

MOLDOVA  
AGRICULTURAL POLLUTION CONTROL PROJECT

**GEF Project Document**

Europe and Central Asia Region  
ECSSD

<p><b>Date:</b> January 5, 2004  <b>Sector Manager/Director:</b> Marjory-AnneBromhead  <b>Country Manager/Director:</b> Luca Barbone  <b>Project ID:</b> P075995  <b>Focal Area:</b> I - International waters</p>	<p><b>Team Leader:</b> Aleksandar Nacev  <b>Sector(s):</b> General agriculture, fishing and forestry sector (80%), General public administration sector (20%)  <b>Theme(s):</b> Other environment and natural resources management (P), Other rural development (P), Environmental policies and institutions (S)</p>
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**Project Financing Data**

Loan     Credit     Grant     Guarantee     Other:

**For Loans/Credits/Others:**

**Amount (US\$m):** US\$4.95

**Proposed Terms (IDA):** Standard Credit

**Commitment fee:** 0.00-0.50%

Financing Plan (US\$m):	Source	Local	Foreign	Total
BORROWER/RECIPIENT		1.04	0.00	1.04
LOCAL COMMUNITIES		0.72	0.00	0.72
GLOBAL ENVIRONMENT - ASSOCIATED IDA FUND		2.38	1.55	3.93
GLOBAL ENVIRONMENT FACILITY		3.08	1.87	4.95
LOCAL GOVTS. (PROV., DISTRICT, CITY) OF BORROWING COUNTRY		0.10	0.00	0.10
<b>Total:</b>		7.32	3.42	10.74

**Borrower/Recipient:** GOVERNMENT OF MOLDOVA

**Responsible agency:** MINISTRY OF ECOLOGY, CONSTRUCTION AND TERRITORIAL DEVELOPMEN

**Estimated Disbursements ( Bank FY/US\$m):**

FY	2003	2004	2005	2006	2007			
<b>Annual</b>	0.56	1.00	1.20	1.10	1.09			
<b>Cumulative</b>	0.56	1.56	2.76	3.86	4.95			

**Project implementation period:** 5 years

**Expected effectiveness date:** 06/15/2004    **Expected closing date:** 12/31/2009

**Supplementing the following IDA project**

<p><b>Date:</b> May 22, 2002  <b>Sector Manager/Director:</b> Marjory-AnneBromhead  <b>Country Manager/Director:</b> Luca Barbone  <b>Project ID:</b> P060434  <b>Lending Instrument:</b> Adaptable Program Loan (APL)</p>	<p><b>Team Leader:</b> Pierre Olivier Colleye  <b>Sector(s):</b> General finance sector (74%), General industry and trade sector (20%), Sub-national government administration (4%), Other social services (2%)  <b>Theme(s):</b> Rural markets (P), Rural non-farm income generation (P), Administrative and civil service reform (P), Rural services and infrastructure (P), Infrastructure services for private sector development (P)</p>
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## A. Project Development Objective

### 1. Project development objective: (see Annex 1)

The development objective of the project is to increase significantly the use of environmentally friendly agricultural practices by farmers and agro-industry in Moldova in order to reduce nutrient discharge from agricultural sources to the Danube River and Black Sea. In support of this, the project will assist the Government of Moldova to: (i) promote the adoption of mitigating measures by farmers and agro-industry for reducing nutrient loads (nitrogen and phosphorous) entering local water bodies; (ii) strengthen national policy, regulatory enforcement and institutional capacity for agricultural nutrient pollution control and organic farming; and (iii) promote a public awareness campaign and replication strategy so that project activities could be replicated in similar areas within Moldova and other Black Sea riparian countries.

