies and it meets criteria of readiness for implementation.

Annex 1: Country and Sector or Program Background

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

COUNTRY AND SECTOR BACKGROUND

In 2004, Moldova had a population of about 4.2 million people of whom some 0.6 million reside in the Transnistria part, on the East Bank of the river Nistru. The Cisnistria part, on the West Bank of the river Nistru, has a GNP of US$ 2.5 billion and a per capita income of about US$ 720, making it the poorest country in Europe. The country's population decreased slightly between 1990 and 2004 and a substantial share of the economically active age groups are working abroad. Worker remittances explain strong sustained GDP growth since 2000, and the fact that the national poverty rate has been halved from around 70 percent in 2000 to about 35 percent in 2005. However, poverty remains high in rural areas where 54 percent of the population lives.

The two main Moldovan Rivers, the Nistru in the east and the Prut, are both tributaries to the Black Sea. In 1998, 56% of the raw water used for treatment and distribution came from the Nistru River, 16% from the Prut River, 8% from smaller rivers and the balance of 20% from wells. Surface water quality distinguishes between four classes: class I (good quality), class II (moderately polluted), class III (polluted), and class IV (very polluted). The water quality of the Nistru and Prut rivers is generally classified as "moderately polluted" whereas it ranges from "polluted" to "very polluted" in smaller rivers. The main quality problem of surface water is the prevalence of nitrates and ammonium. The levels of Biological Oxygen Demand (BOD) are also high and exceed EU guidelines.

STATUS OF THE SECTOR

Water Supply:

There are 541 water supply systems in operation in Moldova. Out of these only 46% meet hygienic requirements, and a mere 36% have the necessary authorizations to operate. The average Moldovan water consumption norms are about 163 liters/cap/day (lcd) but the actual consumption is much lower due to supply restrictions and low consumer income that also restrict consumption. In many rural areas, particularly in the south of Moldova, this figure does not exceed 20 lcd. In the project town of Soroca, the population consumes at rates below 40 lcd, proof of the poor water supply and the low household incomes. The traditional source for drinking water supplied to homes in Moldova is groundwater. According to data from the Ministry of Health and Social Protection, 70% of the overall population is supplied from groundwater sources and 30% is supplied from surface water sources. Most drinking water treatments have over-capacity nowadays resulting in inefficient operation and high levels of electric power consumption per cubic meter supplied.

Water sources in most cases are of unsatisfactory quality due to high concentrations of nitrates, sulphates, chlorine, fluorides, iron, minerals, color and hardness. In recent years the concentration of nitrates has risen.

Untreated water usually does not comply with GOST 2874-82 "Drinking water" requirements and WHO requirements with regard to safe drinking water quality. Hydraulic groundwater recharge is generally considered sufficient. In terms of pollution level, the Nistru River is a class 2 river – moderate pollution, the Prut River upstream from Ungheni is a class 2, and downstream – a class 3 river. The quality of water extracted from the Nistru River is changing, dependent on seasonal factors: rainwater is predominant in

summer and autumn, snow melting predominates in spring, and groundwater influence is predominant in winter.

The main causes of surface water pollution are: (i) the absence, in many communities, of wastewater treatment plants (WWTPs), (ii) the poor functioning of existing WWTPs, (iii) direct discharges of untreated domestic and industrial wastewater into recipient waters, (iv) accidental leaks from industries, (v) agricultural runoff polluted with fertilizers, pesticides and other compounds, (vi) seepage from landfill sites, and (vii) ploughing of land in water protection zones down to the water table. Research carried out by the National Scientific and Practical Centre for Preventive Medicine shows a correlation between specific human diseases and water quality, particularly in areas lacking centralized water supply.

Water supply networks are mostly made of steel, cast iron or asbestos cement. These systems have often been in operation for 35-40 years and need urgent rehabilitation. Water losses around 50% are common. This is not only uneconomic, since unnecessary large amounts of water have to be treated / supplied, but it also leads to infiltration of polluted water into the water supply system. Neither production, nor supply, nor consumption of water is satisfactorily metered.

Sewerage and wastewater treatment plants (WWTPs):

Communal centralized sewerage systems exist in 74 urban areas and 126 rural communities. The installed capacity of WWTP systems equals 767,000 m^3/d. Total lengths of sewer lines equal 2,070 km. The current real capacity of all wastewater treatment stations is 727,000 m^3/d, but the volume of wastewater collected is just 200,000 m^3/day.

Wastewater from individual households without sewage systems is mostly being discharged into septic tanks. Subsequently some pollutants infiltrate into the soil, polluting groundwater. Emptying of septic tanks is erratic, and sludge disposal / treatment usually does not meet sanitary standards.

Sewerage systems lag behind water supply systems in terms of their development. 100 wastewater pumping stations are currently in operation, out of which at least three are damaged (in the towns of Hincesti, Ungheni and Basarabeasca).

Many of the under-lying assumptions for design in the Former Soviet Union (FSU) have since changed such as per capita consumption levels and energy prices. Hence, many sewer systems and WWTPs need to be updated such as connected population numbers, wastewater production rates per capita, size and location of economic zones, industries, and land development plans.

The existing WWTPs comprise two groups:

- Group 1 – mechanical and biological treatment (43% of WWTPs); and
- Group 2 – mechanical and biological treatment. Biological treatment of wastewater is usually by means of Trickling Filters (in 12% of all WWTPs) or Activated Sludge (in 88% of all WWTPs).

Following treatment, runoff is sometimes chlorinated, contrary to environmentally best practice.

Even in those towns, where there are WWTPs, the treatment is not up to discharge requirements. Only four existing WWTPs operate satisfactorily, viz. in Balti, Glodeni, Drochia and Floresti. The general requirement for all these works is only for carbon removal. Consequently, process schemes need to be modernized and additional WWTPs to be constructed. But also existing inefficient installations such as pumps, air blowers for aeration tanks, etc. require urgent replacement to reduce power consumption cost. At present electricity accounts for an average 34% of total expenditures.

The chemical composition of wastewater has changed, too, in the last decade, with 75% now being domestic wastewater. In FSU industrial wastewaters dominated. The operation & maintenance (O&M) of communal systems leaves much to be desired due to a low level of qualification of employees, lack of financial resources and a lack of adequate control means. Many WWTPs suffer from frequent power blackouts.

At present, operating revenue for water supply and sewage services does not cover cash O&M expenditure leaving no funding for utilities to perform the necessary repair and maintenance work. As a result, infrastructure is deteriorating rapidly.

In view of the unsatisfactory situation, the Deputy Prime Minister of the Government of Moldova, requested, in the letter dated October 9, 2006, the Bank's assistance in helping the Government update its sector strategy. Subsequently, the Agency for Construction and Territorial Development (ACTD) organized a workshop on October 26, 2006 to allow a wide range of national stakeholders and representatives from external assistance agencies to discuss the sector development strategy. The Bank provided its comments on the government sector strategy in January 2007 on which basis, the dialogue on sector policy continues. One conclusion is that wastewater treatment is contingent on securing grant financing of the rehabilitation or new construction. To date, no WWTP in Moldova is designed for enhanced nutrient removal. The proposed Soroca low-cost wastewater treatment pioneers nutrient removal and could potentially prove significant in guiding the rehabilitation or replacement of existing treatment plants.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

The only active project in the water supply and sanitation sector is the Pilot Water Supply and Sanitation Project (PWSSP) that was approved in 2003 and is expected to be completed by December 31, 2007. The PWSSP finances physical rehabilitation of water supply systems in the five cities and towns of Balti, Cahul, Orhei, Soroca, and Stefan Voda. The proposed Soroca GEF project will benefit from the PWSSP in several ways:

- Effective implementation arrangements have been created and tested which will help speed up project implementation of the GEF project;
- The Borrower, the Soroca apa-canal, will already have experienced all challenges associated with monitoring and evaluation, reporting requirements, and the Bank's safeguard policies;
- The Soroca apa-canal will have gained in financial sustainability under the PWSSP;
- The standards for operations and maintenance have improved as a result of the PWSSP which will directly benefit the efficacy, efficiency and sustainability of the GEF-financed facilities; and
- The rehabilitation of a portion of the existing water supply and wastewater system, including the expansion of metering and the replacement of obsolete electro-mechanical equipment, has made both production and consumption more efficient which implies that the GEF-financed wastewater treatment can treat less water and therefore reduce capital investments.

The Development Objectives (DO) and Implementation Progress (IP) are both rated as "satisfactory" in the latest Project Status Reports.

Annex 3: Results Framework and Monitoring

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

Results Framework

PDO/GEO	Project Outcome Indicators	Use of Project Outcome Information
(i) improve the quality of sanitation services in Soroca; (ii) Reduce the discharge of pollutants, including nutrients, from Soroca municipal sources that flow into the Nistru River and, subsequently, into the Black Sea; and (iii) demonstrate viable nutrient reduction strategies and technologies from municipal sources for the benefit of Moldova and Black Sea region.	(i) The amount of wastewater treated and the treatment efficiency will be monitored in order to gauge the removal of BOD, SS, and nutrients; (ii) The potential replication of a successful Soroca project outcome, through the incorporation of the technology in feasibility studies and the possible implementation of such treatment schemes, subject to affordable financing to Moldova, Ukraine and other neighboring countries.	The supervision of the project will track both treated wastewater flow and the operating efficiency. If either turns out different from projections, Bank supervision may prompt greater attention to project implementation, such as accelerating the extension and rehabilitation of sewage collection networks.
Intermediate Outcomes	**Intermediate Outcome Indicators**	**Use of Intermediate Outcome Monitoring**
Progress of CW construction contract	Disbursed amount of the CW construction contract	The ACTD will use the indicators to make sure the successful implementation of this main project component.

Arrangements for results monitoring

The levels of BOD, SS, and nutrients will be monitored in the incoming wastewater and in the effluents, and BOD and nutrient levels will be monitored in the Nistru River. The Soroca Apa Canal has a laboratory that is assessed to be competent in carrying out the necessary analysis. The data will be reported to the PIU that will in turn report to the Bank supervision teams.

Arrangements for results monitoring

		Target Value s (effluent)				Data Collection and Reporting		
Project Outcome Indicators	**Baseline** present situation	**YR 1**	**YR 2**	**YR3**	**YR4**	**Frequency and Reports (4)**	**Data Collection Instruments**	**Responsibility for Data Collection**
Effluent concentrat.								
BOD_5 [mg/l]	150	--	---	< 25 (1,2)	< 25 (1,2)	Weekly	Sampling (5)	WWTP staff
COD [mg/l]	300	-	---	< 125 (1,2)	< 125 (1,2)	2-weekly	Sampling (5)	WWTP staff
SS [mg/l]	180	--	---	< 35 (1,2)	< 35 (1,2)	Weekly	Sampling (5)	WWTP staff
NH_4-N [mg/l]	---	-	---	---	---	2-weekly	Sampling (5)	WWTP staff
NO_3-N [mg/l]	---	--	---	---	---	2-weekly	Sampling (5)	WWTP staff
TN [mg/l]	30	-	---	---	---	2-weekly	Sampling (5)	WWTP staff
PO_4-P [mg/l]	---	--	--	---	---	2-weekly	Sampling (5)	WWTP staff
TP [mg/l]	7,5	-	--	---	---	2-weekly	Sampling (5)	WWTP staff
Removal efficiency								
BOD_5 removal [%]	0	--	--	> 90 (1,3)	> 90 (1,3)	Weekly	Calculated (6)	WWTP staff
COD removal [%]	0	--	--	> 75 (1,3)	> 75 (1,3)	2-weekly	Calculated (6)	WWTP staff
TN removal [%]	0	--	--	> 50 (3)	> 50 (3)	2-weekly	Calculated (6)	WWTP staff
TP removal [%]	0	--	--	> 50 (3)	> 50 (3)	2-weekly	Calculated (6)	WWTP staff
Nutrient Removal								
TN removal [kg/d]	0	--	--	100	100	2-weekly	Calculated	WWTP staff
TP removal [kg/d]	0	--	--	25	25	2-weekly	Calculated	WWTP staff
Other parameters								
Q_d [m^3/d] treated	0	--		< 3000	< 3000	Daily	Flow meter 7)	WWTP staff
$T_{wastewater}$ [°C]	---	--		8-20	8-20	Daily	T probe (8)	WWTP staff
No of dissemination and replication events	0	--	--	1	1	Annual	Minutes	ACTD
CW construction contract [%]		--	20	60	20	Annual	Disbursem'nt	ACTD

(1) Figures according to EU standards, i.e. Council Directive 91/271/EEC concerning urban waste water treatment (21-05-1991) & Commission Directive 98/15/EEC (27-02-1998) amending Council Directive 91/271/EEC.
(2) Target value for daily mean.
(3) Target value for annual mean.
(4) The frequency indicated relates to the frequency of wastewater analysis / data collection. The reporting should be done once every half year.
(5) Analysis of wastewater should be done on composite samples of both influent and effluent. These samples are taken during the course of one day (24 hours) by adding a constant volume of wastewater (e.g. 0.5 liters), taken in constant time intervals (e.g. every 2 hours), to the composite sample, which is kept refrigerated. After the end of a sampling day the total composite sample is homogenised and then analysed.
Whenever influent and effluent samples are analysed, this should always be done for the same 24-hour time interval.
(6) Efficiency [%] = 100 x (influent concentration – effluent concentration) / influent concentration
(7) The flow rate should be measured both in the influent and in the effluent. Both figures have to be documented.
(8) Temperature should represent the average figure of a minimum of 4 separate temperature measurements in the effluent of the WWTP, taken in regular intervals over the course of one day (24 hours).