The proposed Agricultural Pollution Control Project (APCP) would provide a mix of investments and policy related activities to mainstream environmental concerns in Moldova's agricultural sector. It will be implemented in close association with the US\$25 million IDA-funded Rural Investment and Services Project (RISP), an Adaptable Program Lending (APL), which has been "designed to foster post-privatization growth in the agricultural sector by improving the access of new private farmers and rural businesses to what they need to succeed - legal ownership status, knowledge, know-how, and finance". The first tranche of the APL, in the amount of US\$10.5 million was approved in mid-2002. The APCP will assist farmer and agro-industry beneficiaries of RISP to put in place the mitigating measures necessary to reduce nutrient discharge from the agricultural sector. It would also assist the Government of Moldova in harmonizing its legislative framework with relevant European Union (EU) directives and honoring its international commitments to reduce nutrient loads to the Danube River and Black Sea.

*Project Global Environmental Objectives:* The global environmental objective of the project is to reduce the discharge of nutrients into surface and groundwater in watersheds draining into the Danube River and Black Sea. An ancillary benefit is increased carbon sequestration from tree planting and ecologically sustainable land use practices and decreased methane emissions from farming and livestock practices, both of which have significant implications for climate change mitigation. The Project will help introduce improved manure and nutrient management practices as well as organic farming which, over the long run, will help reduce the discharge of nitrogen, phosphorus and other agricultural pollutants into the surface and ground waters of Moldova and the Black Sea. Project activities are directly linked to the "Strategic Action Plan for the Protection and Rehabilitation of the Black Sea" (BSSAP), formulated with the assistance of the GEF. The nutrient reduction component is being prepared under the umbrella of the *Black Sea/Danube Strategic Partnership-Nutrient Reduction Investment Fund* under which riparian countries are eligible for Global Environment Facility (GEF) Grants for projects that help control or mitigate nutrient discharge into the Black Sea.

The proposed project is Moldova's contribution to a regional effort seeking to reduce nutrient flow to the Danube River and Black Sea. It is one in a series of pilot projects that have been successfully launched in several Black Sea riparian countries to reduce non-point source pollution from agriculture and thereby improve the waters of the Black Sea - Agricultural Research,

Extension and Training Project in Georgia, Agricultural Pollution Control Project in Romania and Wetlands Restoration and Pollution Reduction Project in Bulgaria.

## **2. Key performance indicators:** (see Annex 1)

Key indicators to measure project impact will include the following:

- increased awareness of environmental issues in agriculture and agro-industry
- increased percentage of farmers and agro-processors/industries implementing environment-friendly practices;
- improved soil and water quality in the pilot watershed area;
- adoption of a Code of Good Agricultural Practices;
- implementation of policy framework for non-point source pollution commensurate with EU criteria
- improved quality of rural drinking water.

## **B. Strategic Context**

### **1. Sector-related Country Assistance Strategy (CAS) goal supported by the project:** (see Annex 1)

**Document number:** 18896-MD **Date of latest CAS discussion:** 04/07/99

The proposed project is consistent with the Bank's Country Assistance Strategy (CAS), as set forth in the IBRD, IDA and IFC joint memorandum dated April 17, 1999. The CAS identifies three priorities for assistance in order to improve economic growth and thereby improve prospects for reducing poverty and social hardship in Moldova: *macroeconomic stability and growth; private sector development; and public sector reform*. Towards this, the CAS envisages "support for reforms in agriculture and enterprise to stimulate a supply response and promote private sector-led growth" (CAS Progress Report, May 3, 2002). The proposed GEF-funded APCP supports the agriculture and private sector development objective of the CAS by directly addressing the major development challenge of protecting and enhancing the environment as privatization of the agricultural sector proceeds in the country. The project will seek to promote low-cost, high-yielding agricultural technologies, enforcement of existing legislation covering agro-industry and environment, development of the legal framework to address the EU Nitrates Directive as well as assistance to prepare a Code of Good Agricultural Practices. The mitigating measures to reduce nutrient loads in water bodies will also include investment and policy/institutional support for organic farming, thereby promoting the production of ecologically sound agricultural products which will help boost the country's volume of agricultural exports, regain traditional export markets and tap lucrative new markets in western Europe.