Annex 4: Detailed Project Description

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

SOROCA WWTP

Soroca, on the border with Ukraine, is located on the banks of the Nistru River in North Moldova. The municipally-owned Soroca Apa Canal, established in 2000, is responsible for water supply and wastewater services. At present, it has a total of 113 staff, who operate 61 km water lines and 53 km sewer lines. The operating surplus is nil and cannot support any major investment. Water is supplied to 98% of the population through 4,800 connections, whereas 63% of the population with water supply connections has 3,000 sewerage connections. The 4,800 water connections correspond to about 9,000 individual service accounts, since a share of the population reside in multi-story buildings with multiple apartments. Generally, the physical state of all installations is dire, suffering from age, poor quality and lack of re-investment.

At present, there is no wastewater treatment whatsoever and the raw sewage is discharged into the Nistru River in the front of the town's main tourist attraction, a medieval fortress built between the 14th and 16th century. The former Soroca WWTP, built in Soviet times in 1980, is located on the Ukrainian side of the Nistru River. From 1980 until the pipeline broke down in 1991, the Soroca wastewater was being pumped to the WWTP through a steel pipe of 400 mm diameter and 6.3 km length. In 1996, construction began on a new river crossing pipeline but it was never completed because of its cost, substantial risks inherent in under river crossing pipeline and due to political uncertainties. Thus, the sewage treatment works on the Ukrainian side are no longer operable and Soroca's wastewater is discharged, untreated, into the river. Hence, a new site has been proposed to the North of Soroca, where a new WWTP should be constructed. There are no suitable nearby sites downstream of Soroca on the Moldovan side because the river banks are steep on the Moldovan side (in contrast to the flat Ukrainian side).

The ACTD carried out a feasibility study of three alternatives: Activated Sludge (AS), Extended Aeration (EA) and Sequencing Batch Reactor (SBR). Out of the three options, SBR is too sophisticated and involves too many risks for failure under the specific environment in Soroca. The other two options studied, AS or EA, are feasible but will pose operational challenges for the Apa Canal staff whose skill level is limited. More serious, the level of operations and maintenance costs of either treatment method is about US$ 300,000 annually which would require a sewage treatment surcharge of MDL 11 per cubic meter of wastewater, or about US$ 0.85 per m3. This surcharge would be around 125% of the average water tariff at present and about 170% of the domestic water tariff. The surcharge is so high that it is unlikely that the population would be willing to pay it, which in turn would make the financial and operational sustainability moot.

Under the circumstances, the Apa Canal and the ACTD have opted for low cost appropriate technologies to reduce BOD, SS and nutrient loads. The most suitable alternative was found to be "constructed wetlands" that are non-mechanized, robust and within the capacity of the Apa Canal staff to operate, conditional on additional training being provided. The site has an area of 10 hectares which is ample for the area necessary for effective treatment through wetlands. It is estimated that the presently sewered population of 17,000 would require 5.5 hectares of constructed wetlands and the remaining area of 4.5 hectares provide additional space to accommodate the mechanized pre-treatment, access roads, and the industrial and future domestic wastewater. Industrial wastewater amounts to about 30% of the domestic wastewater and has mainly organic loads since the main industry is a fruit canning plant.

Sewerage System

The sewerage system in Soroca is about 40 years old and received little or no maintenance for many years. Wastewater concentrations are found to be low. Consequently, there is substantial groundwater infiltration into the sewers at present, which renders any pumping and treatment unnecessarily expensive. Several sections of the sewer system are near collapse. About 40% of Soroca population is still not sewered and require investment into new sewer lines.

Urgent rehabilitation measures

Given these dire conditions, APA-Canal has produced a priority list for "urgent rehabilitation" of the sewer system. It lists about 2 km of sewer lines and an additional number of about 40 manholes where rehabilitation would be provided immediately. This component will be financed under the Pilot Water Supply and Sanitation Project and will be completed by the end of 2007.

Rehabilitation of sewer network

With the above urgent rehabilitation, the sewer system as a whole will be by no means in a substantially improved condition. To tackle this complicated and very comprehensive issue, the first thing to develop is a sewer database. Such a database should contain:

- basic information for each individual sewer section (pipe material, diameter, age, etc.)
- information on the physical state of selected sewer sections; and
- surveying data (level of manhole bottoms, street level, exact position)

Once this information is known, a hydraulic model can be developed and reliable decisions be taken on the priority of subsequent measures.

Engineering Consultant and TA

This component would support: (i) Engineering services for WWTP and sewer network design, procurement, supervision support; and a six months' operational assistance for WWTP; and (ii) Feasibility studies for 10 towns and pre-feasibility studies for an additional 5 towns, including replication of constructed wetland system in the studies.

Dissemination and Replication Component

This component targets the dissemination of experience and knowledge obtained from operation of the new Soroca WWTP to be constructed. This is considered of particular importance due to the pioneering character of this GEF project, which could prove exemplary to many other WWTPs in Moldova. Hence, to this purpose, the new operation building at the WWTP will include facilities suited for seminars and workshops. The annual water monitoring workshops would expand in scope and participation with the growing database and with the progress of treatment of the Soroca wastewater. The first workshop in year 3 would likely mainly have Moldovan participation and would target participants from all those communities in Moldova that have or are contemplating wastewater treatment plants. The second workshop in year 4 is planned for Moldovan and Ukrainian participation and possibly wider international participation in coordination with the Istanbul commission of the GEF Black Sea Convention.

The possible replication is also facilitated by the fact that the PWSSP will finance 15 pre-feasibility and 10 feasibility studies for small towns in Moldova. Through the close Bank supervision of the studies, it will be possible to consider the use of the same low-cost technology that the GEF will finance in Soroca.

Institutional Strengthening Component

Public awareness

This component would finance the development of a communication strategy and capacity building for media campaign and community and civil-society outreach. The proposed measures shall include a wide variety of components, ranging from leaflets, billboards, campaigns at local schools to information over radio and TV.

TA for Apa Canal for operating WWTP

To minimize any potential operation risks, a strong emphasis is put on sound training of the WWTP staff (notwithstanding that the process is simple to operate). To this purpose, a three step approach is foreseen:

- Contractors of electrical and mechanical equipment have to submit operation manuals and give advice on proper operation and maintenance;
- The Engineering Consultant has to give operational assistance to the WWTP staff during the first 6 months after WWTP start-up.
- Prior to the start-up, a minimum of two operators - including translators, if need be - is sent to a CW plant in Europe for a minimum period of 1 month. This should give them a sound understanding of the state of the art operation of such a system.

Project management:

This component would support management and implementation of the project by PIU.

Table 4-1- Implementation Schedule

SOROCA: IMPLEMENTATION SCHEDULE

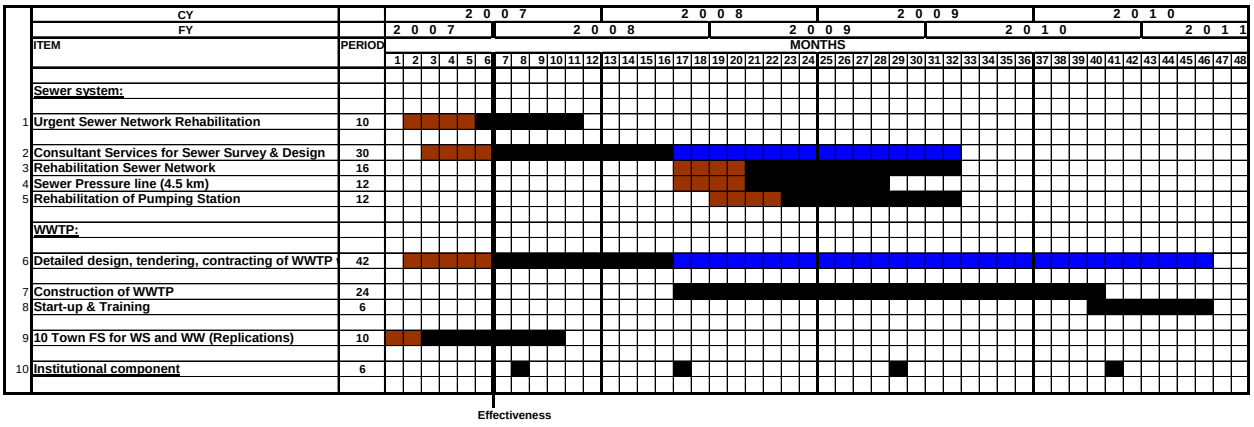


Table 4-2: Procurement plan

(US$)

SOROCA No Description	Procurm' Method	Government	IDA* PWSS	GEF	sum	Local	Foreign
Component 1-A - Investment							
1 Soroca WWTP (Constructed Wetland System)	W			3,000,000	3,000,000	1,000,000	2,000,000
2 Water quality monitoring equipment & furniture & office equipment	G			50,000	50,000		50,000
3 WWTP Land	N/A	770,000			770,000	770,000	
4 Pressure pipelines (4.5 km)	W	360,000			360,000	360,000	
5 Urgent Rehab. Of Sewer Network	W		445,000		445,000	445,000	
6 Rehabilitation of Sewer Network & P/S	W	1,000,000			1,000,000	1,000,000	
7 Water Supply - Urgent Rehabilitation (1-2 years)							
Design Technical Assistance	C		135,000		135,000	60,000	75,000
Computer and Software	G		15,000		15,000	15,000	
Production Metering	G		21,300		21,300	21,300	
Metering for all consumers	G		3,400		3,400	3,400	
Leak detection equipment and training	G		23,000		23,000		23,000
Construction and electrical equipment	G		275,000		275,000		275,000
Repair material for network and connections	G		400,000		400,000		400,000
Installation of network valves and electrical equipment	G		100,000		100,000		100,000
8 Water Supply - Medium Term Rehabilitation (2-5 years)							
Replacement of pipelines	W		500,000		500,000	500,000	
Replacement of pumps and electrical equipment	W		290,000		290,000	290,000	
Sanitation works and equipment	W		500,000		500,000	500,000	
sum 1		2,130,000	2,707,700	3,050,000	7,887,700	4,964,700	2,923,000
Component 1-B - Engineering Consultant and TA							
9 Engineering consultants for WWTP - studies, design, procurement docs, construction assistance, operation training	C			612,000	612,000		612,000
10 Sewer database (CCTV, survey & general sewer data) Engineering Consultant for sewer- hydraulic model, design , procurement docs, construction assistance	C			350,000	350,000	100,000	250,000
11 Ten Towns feasibility study and Five towns pre-feasibility study for WSS rehabilitation including replication of CW technology	C		450,000		450,000		450,000
12 TA for Apa Canal and ACTD	C		20,000	50,000	70,000		70,000
sum 2			470,000	1,012,000	1,482,000	100,000	1,382,000
Component 2 - Dissemination and Replication Component							
13 Dissemination of Constructed Wetland System	C			100,000	100,000	100,000	
sum 3				100,000	100,000	100,000	
Component 3 - Institutional Strengthening Component							
14 Communication Strategy, Media Campaign, Civil Society outreach for Apa Canal activities for WSS services	C			100,000	100,000	100,000	
15 TA for Apa Canal Staff for WWT Plant operation	C			50,000	50,000		50,000
sum 4				150,000	150,000	100,000	50,000
Component 4 -Project Management							
16 PIU Consultant - incremental operation cost	C		30,000	250,000	280,000	280,000	
Total		2,130,000	3,207,700	4,562,000	9,899,700	5,544,700	4,355,000

* IDA PWSS investment will be completed before the end of 2007.

Note: The IDA credit for the PWSSP provided $450,000 in support of project management and preparation activities during the preparation of the GEF project.

Annex 5: Project Costs

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

Project Cost By Component and/or Activity	Local US $million	Foreign US $million	Total US $million
Component 1-A – Physical Investment	4.965	2.923	7.888
Component 1-B – Engineering Consultant and TA	0.100	1.382	1.482
Component 2 – Dissemination and Replication of CW	0.100		0.100
Component 3 – Institutional Strengthening	0.100	0.050	0.150
Component 4 - Project Management	0.280		0.280
Total Baseline Cost	5.545	4.355	9.900
Physical Contingencies (contained in component costs)			
Price Contingencies (contained in component costs)			
Total Project Costs[1]	5.545	4.355	9.900
Total Financing Required	5.545	4.355	9.900

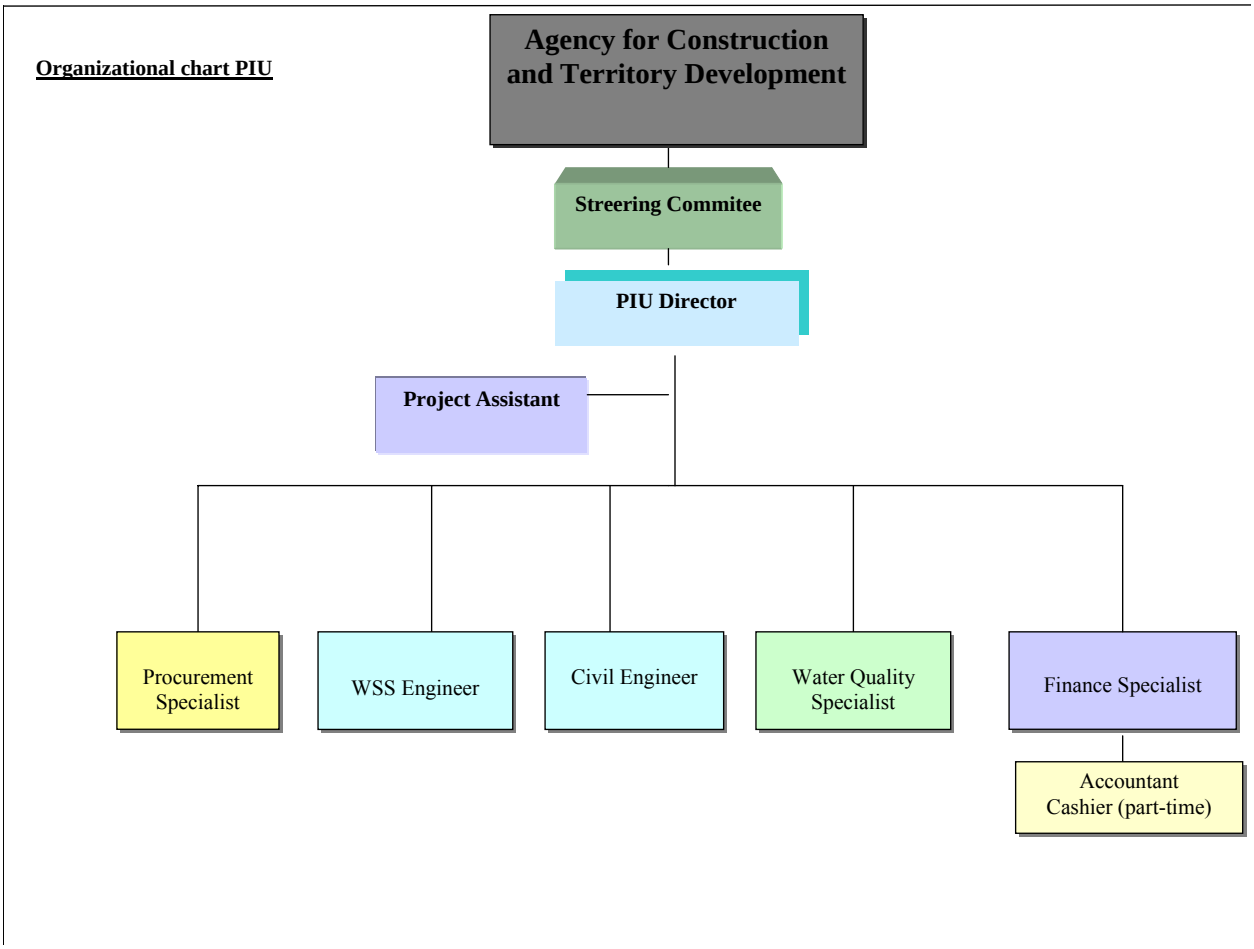
Annex 6: Implementation Arrangements

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

Agency for Construction and Territorial Development (ACTD)

The project would be implemented during FY2008-2011 under the overall responsibility of the Agency for Construction and Territorial Development (ACTD). The project implementation unit (PIU) funded under the Pilot Project would also implement the GEF project. The PIU is legally registered and reports to the Ministry. The PIU consists of a Project Head, Procurement Officer, WSS and Civil Engineer, GEF Coordinator, Financial Manager, Accountant and a translator. In addition, a Steering Committee based within ACTD would assist to provide policy guidance regarding project implementation. The PIU, in coordination with the Soroca Apa Canal, would be responsible for all aspects of financial management and disbursement.

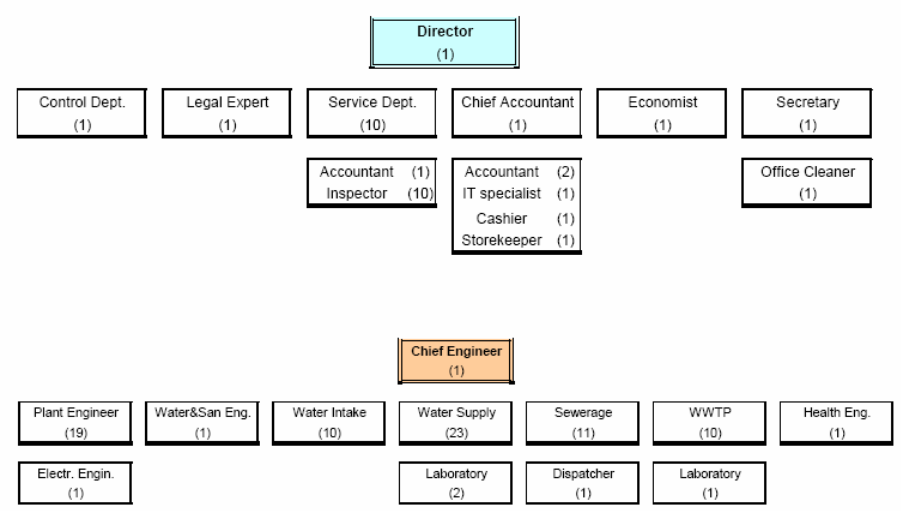
Table 6-1 Organizational Chart of PIU



Soroca Apa Canal:

The Soroca Apa Canal was established in 2000. It is a registered, legal entity, and owned to 100% by the Soroca Municipality. It is in charge of water supply and wastewater collection and treatment in the Municipality of Soroca. The Apa Canal has a total of 113 staff as shown in the below table. The PIU will coordinate with the Director and the chief engineer during the project implementation. The operation and maintenance of the constructed wetlands will be minor and the present Apa Canal staff will be able to operate it as part of their other duties, subject to receiving initial training and supervision by the contractor and by the engineering consultant.

Table 6-2 Organizational Chart of Soroca Apa Canal



Monitoring and evaluation of outcomes/results

The monitoring and evaluation of outcomes and results during implementation would follow standard Bank practice and be carried out in conjunction with the Pilot Water Supply and Sanitation Project. The Project Implementation Unit would collect and present data and reports for yearly review by Bank supervision missions. Discussions during supervision related to institutional capacity building, financial viability, technical reviews and site visits would provide an effective means of monitoring progress

Annex 7: Financial Management and Disbursement Arrangements

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

1. *Country Issues.*

The 2003 Country Financial Management Accountability Assessment (CFAA) in Moldova concludes that the financial accountability framework in Moldova is weak and requires substantial strengthening. The key weaknesses identified include: (a) budget framework process is fragmented, (b) inefficient cash management, (c) weak internal control and internal audit, and (d) inadequate external audits. It would be inappropriate for the Bank to place a blanket reliance on that framework for the purposes of satisfying the Bank's fiduciary financial management requirements. Reliance on any particular aspect of the country's financial management framework would need to be established on a case-by-case basis with reference to the specific financial management arrangements of the institutions involved.

The overall conclusion of the country Fiduciary Risk Assessment was that Moldova rated a high risk. Although the position may have improved considerably, but any change in the risk assessment is conditional on the process reforms that are being introduced and are continued to be implemented effectively and efficiently, and that the improved signs in tackling corruption are supported by hard evidence.

2. *Summary of FM assessment.*

The financial management assessment of the project was performed based on agreement that financial management functions, including accounting, reporting, auditing, internal controls will be performed by the PIU, subordinated to the Agency for Construction and Territory Development (ACTD), which is currently implementing the WSSP.

The FM arrangements for the project meet the Bank's minimum requirements. The overall financial management risk for the Project is moderate.

3. *Risk assessment.*

Summary of Risk Assessment

The overall financial management risk for the project is moderate. The Table below summarizes the financial management assessment and risk ratings of this project:

	FM Risk	***Risk Mitigating Measures***	***Residual Risk***	***Conditions of Negotiations, Board or Effectiveness***
INHERENT RISKS				
Country Level				
Weak PFM institutions and certain weaknesses in existing FM arrangements of SOEs.	H	PIU will maintain a financial management system, other measures include financial audit by international auditors, use of FM and procurement specialists in PIU.	M	No

	FM Risk	*Risk Mitigating Measures*	*Residual Risk*	*Conditions of Negotiations, Board or Effectiveness*
Entity Level				
Risk of low expertise in project implementation by Soroca Apa Canal as an Implemented Entity for Part A of the Project	H	Financial Management of the project will be done by PIU which has relevant experience in project financial management from implementation of WSSP.	M	No
Project Level				
Project uses project financial management arrangements similar to PWSSP.	M	The Project financial management arrangements have proven adequate from PWSSP, and are specified in the Operations Manual	M	No
OVERALL INHERENT RISK	H		M	No
CONTROL RISKS				
1. Budget	M	See below the relevant sections	M	No
2. Accounting	M	See below the relevant sections	M	No
3. Internal Controls	S	PIU has documented in its Financial Management Manual the internal control mechanisms to be followed in the application and use of funds and the implementation of the project.	M	No
4. Funds flow	S	The MOF, as recipient, will control all fund flows. Designated Account (DA) will be opened specifically for this project, in a bank acceptable to the Bank. Bank funds will be disbursed under the Bank's procedures including SOEs and direct payments.	M	No
5. Financial Reporting	M	See below the relevant sections	M	No
6. Auditing	M	See below the relevant sections	M	No
7. OVERALL CONTROL RISK	M	See below the relevant sections	M	No
8. RESIDUAL RISK RATING	M		M	

Risk of Misuse of Funds and Mitigation Measures

The following measures are incorporated in the project design to minimize the risk of misuse of funds:

- *Financial Management Manual.* The Project will closely follow the procedures and controls prescribed in the Financial Management Manual. The Manual shall not be amended or waived without prior approval of the Bank.
- *Internal Controls.* The internal controls procedures are detailed in the section Internal Controls and Internal Audit below.
- *Prior Review of Procurement.* A low threshold will initially be set for the Bank's prior review of procurement decisions by the Borrower.
- *Annual Financial Audit.* The financial audit will cover annual project accounts and entity financial statements
- *Regular reporting.* The project will prepare and submit to the Bank quarterly financial reports - IFRs.
- *Intensive Supervision by the World Bank.* Overall supervision, including financial management supervision, will be undertaken by Bank staff on a regular basis.