Moreover, as articulated in Government's Interim Poverty Reduction Strategy Paper (I-PRSP) of April 2002, one of the three pillars of the government's poverty reduction strategy is "sustainable and inclusive economic growth that will provide the population with productive employment". In Moldova, poverty is especially prevalent in rural areas where agriculture is the dominant means of livelihood. The political and economic upheavals of the transitional years impacted the agricultural sector resulting in decreased productivity and loss of traditional markets. Since agriculture is the most important revenue source for the rural poor population, the I-PRSP accords high priority to agricultural and rural development. The proposed project will promote sustainable growth in agriculture by encouraging the adoption of environmentally friendly practices (in both agricultural production and agro-processing) which will help increase rural incomes and living standards by promoting rural entrepreneurship, agricultural production, economic diversification, and trade, especially in rural areas.

### **1a. Global Operational strategy/Program objective addressed by the project:**

The Project will implement priority actions identified in the Black Sea/Danube Strategic Partnership - Nutrient Reduction Investment Fund, Black Sea Strategic Action Plan, Danube River Strategic Action Plan and Danube River Basin Pollution Reduction Program supported by GEF. The Project's objective of reducing non-point source nutrient pollution from agriculture is consistent with GEF Operational Program Number 8, *Waterbody Based Operational Program*, which focuses "mainly on seriously threatened water-bodies and the most important trans-boundary threats to their ecosystems." Under the Program, priority is accorded to projects that are aimed at "changing sectoral policies and activities responsible for the most serious root causes or needed to solve the top priority trans-boundary environmental concerns." The project's approach of combining good agricultural practices with ecologically sustainable use of natural resources identified under the Danube River Pollution Reduction Program, also makes it consistent with several additional GEF Operational Programs, including program number 3 "*Forest Ecosystems*", program number 12 "*Integrated Ecosystem Management*" and program number 9 "*Integrated Land and Water Multiple Focal Areas Operational Program*" which supports "more comprehensive approaches for restoring and protecting the international waters environment". Rehabilitation and improved management of degraded watersheds, in combination with improved nutrient and manure management will also reduce threats to biodiversity and promote increased carbon sequestration.

The project will provide an opportunity for the GEF to be a catalyst for actions to bring about the successful integration of improved land and water resource management practices. GEF support will help reduce costs and barriers to farmers adopting improved and sustainable agricultural practices. It will help develop mechanisms to move from demonstration level activities to operational projects that reduce non-point nutrient pollution to the Danube River and Black Sea.

### **2. Main sector issues and Government strategy:**

***Environmental Issues:*** During the last few decades, the Black Sea suffered severe environmental damage, mainly due to coastal erosion, eutrophication, conversion of wetlands, increased nutrient run-off from agriculture, invasion of exotic species, and inadequate resource management all of which led to a decline of its biological diversity, loss of habitat and long-term ecological changes. Black Sea Environmental Program (BSEP) studies revealed that 58% of the total dissolved nitrogen and 66% of the total dissolved phosphorous flowing into the Black Sea come from the Danube river basin. More than half of all nutrient loads into the Danube river originate from agriculture, about one-fourth from private households and about 10-13% from industry.

The entire territory of Moldova (33,800 sq km) lies in the Black Sea Basin. About 34 % of the country drains into the Prut River, a tributary of the Danube, approximately 60% into the Nistru (Dniester) River and the rest into a series of small rivers that empty directly into the Black Sea. For over five decades, unsustainable land use, excessive application of inputs, such as fertilizers, and use of heavy machinery resulted in severe degradation of the land and environment (notably soil, water and biodiversity). Soil erosion washes away an estimated 10 million tons of fertile soil annually. During the Soviet era, large cattle, pig and poultry farms were established near rivers that lacked efficient manure management practices. The discharge of untreated animal waste and manure is, in fact, one of the major pollutants of Moldova's surface and ground water. The continued lack of efficient manure management practices is having significant implications for groundwater pollution and drinking water supply for rural settlements in Moldova. Samples analyzed from about 70% of shallow wells which are the main source of drinking water supply for rural communities revealed nitrogen concentrations in excess of the maximum acceptable levels. (UN/ECE. The Republic of Moldova: Environment Performance Review. Geneva, 1998)