Anti-Corruption Measures

In general, corruption is acknowledged as an issue in the public sector in Moldova. Therefore, increased spending in utilities sector potentially opens up opportunities, and this risk must be countered by specific anticorruption measures to be implemented under the project. The risk mitigation measures would include the measures outlined in this section and section on Internal Controls and Internal Audit below.

4. *Strengths and weaknesses*

The significant strengths that provide a basis of reliance on the project financial management system include: (i) the experience of PIU in implementing Bank-financed projects and satisfying Bank financial management requirements; and (ii) centralized financial management arrangements and simplified cash flow.

5. *Soroca Apa-Canal*

The municipally owned Soroca Apa Canal, established in 2000, is responsible for water supply and wastewater services. At present it has a total of 113 staff, who operate 61 km water lines and 53 km sewer lines. Water is supplied to 98% of the population through 4,800 connections, whereas 63% of the population with water supply connections are sewered through 3,000 sewerage connections. The 4,800 water connections correspond to about 9,000 individual service accounts, since a share of the population reside in multi-story buildings with multiple apartments.

The operating surplus is nil and cannot support any major investment.

There are the following sources of revenues of Soroca Apa Canal: revenues from water supply (for services provided to entities and individuals) and revenues from sewerage services (to entities and individuals). In 2005 Revenues were MDL 4.2 million (US$ 0.33 million at the average exchange rate) and Cost of sales MDL 3.7 million (US$ 0.29 mln.) and gross profit of MDL 0.52 mln. (US$ 0.04 million at the average exchange rate). In 2004 sales did not cover cost of sales resulting to a gross loss of MDL 1.06 million (US$ 0.09 million at the average exchange rate). Revenues from water supply represented 35%, and from sewerage services 65%. The largest part of revenues is generated from sewerage services

provided to individuals - 49%. The largest part of cost of sales is fuel and energy (42% in 2005 and 34% in 2004).

The net profit figure in 2005 was MDL 1.05 million (US$ 0.08 million at the average exchange rate), while in 2004 there was a net loss of MDL 2.3 million (US$ 0.19 million at the average exchange rate). The major costs element which caused shift from gross loss in 2004 to gross profit in 2005 was personnel costs - was reduced by 40% in 2005 comparing to 2004. Another factor that contributed to the shift was reversal of previously recorded payable of MDL 1.7 million (US$ 0.14 million at the average exchange rate) as a result of court's decision.

6. ***Implementing entity***

The PIU was established in 2003 as implementing unit, created specifically to implement the PWSSP. The PIU is subordinated to the Agency for Construction and Territory Development (ACTD). The PIU is responsible for implementation and is capable to handle all fiduciary aspects of the project.

The risk associated with implementing entity is moderate, due to the sufficient experience in implementation of the Bank-financed projects.

7. ***Staffing***

The PIU is headed by the PIU Director, and financial staff includes a Financial Specialist and an accountant cashier (part-time). Although the Financial Specialist and the accountant cashier are relatively new, the PIU Director is able to ensure continuity in accounting and financial management of the project, due to her past extensive experience in financial management of Bank-financed projects.

Implementation of additional project, Environmental Infrastructure Project, will not substantially increase the work load of the existing staff, as the major activities for this Project will commence after completion of major activities for PWSSP.

The risk associated with staffing is assessed as moderate.

8. ***Budgeting and Planning***

The PIU will prepare annual budgets for the Project based on procurement plan and disbursement profile (approved by the Bank staff). The budget will be prepared by PIU, approved by head of PIU, then submitted for review to the General Director of the ACTD and then for approval to the Ministry of Finance. The budget will be annually revised according to the project implementation process and in case of any major changes in the procurement plan.

These budgets form the basis for allocating funds to project activities. The approved annual budget will be entered into the accounting system and used for periodic comparison with actual results as part of the interim reporting.

The risk associated with planning and budgeting is assessed as moderate.

9. ***Information Systems***

The PIU has recently purchased and installed licensed 1-C accounting system, and has made necessary modifications to the system to suit the needs of the Bank Projects. It is envisaged that the Environmental Infrastructure Project will use the new automated 1-C accounting and reporting system.

The risk associated with planning and budgeting is assessed as moderate.

10. ***Accounting Policies and Procedures.***

The accounting books and records will maintained on a cash basis and project financial statements are presented in United States dollars. PIU has instituted a set of appropriate accounting procedures and internal controls including authorization and segregation of duties. Accounting policies and procedures of the project are reflected in the project Financial Manual, which will be used by PIU in implementation of the Environmental Infrastructure Project.

Additional accounting policies that to be applied on the project (besides standard accounting policies used for Budget agencies) will include the following major procedures:

- cash accounting as the basis for recording transactions;
- reporting should be done in US dollars (reporting currency);
- consolidated IFRs should be prepared for the Project.

The risk associated with accounting policies and procedures is considered as moderate.

11. ***Internal Controls and Internal Audit.***

PIU has documented in its Financial Management Manual the internal control mechanisms to be followed in the application and use of funds and the implementation of the project. The Financial Management Manual deals with financial management and administrative procedures. The Financial Management Manual also deals with accounting and record-keeping, flow of funds, and reporting procedures.

The Financial Management Manual reflects the structure of the agency, administrative arrangements, and internal control procedures.

The internal control procedures include the following:

- proper authorization of expenditures, including authorization of SOEs and withdrawal applications;
- control over transfer and acceptance of goods by authorization by technical specialist of compliance of received goods to the agreed specifications;
- maintenance of automated records and regular backup of the accounting records;
- safeguard of assets through maintenance of register of equipment and annual stock takes;
- segregation of duties to avoid conflict of interest,
- regular reconciliation of bank account statements to project records, including through access to client-bank system for remote access to the bank;
- regular reconciliation of project records through on-line access to Client-connection;

- bank signing mandate (to include at least two signatories);
- regular reporting to ensure close monitoring of project activities,

The PIU has no internal audit function, and none is considered necessary given the size of the organization.

The risk associated with internal controls and internal audit is considered as moderate.

12. *Reporting and Monitoring.*

The PIU will prepare the quarterly Interim Un-audited Financial Reports (IFRs), previously knows as Financial Monitoring Reports (FMRs) and submit them to the Bank within forty-five days following end of each quarter. The IFRs will be prepared automatically from 1-C accounting and reporting system. PIU has demonstrated in its previous project that it is able to report on project expenditures, however, the PIU has once during year 2006 delayed submission of the FMRs.

The indicative forms of IFRs have been included in the Financial Management Manual used by PIU.

The risk associated with reporting and monitoring is assessed as moderate.

13. *External Audit.*

No significant issues have arisen in the audits of previous Bank-financed project implemented by PIU. PIU's previous Project auditing arrangements and findings are satisfactory to the Bank and it has thus been agreed that similar audit arrangements will be adopted for the Environmental Infrastructure Project, where Project financial statements will include Project sources and uses of funds, SOEs and Designated Account.

In addition, audit of financial statements of Soroca Apa Canal entity will be carried out on an annual basis. The financial statement of Soroca Apa Canal has been audited by independent auditors during implementation of PWSSP. Certain weaknesses have been identified in accounting and internal controls of the entity. The PIU shall continue monitoring progress of Soroca Apa Canal towards strengthening the accounting and reporting framework of the entity.

The audit of the project and entity financial statements will be conducted by independent private auditors acceptable to the Bank, in accordance with International Standards on Auditing (ISA) and the Bank guidelines on auditing and financial reporting, on terms of reference acceptable to the Bank. The annual audited project and entity financial statements will be provided to the Bank within six months of the end of each fiscal year and also at the closing of the project.

The contract for the audit awarded during the first year of project implementation and thereafter extended from year-to-year with the same auditor, subject to satisfactory performance. The cost of the audit will be financed from the proceeds of the grant.

The following chart identifies the audit reports that will be required to be submitted by the project implementation agency together with the due dates for submission.

Audit Report	*Due Date*
Soroca Apa Canal entity financial statements	Within six months of the end of each fiscal year
Project financial statements (PFS), including SOEs and Special/designated account. The PFSs include sources and uses of funds by category, by components and by financing source; SOE statements, Statement of designated account, notes to financial statements, and reconciliation statement.	Within six months of the end of each fiscal year and also at the closing of the project

The risk associated with external audit is considered moderate.

14. ***Funds Flow and Disbursement Arrangements***

The MOF, as recipient, will control all fund flows. The PIU will open and manage a Designated Account (DA) specifically for this project in a commercial bank acceptable to the Bank. Project funds will flow from the Bank, either via a single Designated Account, which will be replenished monthly on the basis of Statement of Expenditures (SOEs) and or full documentation. Bank's traditional procedures including reimbursement, direct payment and Special Commitment methods would be used. Supporting documentation for SOEs, including completion reports and certificates, will be retained by the Borrower and made available to the Bank during project supervision. All disbursements would be made on the basis of full documentation for (a) contracts for goods costing more than the equivalent of US$ 100,000 each; (b) contracts for works costing more than the equivalent of US$ 100,000 each; and (c) services under contracts of more than the equivalent of US$ 100,000 for each consulting firm and more than the equivalent of US$ 50,000 each for individual consultants. Disbursements below these thresholds and for expenditures against incremental operating costs would be made according to certified Statement of Expenditure (SOEs).

This documentation would be retained by the MOF through the PIU for at least one year after receipt by the IDA of the audit report for the year in which the last disbursement was made.

The risk associated with funds flow and disbursement is considered as moderate.

Allocation of Grant Proceeds

Category	Amount of the Grant Allocated (expressed in USD)	Percentage of Expenditures to be financed
(1) Goods, works, consultants' services, and Incremental Operating Costs	4,562,000	100 %
TOTAL AMOUNT	**4,562,000**	

15. ***Supervision Plan.***

As part of its project supervision missions, IDA will conduct risk-based financial management supervisions, at appropriate intervals. During project implementation, the Bank will supervise the project's financial management arrangements in the following ways: (a) review the project's quarterly FMRs as well as the project's annual audited financial statements and auditor's management letter and remedial actions recommended in the auditor's Management Letters; and (b) during the Bank's on-site supervision missions, review the following key areas (i) project accounting and internal control systems; (ii) budgeting arrangements; (iii) disbursement management and financial flows; and (iv) any incidences of corrupt practices involving project resources. As required, a Bank-accredited Financial Management Specialist will assist in the supervision process.

Annex 8: Procurement Arrangements

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

A. General

Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement Under IBRD Loans and IDA Credits" dated May 2004 and revised in October 2006, and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, and revised in October 2006 and the provisions stipulated in the Legal Agreement.

The various items under different expenditure categories are described in general below. For each contract to be financed by the Grant, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and the improvements in institutional capacity.

A General Procurement Notice (GPN) will be published in March 2007 in the United Nations Development Business (UNDB) and dgMarket. The GPN will give a description of the works and consulting services contracts to be procured under the project and will invite all potential contractors and consultants to express interest and request additional information from the implementing agency. Specific Procurement Notices (SPNs) for International Competitive Bidding (ICB) procurement packages and Expression of Interest (EOI) for consulting assignments estimated to cost US$ 200,000 equivalent per contract will be published in UNDB (on-line), dgMarket and a national newspaper of broad circulation as the corresponding bid documents become available. In addition, the Procurement Plan (including all formal updates), SPNs and EOIs for all contracts as well as results of contract awards will be published on the external website of UNDB online and in dgMarket.

The PIU will follow the Bank's anti-corruption measures and will not engage services of firms and individuals debarred by the Bank. The listing of debarred firms and individuals is located at: http://www.worldbank.org/html/opr/procure/debarr.html.

Procurement of Works: Works procured under this project would consist of rehabilitation of waste water system and the construction of waste water treatment facility of the municipalities of Soroca. This will include the rehabilitation of pumping sets and sewer networks and laying of pressure pipelines. Small size contract will be procured through Minor Works (shopping), by obtaining a minimum of three quotations and National Competitive Bidding by using sample bidding documents or invitation to quote. Suitable consulting firm will be selected for design and supervise the rehabilitation works. Procurement of a large contract for the rehabilitation of sewer network will follow the World Bank's International Competitive Bidding (ICB) procedures. Bidding documentation will be based upon the Bank's Standard Bidding Documents (SBD) for Works (May 2005 edition). The Domestic Preference clause will not be applied in the evaluation of bids. Contracts for civil works will be subject to screening for environmental impact by the responsible entity. All bidding documents and contracts will include measures to minimize or mitigate environmental damage.