Nutrient discharge from agriculture is the most important contributor of water pollution in Moldova. Other sources are inadequately managed municipal and industrial wastewater treatment plants. Nutrient run-off to the rivers stems from: (i) environmentally unsustainable crop and soil management practices; (ii) inappropriate management, storage and disposal of animal manure, including dumping of manure in household backyards and river banks; (iii) over-grazing; and (iv) mismanagement of wetlands. From the Prut River basin alone, approximately 12.5 thousand tons of nitrogen and 1.5-2.0 thousand tons of phosphorous are being discharged each year. Annual run-off from manure is estimated at 10.5 thousand tones for nitrogen and 2.5 thousand tones for phosphorus (Nutrient Balancer for Prut River Basin Project, 1994).

Agricultural pollution, together with over-fishing, mismanagement of game sources, poaching, draining of wetlands, excessive tree cutting have also led to the degradation of biodiversity, which has reached a severe level in the Lower Prut River Basin. Hydropower stations built upstream have exacerbated the problem by changing the site conditions in the area. Native flora and fauna species are severely threatened and, in some cases, facing extinction. Privatization of farm land assets has led to farmers keeping livestock near their households - in backyards or barns adjacent to houses - which is resulting in nutrient pollution problems for the local drinking water supply. Groundwater pollution with nitrates and microbial organisms has major implications from the point of view of drinking water supply for rural settlements in Moldova.

A number of studies have been conducted over the past decade on nutrient run-off and various other aspects of environmental degradation in the Republic of Moldova and particularly in the Prut River Basin which have concluded that a principal cause of water degradation in Moldova is excessive nutrient discharge from agricultural sources. Some of these studies include:

- UNDP/GEF Strengthening Implementation of the Nutrient Reduction Measures and Transboundary Cooperation (1998, Danube Programme);
- Nutrient Balance for the Prut River Basin Project (1995, Danube River basin Programme);
- Study on the Quality of the Rural Drinking Water (1997, The World Bank, in two pilot areas);
- Evaluation of Wetland and Floodplain Areas in the Danube River Basin;
- Development of Agricultural Strategy (2000, Tacis Programme);
- First Agricultural Project of the WB in Moldova;
- Prut River Management Project (2000, Tacis CBC Programme, GIS mapping of the quality of surface and underground waters).

***Agricultural Issues:*** Agriculture is the mainstay of Moldova's economy contributing approximately 33% to GDP and accounting for 65% of the country's exports. With agricultural land covering 85% of the country's territory (33,800 sq. km), in good years the agri-business sector accounts for 75% of the country's total exports. The sector employs 40% of the republic's estimated population of 4.3 million (54% of the country's population lives in rural areas where almost all of the labor force is engaged in agriculture). This specialization in agricultural production is due to favorable climatic conditions and higher than average soil fertility. Fertile chernozem soil dominates over 72% of the total agricultural land within the country, which represents the highest percentage anywhere in the world.

Arable land represents 71% of the agricultural land; perennial plantations comprising orchards and vineyards account for 14%. Pastures take up the remaining 15% of agricultural land. As a result of land reform efforts started in 1992, over 80% of the agricultural land, and the overwhelming majority of state and collective farms were privatized. Individual farmers now supply about 75% of the country's agricultural produce. In all there are approximately 400,000 individual farms, averaging 1.5 ha in size.

Main agricultural products include grains such as wheat and maize, vegetables, fruits, tobacco, sugarbeet soya beans, etc.

Agriculture provides the raw materials for Moldovan food processing industries such as wine and beverages, sugar, oil and fats, bakeries, food concentrates, dairy products, meats, canned fruits and vegetables, etc. Its share of over 50% in total industrial output reveals the importance of the food industry to the Moldovan economy. Agricultural exports are the single most important source of foreign exchange income.