Procurement of Goods: Goods procured under the grant would include monitoring and office equipment, and office furniture through shopping. Shopping of goods under the specific threshold will be carried out by comparing price quotation obtained from at least three suppliers.

Selection of Consultants: Consultant services required under this project would include: (i) engineering consultant for WWTP feasibility /pre-feasibility studies and design procurement documents and supervision and monitoring rehabilitation works; (ii) developing communication strategy; and (iii) associated training etc. Consultant's services to be financed from the grant would be selected in accordance with the Bank Guidelines issued in May 2004 and revised in October 2006, and for this project, would include Quality and Cost Based Selections (QCBS), Selection based on Consultants Qualifications (CQ) and Individual Consultants (IC). QCBS and CQ selection over US$100,000 would be advertised in Development Business (online version) and Gateway, and in local media (one newspaper of national circulation or the official gazette, and an electronic portal of free access (Moldova SPA website) for expressions of interest, from which a short-list of six firms would be drawn. Individual Consultants would be selected in accordance with Part V of the Consultants Guidelines.

B. Assessment of the Agency's Capacity to Implement Procurement

The project will be implemented by an established Project Implementation Unit funded under the Pilot Water Supply and Sanitation Project (PWSSP), under the overall responsibility of ACTD. The PIU consists of a Project Director, Procurement Officer, WSS Engineer, Civil Engineer, an Environmental Specialist (part-time), Financial Specialist, and Accountant Cashier (part-time). In addition a Steering Committee based within ACTD would assist to provide policy guidance regarding project implementation.

An assessment of the capacity of the Implementing Agency to implement procurement actions for the project has been carried out by Gurcharan Singh (Senior Procurement Specialist) in February 2007. The assessment reviewed options for the organizational structure for implementing the project and the interaction between the project's staff responsible for procurement and management. It was revealed that the PIU staff does have enough capacity to add procurement under the proposed project to their existing workload; they have good experience in conducting international procurement as they are dealing in other Bank-funded credits. As a result of the findings and recommendations of the CPAR dated June 2003 and this assessment, the overall risk for procurement under the project is determined to be "medium risk". At the completion of one year of implementation, the team will review the procurement capacity of the PIU as well as the functioning of procurement with a view to making adjustments if necessary.

The key issues and risks concerning procurement for implementation of the project have been identified. The project may face the following potential risks during implementation:

(i) The public officials, who will be involved in project procurement through tender committees, and the public officials of other related agencies at different levels of government, who will be involved in procurement, are not familiar with international procurement procedures, and may obstruct the procurement process; and

(ii) The bureaucratic system creates opportunities for informal interference in procurement process by senior officials. Furthermore, the past and the current experiences show that the formal involvement of PIU in the procurement process has resulted, and may result in moderate delays in procurement and project implementation.

Based on the analysis made, the following actions are recommended to mitigate the above-mentioned risks:

- The Bank will review and comment on the qualifications and experiences of tender committee members selected by ACTD to ensure that only persons with appropriate qualifications and with no conflict of interest are selected. The PIU procurement staff and all potential members of

tender committees will attend a one-day project procurement launch workshop that will be organized by the Bank staff immediately after the Grant Agreement is signed.

- A simple but detailed Revised Operational Manual will be prepared by the PIU prior to loan effectiveness. The manual will include procurement methods to be used in the project along with their step by step explanation as well as the standard and sample documents to be used for each method pertaining to this project**;**

- The PIU procurement specialists will work closely with the technical staff to foresee and reduce any potential delays in the procurement process;

- The PIU team will establish and maintain a database of suppliers of the required goods, and consultants (firms and individuals, as well as an inventory of the available goods in the country). They will also prepare a database of historical prices so as to be able to prepare more precise and up-to-date contract estimates to be used meaningfully as reference prices; and

- The Bank staff will review the efficiency of procurement under the project and the improvement in the procurement capacity of the PIU team after one year of the Grant effectiveness, and will make recommendations for further improvements, if necessary.

Training: Procurement training for PIU and ACTD staff and consultants will be conducted in accordance with a training program that will be submitted to the Bank for its agreement before implementation.

Operating Costs: The grant will finance the incremental operating costs of the team of experts to oversee and manage the project. Operating costs will be incurred according to an annual budget satisfactory to the Bank using the procedures to be described in the Project Operational Manual.

Anti-Corruption Action Plan. The Bank intends to maintain customary oversight and will carry out prior review of all major contracts according to the thresholds that will be regularly reviewed and adjusted as needed in Procurement Plan. Initial set up thresholds are provided below in this Annex. The following measures will be carried out to mitigate corruption risk:

- Training of Borrower's fiduciary staff starting from the project launch and periodically thereafter customized to procedure and methods that would be required in the next 12 month period. Following the project launch will include on-the-job training during supervision missions and regional training provided by the Regional Procurement Manager's office for the countries in the region;

- Prior review: intensive and close supervision by Bank procurement accredited staff. In addition, all contract *amendments* will be subject to prior approval by the Bank;

- Publication of Advertisements and Contracts: all publications of advertisements and contract awards, including the results of the awards will be done in accordance with the Guidelines' requirements and published on external websites of free access of the UNDB and dgMarket;

- Debarred Firms: appropriate attention will be given to the need to ensure that debarred firms or individuals are not given opportunities to compete for Bank-financed contracts;

- Complaints: all complaints by bidders will be diligently addressed and monitored in consultation with the Bank;

- Evaluation Committee: the Bank will review and comment on qualifications and experience of proposed members of the Evaluation committee(s) with a view to avoid that unqualified or biased candidates are nominated. All members will be required to sign a disclosure form (sample will be included in Operational Manual);

- Civil Works supervision: contractors carrying out rehabilitation works will be supervised by the civil engineer of the PIU;

- Monitoring of contract awards: all contracts are required to be signed within the validity of the bids/proposals and, in case of prior review contracts, promptly after the no-objection is issued. Procurement Plan format shall include information on actual dates (of no objections and award) and will be monitored for cases of delay which will be looked at on a case-by-case basis to identify the reasons;

- Monitoring Payments: all contracts shall include bank account information. The bank account shall be in the name of the same contractor/supplier/consultant that submitted the bid and awarded the contract. Payments to local contractors - suppliers -consultants shall be made in local currency only and paid to the accounts of banks located within the country;

- Monitoring of Payment vs. Physical progress: the IFRs will be customized to include a form to monitor physical progress compared to payment installments to avoid upfront loaded payments; and

- Timeliness of Payments: Payment to contractors, suppliers and consultants will be monitored through semi-annual interim un-audited financial reports (IFRs) to ensure timely payments.

C. Procurement Plan

The Borrower, with support from the Bank, has developed an initial procurement plan for project implementation which provides the basis for the procurement methods and timing. This plan has been agreed between the Borrower and the Project Team on February 1, 2007. The Procurement Plan will be updated in agreement with the Project Team, at least annually or more frequently as required to reflect the actual project implementation needs and improvements in institutional capacity.

D. Frequency of Procurement Supervision

In addition to the prior review supervision to be carried out from Bank offices, the capacity assessment of the Implementing Agency has recommended that procurement supervision will be carried out every six months.

E. Details of the Procurement Arrangements involving International Competition

1. Goods, Works, and Non Consulting Services

(a) List of contract packages to be procured following ICB and Shopping:

1	2	3	4	5	7	8	9
Ref No.	**Contract (Description)**	**Estimated Cost (US$ million)**	**Procurement Method**	**Pre-Qualifi-cation**	**Review by Bank (Prior/Post)**	**Expected Bid-Opening Date**	**Comments**
1.	Soroca WWTP	3.00	ICB	No	Prior	April-08	
2.	Monitoring, Office Equipment	0.05	IS	No	Prior (First)	Oct-09	

(a) All ICB contracts will be subject to prior review by the Bank.
(b) First IS will be subject to prior review

2. Consulting Services

(a) List of consulting assignments

1	2	3	4	5	6	7
Ref. No.	**Description of Assignment**	**Estimated Cost (US$ million)**	**Selection Method**	**Review by Bank (Prior/Post)**	**Expected Proposals Submission Date**	**Comments**
1.	Engineering Consultant for WWTP	0.61	QCBS	Prior	May-07	
2.	Engineering Consultant for Sewer	0.35	QCBS	Prior	May-07	
3.	Dissemination & replication	0.10	TBD*	Prior	Sep-07	multiple
4	Institutional Strengthening	0.15	TBD*	Prior	Sep-07	multiple
5.	Consultants for PIU	0.20	IC		July-07	multiple

* the selection method will be confirmed during negotiation.

Prior review requirement:

a. Contracts with consulting firms (≥US$200,000), First contract with consulting firm selected through CQ, and contracts with individual consultants estimated to cost US$50,000 or more each and all TORs; and
b. All single source, sole source, amendments and direct contracts.

Annex 9: Economic and Financial Analysis

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

The economic analysis of the Soroca Environmental Infrastructure Project will be restricted to cost-effectiveness and least cost analysis because the project benefits are such that they constitute environmental improvements for which there is no market to value the net benefits. Under the circumstances, the economic analysis has been limited to: (a) least cost analysis, i.e. selecting the option among several mutually exclusive alternatives that has the lowest economic costs; and (b) calculate on a continuous basis the cost effectiveness as measured by the cost to remove each kg of BOD and nutrients from the Nistru River.

The least cost analysis has been carried out and favors constructed wetlands the investment cost of which is US$ 3.0 million and the annual operational costs of which would be US$ 30,000. The next best treatment method would be extended aeration where the investment and annual operating costs, would be US$ 4.27 million and US$ 300,000, respectively.

The table below shows the investment costs for the four options studied and indicates that constructed wetlands constitute the least-cost solution (costs in US$ thousands of the year 2006):

Technology Option	Investment Cost	Annuitized investment cost	Annual O&M cost	Total Cost
Constructed wetlands	3,000	330	30	360
Extended aeration	4,270	560	300	860
Activated sludge	5,680	740	490	1,230
Sequencing Batches	4,200	550	380	930

The constructed wetlands is assumed to have a technical life of 25 years whereas the other technologies are assumed to have a useful life of 15 years. The discount rate used is 10% in constant prices.

No economic analysis has been carried out to justify the rehabilitation of the sewerage network. The need for rehabilitation is obvious as illustrated by the fact that the blockage and breakage rates are many times the levels prevailing in well maintained utilities. No precise data are available on breakage rates in the Soroca sewerage system. However, as a comparison it could be mentioned that the breakage rate in the water supply system is 7.2 pipe ruptures per km and year, equivalent to more than 30 times the level in Western utilities.

Economic cost/benefit analysis of the proposed GEF project should also consider intangible benefits since the absence of a market for the output of the project means that benefits cannot be valued reliably. Water quality protection will primarily benefit those who live downstream from the primary sources of pollution that the project will mitigate. The downstream communities comprise Rezina, Ribnitsa, Dubasari, Criuleni, Grigoriopol, Tighina, Vadul-lui-Voda, Tiraspol, Slobozia, Dnestrovsk, Olonesti, and Odessa with a combined population of 1.4 million. The length of the Nistru River downstream of Soroca is 550 km with high and low flow rates at Soroca of respectively 334 and 145 m^3/second. Many of the benefits, such as better quality of life, lowered risk of disease, and improved public health, are such that monetary valuation is tenuous. They are therefore classified as intangible (although important) benefits.

Annex 10: Safeguard Policy Issues

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

Environmental Issues

Environmental Assessment:

An Environmental Assessment (EA) has been completed for the rehabilitation and construction included in the project. The EA includes an Environmental Management Plan (EMP) covering the details of the specific mitigation and monitoring measures for the works under the project. Mitigation would include any minor social impact as well as physical impacts on the environment. Work under the project is expected to have a significant impact on nutrient reduction and have positive impact on water quality.

Monitoring the compliance of the implementation of the EMP is the responsibility of the Soroca municipality and ACTD in coordination with the local environmental authorities (Regional inspectorate, local environmental protection agency). Monitoring will focus on measuring compliance with pollution standards and requirement of related permits (wastewater discharges, air quality, construction permit, water permit, etc.) while mitigation measures will include actions to prevent environmental hazards such as health and safety for the construction workers and the public; noise disturbance; restrictions to access; dust - leading to adverse air quality; soil and/or water pollution from fuel and oil, excavation of materials and disposal of surplus soil/earth and other materials, degradation of historical and cultural sites, etc.

The EA has been locally consulted and disclosed and deposited in the World Bank InfoShop (March 15, 2007).

Natural Habitats:

No impact is expected on natural habits along the river bank by the site, and the impact on natural habitats downstream, is expected to be positive once rehabilitation and construction is completed.

Pest Management: *Not Applicable.*

Involuntary Resettlement: There are no land acquisition or resettlement issues. The former pressure sewer pipeline that runs from the pumping station to the treatment site will be replaced. The pipe runs under an existing access road, and the right of way is secured by the municipality. The route runs through an open area, and no structures or trees are located near the alignment. The now-abandoned sewerage pond system was located on 10 hectares of land. This is sufficient space for the proposed receiving station and the constructed wetlands. The land is to be transferred from Egoreni Commune to Soroca Municipality based on a Local Council Decision issued by the Egoreni Commune on March 30, 2007. This area is owned by Egoreni Commune and it is open land with no squatters and no informal use.

Indigenous People: *Not Applicable.*

Forests: *Not Applicable.*

Safety of Dams: *Not Applicable.*

Cultural Property:

The site for the receiving station and the constructed wetlands is four and a half kilometers from the historic center of the city, and is not believed to have ever been inhabited. Provision for chance finds, however, has been included in the EA and arrangements have been discussed with the Ministry of Culture for handling any chance finds.

Projects in Disputed Areas: *Not Applicable.*

Projects on International Waterways:

OP 7.50 applies to any water project that involves "the use or potential pollution of international waterways. It specifically exempts from the notification requirement "minor additions or alterations" to existing schemes that "will not adversely change the quality or quantity of water flows to the other riparians." Since by design the project seeks to improve the water quality of rivers in the region, it meets this definition. Reduced downstream flow of pollutants into the Black Sea would have positive regional/global implications. On this basis, an exemption to the notification of riparians has been requested and approved by the office of the ECA Regional Vice President on March 2, 2007.

Public Consultation, Social Survey, and Information Disclosure

Objectives and Method:

The objectives of public consultation were to: i) provide information to water consumers and other key stakeholders about the proposed improvement to the waste water treatment system, discuss the risks associated with the alternative of continued discharge of polluted waters into the natural water bodies, and provide an overview of the costs of the improvement; and ii) to involve the public into the implementation of project. The consultation process included a public social survey and several focus groups including local residents and NGOs.

The main concerns indicated by stakeholders include: (i) environmentally friendly project management and monitoring; (ii) strengthened inter-agency coordination; (iii) training needs; (iv) public information and awareness requirements; and (v) high-quality construction.

Results of Social Survey:

During the months of May and June 2006, almost 400 people participated in a social survey, representing proportionally the town's population with regard to gender, regions, age and education. Generally, most respondents had heard about the project (61%) before the survey and most (83%) indicated a positive attitude toward the project. Expected positive benefits included the economic development of the region (65%); the development of tourism in the region (81%); and positive impact on the conservation of natural ecosystems (79%). Most felt the implementation of the works under the project would have little or no impact on their everyday life (68%) and most (74%) were willing to accept any minor temporary inconveniences.

Results of Public Consultation:

Public consultation was organized by advanced announcement of open meetings using the local TV service. The meetings took place in the premises of Mayor's Office. These meetings paralleled the

conduct of the social survey. The expectations expressed by the participants included the following (in order of priority, from the highest to the lowest):

- improved health and life expectancy of the population;
- improvement of the river environment for both flora and fauna, including an increase in fish reserves in the Nistru River;
- promotion of industrial development and the reduction of unemployment;
- improved agricultural conditions and irrigation;
- strengthening of the Government's ability to respect its obligations concerning the maintenance of trans-boundary river water quality;
- improved conditions for tourism and recreation;
- improved conditions for river eco-system for future generations (ethno-cultural aspect); and
- minimization of the inconveniences for population during the construction.

Disclosure:

The draft EA, prepared by ECO-TIRAS for the ACTD, was reviewed and was submitted to the Infoshop on February 16, 2007 and made available to the public in Moldova in the local language. Another public information session that announced the selected technical option (constructed wetland) proposed under the project took place in Soroca on March 14, 2007. A revised final draft EIA has been made available in local language at the PIU office in Chisinau and disclosed at the Bank's Infoshop on March 15, 2007.

Annex 11: Project Preparation and Supervision

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

	Planned	Actual
PCN review	12/10/2003	12/11/2003
Initial PID to PIC		01/06/2004
Initial ISDS to PIC		02/23/2004
Appraisal	03/30/2007	03/21/2007
Negotiations	04/09/2007	04/13/2007
Board/RVP approval	05/29/2007	
Planned date of effectiveness	09/28/2007	
Planned date of mid-term review		
Planned closing date	12/15/2011	

Key institutions responsible for preparation of the project:

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Takao Ikegami	Sr. Sanitary Engineer	ECSSD
Seema Manghee	Sr. Infrastructure Specialist	ECSSD
Klas Ringskog	Consultant	ECSSD
Sandu Ghidirim	Project Officer	ECSSD
Delphine Hamilton	Sr. Program Assistant	ECSSD
Ruxandra Floroiu	Environmental Engineer	ECSSD
Lucian Bucur Pop	Sr. Social Development Specialist	ECSSD
Philip Moeller	Consultant	ECSSD
Gucharan Singh	Sr. Procurement Specialist	ECSPS
Dara Goldstein	Sr. Counsel	LEGEC
Irina Babich	Financial Management Spec.	ECSPS
Hannah Koilpillai	Sr. Finance Officer	LOAG1
Arcadie Capcelea	Consultant	ECSSD
Arben Bakllamaja	Consultant	ECSSD

Bank funds expended to date on project preparation:

1. Bank resources: US$484,817.59
2. Trust funds: US$19,599.10
3. Total: US$504,416.69

Estimated Approval and Supervision costs:

1. Remaining costs to approval:
2. Estimated annual supervision cost:

Annex 12: Documents in the Project File

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

1. Support for the Implantation of Environmental Policies and NEAPS in the NIS – Task 10d:Moldova. A Framework for Water Quality Standards in Rivers and Point-Source Discharges, January 2003. European Commission Project SCRE/111232/C/SV/WW.

2. Credit Repayment Analysis: Water Utility of Soroca. Moldova Local Government Reform Project. BDO Conti Audit and Urban Institute. December 2004.

3. Technical and Financial Proposal for Application for GEF Financing (Soroca). 2005.

4. Technical and Financial Feasibility Study for Soroca by ACTD 2006.

5. Review of the Technical and Financial Feasibility Study for Soroca by ARA Consult 2006

Annex 13: Statement of Loans and Credits

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P079314	2004	SIF 2	0.00	20.00	0.00	0.00	0.00	19.43	0.77	0.00
P075995	2004	AG POLLUTION CONTROL (GEF)	0.00	0.00	0.00	4.95	0.00	3.92	0.63	0.00
P040558	2004	ENERGY 2	0.00	35.00	0.00	0.00	0.00	35.32	3.79	0.00
P074469	2003	WS & SAN	0.00	12.00	0.00	0.00	0.00	12.10	-1.01	0.00
P074122	2003	AIDS CONTROL	0.00	0.00	0.00	0.00	0.00	4.94	0.67	0.00
P073626	2003	TRADE & TRANS FACIL IN SE EUR	0.00	7.21	0.00	0.00	0.00	5.48	-2.45	0.00
P060434	2002	RURAL INV & SERVS (APL #1)	0.00	10.50	0.00	0.00	0.00	2.36	-7.57	-2.83
P051174	2001	HEALTH INVST FUND	0.00	10.00	0.00	0.00	0.00	2.29	1.26	1.26
P051173	1999	SOC PROT	0.00	11.10	0.00	0.00	0.00	7.44	6.70	0.14
P035771	1998	FIRST CADASTRE	0.00	15.90	0.00	0.00	0.00	0.16	-0.03	-0.03
		Total:	0.00	121.71	0.00	4.95	0.00	93.44	2.76	- 1.46

MOLDOVA
STATEMENT OF IFC's
Held and Disbursed Portfolio
In Millions of US Dollars

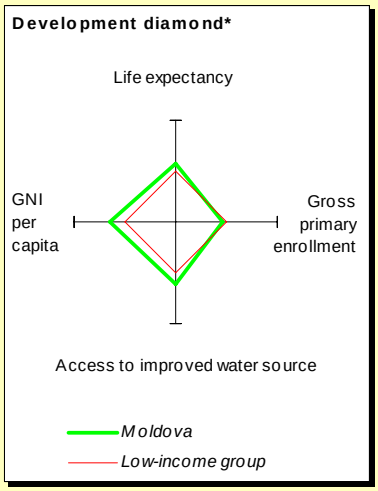
		Committed				**Disbursed**			
		IFC				**IFC**			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
2000/04	FinComBank	1.50	0.00	0.00	0.00	1.50	0.00	0.00	0.00
1997	INCON	5.55	0.00	0.00	0.00	5.55	0.00	0.00	0.00
2000/04	Moldindconbank	4.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
2000	ProCredit MDA	0.00	0.10	0.90	0.00	0.00	0.10	0.90	0.00
2001	UF Moldova	23.57	0.00	0.00	0.00	18.57	0.00	0.00	0.00
2001/04	Victoriabank	5.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
1999/00/01	VoxTel	0.00	0.00	0.30	0.00	0.00	0.00	0.30	0.00
	Total portfolio:	39.62	0.10	1.20	0.00	34.62	0.10	1.20	0.00

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
	Total pending commitment:	0.00	0.00	0.00	0.00

Annex 14: Country at a Glance

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

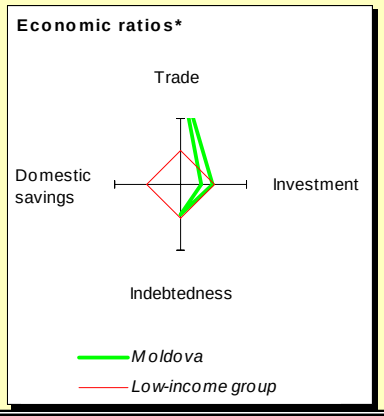
POVERTY and SOCIAL	Moldova	Europe & Central Asia	Low-income
2003			
Population, mid-year *(millions)*	4.2	473	2,310
GNI per capita *(Atlas method, US$)*	590	2,570	450
GNI *(Atlas method, US$ billions)*	2.5	1,217	1,038
Average annual growth, 1997-03			
Population *(%)*	-0.3	0.0	1.9
Labor force *(%)*	0.2	0.2	2.3
Most recent estimate (latest year available, 1997-03)			
Poverty *(% of population below national poverty line)*	23	..	..
Urban population *(% of total population)*	46	63	30
Life expectancy at birth *(years)*	67	69	58
Infant mortality *(per 1,000 live births)*	27	31	82
Child malnutrition *(% of children under 5)*	..	..	44
Access to an improved water source *(% of population)*	92	91	75
Illiteracy *(% of population age 15+)*	1	3	39
Gross primary enrollment *(% of school-age population)*	85	103	92
Male	86	104	99
Female	85	102	85



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

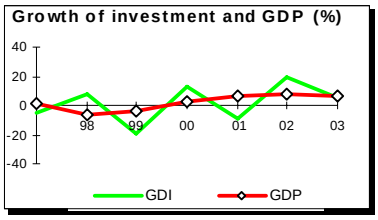
	1983	1993	2002	2003
GDP *(US$ billions)*	..	2.4	1.7	2.0
Gross domestic investment/GDP	..	55.8	21.7	21.7
Exports of goods and services/GDP	..	39.3	52.3	53.7
Gross domestic savings/GDP	..	39.8	-3.4	-12.3
Gross national savings/GDP	..	40.7	14.1	11.5
Current account balance/GDP	..	-7.7	-5.6	-9.2
Interest payments/GDP	..	0.0	2.5	1.7
Total debt/GDP	..	11.7	80.0	75.8
Total debt service/exports	..	0.4	20.8	10.2
Present value of debt/GDP	..	..	74.3	..
Present value of debt/exports	..	..	111.3	..

	1983-93	1993-03	2002	2003	2003-07
(average annual growth)					
GDP	-3.3	-1.8	7.8	6.3	4.0
GDP per capita	-3.9	-1.6	8.2	6.7	5.1

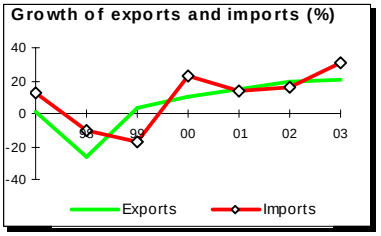


STRUCTURE of the ECONOMY

	1983	1993	2002	2003
(% of GDP)				
Agriculture	..	32.5	24.1	22.5
Industry	..	44.0	23.2	24.7
Manufacturing	..	36.0	17.0	18.4
Services	..	23.5	52.7	52.8
Private consumption	..	44.3	87.4	94.6
General government consumption	..	15.9	16.1	17.7
Imports of goods and services	..	55.4	77.4	87.6

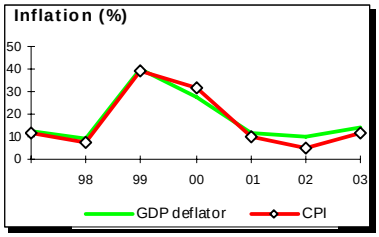


	1983-93	1993-03	2002	2003
(average annual growth)				
Agriculture	..	-2.6	3.7	-9.9
Industry	..	-6.1	3.9	13.4
Manufacturing	..	0.5	2.6	12.8
Services	..	1.5	7.4	9.5
Private consumption	..	7.5	4.7	19.1
General government consumption	..	-7.5	21.0	20.4
Gross domestic investment	..	-6.8	19.0	5.8
Imports of goods and services	..	8.9	16.1	30.9



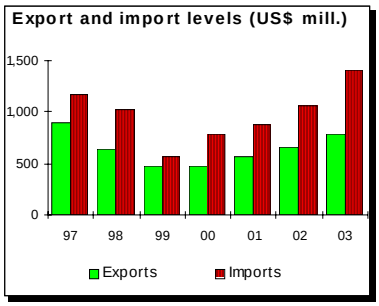
PRICES and GOVERNMENT FINANCE

	1983	1993	2002	2003
Domestic prices				
(%change)				
Consumer prices	..	788.5	5.3	11.7
Implicit GDP deflator	..	860.5	10.0	13.9
Government finance				
(%of GDP, includes current grants)				
Current revenue	..	26.8	29.5	31.1
Current budget balance	..	-4.1	0.7	1.4
Overall surplus/deficit	..	-9.0	-1.8	0.4



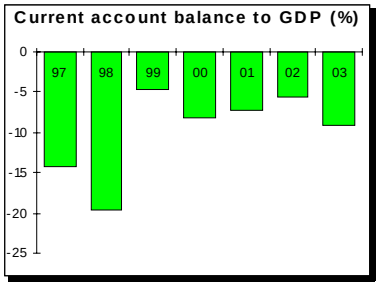
TRADE

	1983	1993	2002	2003
(US$ millions)				
Total exports (fob)	..	451	666	790
Live animals and animal products	..	26	39	29
Vegetable products	..	22	106	120
Manufactures	..	100	135	197
Total imports (cif)	..	631	1,052	1,403
Food	..	39	44	82
Fuel and energy	..	279	218	233
Capital goods	..	33	147	214
Export price index *(1995=100)*	..	..	91	93
Import price index *(1995=100)*	..	..	106	113
Terms of trade *(1995=100)*	..	..	85	82



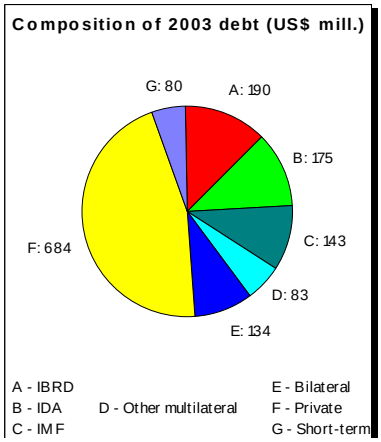
BALANCE of PAYMENTS

	1983	1993	2002	2003
(US$ millions)				
Exports of goods and services	..	501	870	1,054
Imports of goods and services	..	705	1,287	1,720
Resource balance	..	-204	-417	-666
Net income	..	0	151	323
Net current transfers	..	..	140	144
Current account balance	..	-182	-93	-181
Financing items (net)	..	169	115	214
Changes in net reserves	..	13	-22	-33
Memo:				
Reserves including gold *(US$ millions)*	..	..	269	302
Conversion rate *(DEC, local/US$)*	..	0.8	13.6	13.9



EXTERNAL DEBT and RESOURCE FLOWS

	1983	1993	2002	2003
(US$ millions)				
Total debt outstanding and disbursed	..	278	1,329	1,489
IBRD	..	28	186	190
IDA	..	0	145	175
Total debt service	..	2	231	148
IBRD	..	0	17	18
IDA	..	0	1	1
Composition of net resource flows				
Official grants	..	18	31	..
Official creditors	..	65	-5	-17
Private creditors	..	0	-36	33
Foreign direct investment	..	0	111	..
Portfolio equity	..	0	2	..
World Bank program				
Commitments	..	86	41	54
Disbursements	..	29	26	18
Principal repayments	..	0	9	11



Annex 15: Incremental Cost Analysis

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

SECTOR DEVELOPMENT GOALS AND THE BASELINE

Sector Development Goals:

Under the "**Program for the Development of Water Supply and Wastewater Services**", which was approved on 30 December 2005, the main sector development goals, which the GoM intends to achieve by 2015, are: i) ensuring access for the population to good quality drinking water in quantities necessary for water supply and other purposes, rational use of water; ii) environmental protection, protection against pollution and depletion of surface and ground water sources, appropriate management of investments, improvement of services rendered to consumers, enhancing the economic efficiency of enterprises in the water supply and sewage sector.

Moldova signed with Ukraine in 1995, calls on the signatories to cooperate in joint use and protection of transboundary water courses and transnational lakes. This agreement followed the spirit and intent of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes adopted at Helsinki in March 1992 and entered into force in October 1996. The second agreement signed by the Government of Moldova was a *Joint Memorandum of Understanding,* dated April 1997, on cooperation with Ukraine for development of a transnational water quality management plan for the Nistru River Basin. In addition, Moldova is a member of the Danube River Commission, an unofficial member of the Black Sea Commission and a party to many Black Sea/Danube cooperation agreements.

The Baseline:

In the above sector context, the government approved the Water Supply and Wastewater Program (Government Decree 1406 dated 30.12.2005) and committed to provide adequate financial resources to meet the MDG target up to the year 2015.

The **Baseline** therefore takes reference to the GoM's Water Supply and Wastewater Program. It is stressed that while environmental issues of local as well as trans-boundary relevance are high on the GoM's agenda, the reality of its financial constraints forces the GoM to give priority to those measures which exert the strongest and fastest positive impact on local population. The scope of other investments and the speed, with which they can be addressed, will depend upon the amount of external financing that the GoM is able to obtain.

The GoM's plans – and thus the Baseline for the present Incremental Cost Analysis – had foreseen a total investment in Soroca for modernization and development of water supply and sewerage systems of 33000 thousand MDL (= US$2500 thousand). Thereof a total = 28000 thousand MDL (= 2121 thousand US$) is supposed to be invested between 2006 and 2009, and another 5000 thousand MDL (= 379 thousand US$) between 2010 and 2015. Out of the total investment 10000 thousand MDL (= 758 thousand US$) are foreseen to be financed by state and local budgets. The latter figure is thus considered the baseline.

GEF ENVIRONMENTAL OBJECTIVES AND GEF ALTERNATIVES

The overall project objective is to reduce organic and nutrient emissions (phosphorus and nitrogen) from municipal wastewater sources and to reduce the pollution in the Nistru River and subsequently in the Black Sea.

Generally, such an approach makes perfect sense. On one hand increasing concentrations of organic pollution and nutrients in surface and ground waters pose an increasing challenge to water treatment. The whole Nistru catchment area, in one or another, is dependent on these resources for water supply. Increasing organic and nutrient concentrations thus cause:

- Additional cost for water treatment;
- Risks to public health;
- Eutrophication threats to surface water ecosystems, particularly in quiescent and stagnant water sections;

On the other hand nutrient emissions to the Black Sea are a main factor in the eutrophication of the continental shelves at the north-western and western fringe of the Black Sea. The abundant introduction of nutrients into the Black Sea began about in the 1970s, and caused:

- Algal blooms;
- Oxygen depletion in the Black Sea, particularly in bottom layers;
- Destruction of wetlands of global importance;
- Threats to marine habitats and ecosystems;
- Threats to seashore ecosystems;
- Negative effects on biodiversity;
- Dying-off of large fish populations with dire impacts on fish industry;

Specific Objective of the GEF Nutrient Removal Project in Moldova:

The specific objective is a reduction of organic pollution and nutrient emissions from point sources in **Soroca**. This requires the new construction of a WWTP designed for the removal of organics and nutrients.

At present point sources constitute about slightly less than half of total P and N emissions in Moldova. These figures were developed for the Danube catchment area, but given that the Danube catchment area covers about 36% of Moldova's total area, the numbers can be considered applicable to Moldova as a whole. The other half of Moldova's nutrient emissions has its origin in agricultural sources. Other nutrient emissions than those from municipal point sources and agriculture do not play any major role in Moldova.

By tackling point sources of water pollution in Moldova, this does not only have national impacts, but international benefits, too. Particular benefits are caused for the Ukraine, which is using Nistru River surface water for drinking water purposes as well. Needless to say, all states bordering the Black Sea can only improve the Black Sea water quality by a mutual effort.

Impacts

The impacts of this project will be twofold:

- Improved water quality in the Nistru catchment area from which both Moldovan and Ukrainian cities and towns draw water;
- Improved water quality in the Black Sea. Lower nutrient loads will reduce eutrophication in the delta and maritime zones. This again will have positive impacts on ecosystems, biodiversity and

wetlands. All this is not meant to be an end in itself, but it will eventually deliver positive economic impacts as well, e.g. if fish populations become more abundant again, and tourism is revived.

Table 15.1 - Average influent & effluent parameters of a new nutrient removal Soroca WWTP[2]

Main parameters	Average expected removal efficiency	Average expected flow	Avg. expected concentration		Avg. expected pollution load	
			Influent to WWTP	Effluent from WWTP	Influent to WWTP	Effluent from WWTP
	[%]	[m3/d]	[mg/l]	[mg/l]	[kg/d]	[kg/d]
BOD_5	97	3.000	333	10	1.000	30
Suspended Solids (SS)	98	3.000	400	8	1.200	24
Nitrogen total (TN)	50	3.000	67	33	200	100
Phosphorus total (TP)	50	3.000	17	8,3	50	25

Note: TN and TP removal observed in large scale CWs is fluctuating considerably in the range of 50 to 80%. Table 15.1 has selected the most conservative reduction. The figures applied for this table are conservative and should be safely feasible with a proper design, according to recent literature[3]. Note further that the average expected flow includes the relatively high levels of intrusion of groundwater and surface water into the aging sewerage system.

Additionality: The measures suggested for the GEF project are additional to the Baseline. These additional measures will complement planned activities. With the comparatively small funds available for the Baseline, in the best of cases some sewer rehabilitation and possibly low cost mechanical treatment of the sewage would be possible to implement. Yet the Baseline is by no means sufficient either for complete carbon removal or for nutrient removal.

[2] Given the assessment of currently known influent data, (i) an estimate is made for average influent BOD_5 load = 1.000 kg/d. All other influent load data is calculated thereof by using typical ratios of BOD_5 / SS / TN / TP = 1 / 1,2 / 0,2 / 0,05; (ii) Influent concentrations are all calculated from average influent loads and flow; and (iii) Average removal efficiencies are assumed according to experience for similar plants with regard to BOD_5 and SS. TN removal = 70% is a design requirement according to EU standards. TP removal is estimated on the basis of bio-P only, that is, without any use of chemicals. If chemicals are used, P concentrations could easily be brought down to the EU effluent standard of 2,0 mg/l, but such an operation cost is not considered economically viable at present.

[3] [1] Schmager C., Heine A.: Leistungsfähigkeit von Pflanzenkläranlagen - eine statistische Analyse (Treatment efficiency of Constructed Wetlands - a statistical analysis). gwf Wasser-Abwasser, Vol 141, No 5, p.315-326, 2000. [2] Felde K., Hansen K., Kunst S.: Constructed Wetlands in Lower Saxony - stock taking and performance. KA, Vol 43, No 8, p.1385-1392, 1996. [3] US EPA (United States Environmental Protection Agency): Wastewater technology fact sheet - Wetlands, subsurface flow. P.1-9, 2000. [4] Molle P., Liénard A., Boutin C., Merlin G., Iwema A.: How to treat raw sewage with constructed wetlands: An overview of the French systems. IWA Conference in Avignon 26th of September - 1st of October, 2004. [5] Obarska-Pempkowiak H., Kowalik P., Tuszynska A., Gajewska M.: Operating experience with Constructed Wetlands in Poland. KA, Vol 52, No 11, p.1229-1235, 2005.

Positive economic impacts on fish industry and tourism:

Avoidance of eutrophication and consequent increase in fish population can have a positive impact on the economy. Present fish populations are still down due to the negative impact of the past decades with bad water quality. Likewise, tourism associated with a sound environment can generate a significant source of income.

Overall financing and cost components:

The availability of significant allocations from GEF could well attract funding from other donors, which could help finance similar projects. The GEF initiative and the grant provided by GEF are welcome and provide the impulse, which will amplify the process of attracting investment, both foreign and local.

The total investment under the project is estimated at US$ 9.900 million. Thereof US$ 4.562 million will be the GEF's contribution and US$ 5.338 million shall be financed by the GoM and IDA.

The suggested investments encompass the following components:

- New construction of nutrient removal WWTP for Soroca;
- Rehabilitation of pumping stations & sewerage pipes in Soroca;
- Dissemination component;
- Institutional components (public awareness; TA for Apa Canal, WWTP staff, PIU);
- Feasibility studies in ten towns and pre-feasibility studies in five towns as a means of promoting replication of the low-cost WWTP pioneered under the project;
- Engineering Consultants;
- PIU Consultant.

Funding Plan

Table 15.2 : Project funding plan

(US$)

SOROCA No Description	Procurm' Method	Government	IDA* PWSS	GEF	sum	Local	Foreign
Component 1-A - Investment							
1 Soroca WWTP (Constructed Wetland System)	W			3,000,000	3,000,000	1,000,000	2,000,000
2 Water quality monitoring equipment & furniture & office equipment	G			50,000	50,000		50,000
3 WWTP Land	N/A	770,000			770,000	770,000	
4 Pressure pipelines (4.5 km)	W	360,000			360,000	360,000	
5 Urgent Rehab. Of Sewer Network	W		445,000		445,000	445,000	
6 Rehabilitation of Sewer Network & P/S	W	1,000,000			1,000,000	1,000,000	
7 Water Supply - Urgent Rehabilitation (1-2 years)							
Design Technical Assistance	C		135,000		135,000	60,000	75,000
Computer and Software	G		15,000		15,000	15,000	
Production Metering	G		21,300		21,300	21,300	
Metering for all consumers	G		3,400		3,400	3,400	
Leak detection equipment and training	G		23,000		23,000		23,000
Construction and electrical equipment	G		275,000		275,000		275,000
Repair material for network and connections	G		400,000		400,000		400,000
Installation of network valves and electrical equipment	G		100,000		100,000		100,000
8 Water Supply - Medium Term Rehabilitation (2-5 years)							
Replacement of pipelines	W		500,000		500,000	500,000	
Replacement of pumps and electrical equipment	W		290,000		290,000	290,000	
Sanitation works and equipment	W		500,000		500,000	500,000	
sum 1		2,130,000	2,707,700	3,050,000	7,887,700	4,964,700	2,923,000
Component 1-B - Engineering Consultant and TA							
9 Engineering consultants for WWTP - studies, design, procurement docs, construction assistance, operation training	C			612,000	612,000		612,000
10 Sewer database (CCTV, survey & general sewer data) Engineering Consultant for sewer- hydraulic model, design , procurement docs, construction assistance	C			350,000	350,000	100,000	250,000
11 Ten Towns feasibility study and Five towns pre-feasibility study for WSS rehabilitation including replication of CW technology	C		450,000		450,000		450,000
12 TA for Apa Canal and ACTD	C		20,000	50,000	70,000		70,000
sum 2			470,000	1,012,000	1,482,000	100,000	1,382,000
Component 2 - Dissemination and Replication Component							
13 Dissemination of Constructed Wetland System	C			100,000	100,000	100,000	
sum 3				100,000	100,000	100,000	
Component 3 - Institutional Strengthening Component							
14 Communication Strategy, Media Campaign, Civil Society outreach for Apa Canal activities for WSS services	C			100,000	100,000	100,000	
15 TA for Apa Canal Staff for WWT Plant operation	C			50,000	50,000		50,000
sum 4				150,000	150,000	100,000	50,000
Component 4 -Project Management							
16 PIU Consultant - incremental operation cost	C		30,000	250,000	280,000	280,000	
Total		2,130,000	3,207,700	4,562,000	9,899,700	5,544,700	4,355,000

* IDA PWSS investment will be completed before the end of 2007.

Note: The IDA credit for the PWSSP provided $450,000 in support of project management and preparation activities during the preparation of the GEF project.

Incremental environmental benefits and incremental cost:

Table 15.3: Incremental environmental benefits

	Baseline	GEF project	Incremental environmental benefit
Key features	GoM investment into Soroca wastewater system. Given the amount available, not more than some rehabilitation of sewer lines and P/S, possibly a minor mechanical WW treatment can be realised.	Construction of a new nutrient removal WWTP. Increased investment into sewer lines. Supplementary institutional components to improve public awareness and staff training.	Reduced emissions of BOD and nutrients (N, P); reduction of algal blooms; increase of oxygen conc. in surface waters; preservance of wetlands; positive effects on biodiversity & ecosystems; increase in fish population.
Cost [million US$]	**0,76**	**6,87**	**6,11**
1 New construction of WWTP	Little or no action.	New WWTP, capable of substantial nutrient removal.	Reduced emissions and subsequent incremental benefits as listed above.
2 Rehabilit. of P/S & sewerage pipes	Limited action.	Doubling of financial resources as compared to the Baseline.	Additional rehabilitation of sewer lines; increased sewer connection rates.
3 Trainings, Public Awareness	No action.	Training of APA Canal, WWTP staff, PIU. Information of general public.	Better operation and management practices leading to lower operation cost & enhanced treatment efficiency; favourable public opinion; increased willingness to accept higher tariffs.
4 Dissemination of knowledge and experience	No action.	Annual conferences, both at national and international level.	Spreading of the knowledge about an exemplary treatment scheme for many other small cities in the region.

Table 15.4: Expected annual reduction of pollution loads

Main parameters	**Avg. expected daily pollution load** Influent to WWTP [kg/d]	Effluent from WWTP [kg/d]	**Avg. expected annual flow** [m3/y]	**Avg. expected annual load reduction** [tons/y]
BOD_5	1.000	30	1.095.000	354
Suspended Solids (SS)	1.200	24		429
Nitrogen total (TN)	200	100		37
Phosphorus total (TP)	50	25		9

Table 15.5: Incremental cost for 25 years average lifespan of investment

Incremental effects		Soroca
BOD_5 reduction within 25 years	[tons/25y]	8,851
Suspended Solids (SS) reduction within 25 years	[tons/25y]	10,731
Nitrogen total (TN) reduction within 25 years	[tons/25y]	913
Phosphorus total (TP) reduction within 25 years	[tons/25y]	228
Incremental investment cost (GEF+GoM)	[million US$]	6.114
Incremental O&M cost	[million US$/y]	0.04
Inhabitants directly affected (based on no. of connections & customer accounts, 3 cap/customer account)	[cap]	16,875
Abatemant cost (for 25 years lifespan)	[US$/kg BOD_5]	0.7
	[US$/kg SS]	0.6
	[US$/kg TN]	6.7
	[US$/kg TP]	26.8
Incremental investment cost per inhabitant affected	[US$/cap]	362
Incremental O&M cost per inhabitant concerned	[US$/cap/y]	2.4

Annex 16: STAP Roster Review

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT

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Scientific and technical soundness

The scientific and technical basis of the project is sound. It addresses the urgent and critical issue of reducing sewage and wastewater pollution of the Nistru River. The project complements the current GEF agricultural pollution control project to deliver reduction of nutrient pollution of the river which flows into the Black Sea. The design of this project and builds on and reflects lessons and experience in many similar projects in effective low cost/low technology urban wastewater treatment.

The technologies for constructed wetlands are established and effective and appropriate to the staff competence and current economic operational context of the Soroca Apa canal.

Given the estimate that less than 5% of wastewater treatment plants in Moldova are meeting effluent standards, a demonstration plant and staff capacity building for low cost water treatment are important in the national context. The linkage to a government project to repair seriously degraded sewerage and pumping infrastructure suggests that the project should achieve readily demonstrable outcomes that are replicable in Moldova and in similar situations elsewhere.

Global environment benefits and costs

The project will improve downstream water quality in the Nistru catchment area. The Nistru River flows into the Black Sea. The project has good prospects of achieving its objectives and leading to further national scaling-up delivering clear global benefits by addressing a component of nutrient pollution of the Black Sea. The design of the project is thus linked to the GEF supported Strategic Action Plan for the Protection and Rehabilitation of the Black Sea" (BSSAP).

The context of GEF goals and guidelines

The project clearly addresses the objectives of the integrated land and water multiple focal area. The measures to reduce pollution to the Black Sea and Nistru River relate to Operational Program 8, the Waterbody-based Operational Program. It addresses the objectives of providing a basis for achieving sustainability, improving human and environmental health and economic outcomes and it applies the guidelines with respect to incremental costs and the log-frame.

Regional Context

The project has high priority in the context of human and environmental health of Moldova and Ukraine because the Nistru catchment water body that is heavily used in both countries for drinking water production. The project is consistent with a Joint Memorandum of Understanding between Moldova and

Ukraine on transnational water quality management and with Moldova's role in several cooperative agreements relating to the Black Sea and the Danube River.

Replicability

The project is based on established methods and it as it achieves success and develops operational capacities of apa canal staff it is likely to be replicated with a degree of urgency in order to enable Moldova to meet its targets under the Millenium Development Goals.

Sustainability

This proposal addresses an urgent priority of restoration and technological catch-up in water treatment after decades of deterioration. The Government of Moldova is committed through national policy and regional and international agreements to sustain and extend water treatment capacity and performance.

Contribution to future strategies and policies

As discussed above this project addresses core elements of national and regional policies and agreements. The constructed wetland to treat the waste of the current sewered population of 22,000 will occupy just over one third of the area of the site for the treatment plant. There is thus substantial capacity for expansion and for establishment of further and more advanced treatment facilities as needs and capacities develop.

Involvement of stakeholders

The project proposal reflects community support built through information, education and demonstration of the needs for and benefits of water treatment. Apparent current willingness to pay to support water quality benefits that accrue to downstream communities is an important and attractive feature of the proposal which also makes reasonable provision for further information dissemination, replication and communication. This augurs well for sustainability and extension.

Risk assessments

I am not familiar with the field operating situation but the assessment of modest risk appears reasonable and perhaps cautious in the light of the reported government and community support for addressing the issue of water treatment and water quality. I note that the GEF Agricultural Pollution Control Project is reported to be operating successfully. On this basis the risks seem to be reasonably discussed and I concur with the assessments

Costs

Subject to the qualification above, the amounts and relativities of funding proposed for the various components appear reasonable..

Conclusion

This is a soundly designed and important pilot project using tried and appropriate technologies to address an urgent public and environmental health issue in one of the poorest countries in Europe. It has government and community support and presents acceptable levels of risk. I recommend that it should proceed.

Richard A Kenchington

11 February 2007

Attachment:

1. PAD document with minor edits in Word edit.

World Bank Response to STAP Reviewer Comments

The Bank team thanks Mr. Kenchington for his positive review of the project scope and design and agrees with the reviewer especially on the importance of the project replication potential given the large number of non-functioning wastewater treatment plants, and the project innovation aspect since while the technology is proven, it is the first project of its kind in Moldova. Successful implementation of this project would appeal donor community to increase its assistance in the water and wastewater sector in near future.

Annex 17: Maps

MOLDOVA: ENVIRONMENTAL INFRASTRUCTURE PROJECT