For nearly a decade since independence in 1991, Moldova's agricultural sector performed poorly, with a decline in production and exports. Agricultural GDP in 2000 was less than half of its 1990 level. While the overall economy grew by 2% in 2000, agricultural GDP declined by 3%. Most of the decline was the result of lower productivity with yields down 20-60% due to withdrawal of subsidies, fewer opportunities to obtain credits and reduction in input use. The contraction in the agricultural sector resulted in farmers opting for subsistence agriculture which emerged as the dominant food supply chain for immediate households as well as extended families in urban areas. However, in the past few years, with the growing acquisition of private land by farmers and the increasing dominance of private initiatives, the agricultural sector is rebounding. Farm lands that were left fallow in the rural areas in the early years of transition are now increasingly under cultivation. A vibrant and efficient commercial agricultural production sub-sector is also gradually emerging. Outputs from subsistence as well as commercial private farming are generally not captured by official statistics since these outputs often move through informal channels. The resurgence in the agricultural sector provides a window of opportunity for the proposed project to ensure that the benefits accruing from the improved agricultural sector are sustainable. As the agricultural sector grows, it is critical to sensitize and educate the new farmers and agro-processors to the need for mainstreaming environmental concerns into their agricultural practices so that the resultant agricultural sector is healthy and sustainable and does not become a candidate for "clean up" efforts in the future.

With the agricultural sector's importance to the economy, in terms of GDP, employment, population, and the large and increasing incidence of poverty among the rural population (55% of population lives below national poverty line), Moldova will not be able to achieve sustainable overall economic growth without generating sustainable growth in the agricultural sector. Key policy, structural and institutional issues and constraints identified in the "Agricultural Strategy for Moldova – Accelerating Recovery and Growth" includes the weak institutional capacity, a less than conducive legal, regulatory and operating environment for the adoption of environmentally sustainable agricultural practices, the still fragile private enterprises in rural areas with a tendency to try to revert to old style collective approaches and the slow transformation of the agro-processing sector. The RISP addresses many of these constraints and the proposed APCP will create synergies and provide additional grant funds to complement the RISP's credit and advisory components, with support for tackling environment problems related to agro-industry and crop and livestock production.

**Government Strategy:** Agricultural pollution control and wetland ecosystem protection are considered priorities by the Government of Moldova as documented in the following: (i) National Program of Strategic Actions for the Environmental Protection for 1995-2020 (1995); (ii) National Environmental Action Plan for 1996-1998 (1996), which included a program of activities to reduce or prevent pollution through better environmental management and sustainable use of natural resources; (iii) Governmental Strategy of Sustainable Development of the Republic of Moldova (2000) which emphasized sound agricultural practices, restoration and rational use of natural resources, elimination of pollution sources, water quality control, and waste management as national priorities, and (iv) Biodiversity Conservation Strategy and Action Plan (2001).

In line with its strategy of reducing nutrient loads to the Danube River and Black Sea, the government of Moldova has signed the Convention on Co-operation for the Protection and Sustainable Use of the Danube River (Sofia, 1994) and is a member of the International Commission for the Protection of the Danube River (Danube Commission). Moldova is also party to the: (i) Statement on Lower Danube Green Corridor signed by Bulgaria, Romania, Ukraine and Moldova, on 5 June, 2000, in Bucharest, Romania; and (ii) Protocol on the Establishing of the Trans-boundary Biosphere Reserve of Danube Delta and Scientific Reserve “Prutul de Jos,” signed on 27 July, 2000 between Romania and Moldova. The government has also signed a number of international conventions on environmental protection and biodiversity conservation, including the Convention on Protection and Use of Trans-boundary Water Courses and International Lakes (Helsinki, 1992), the Convention on Wetlands of International Importance especially as a habitat of aquatic birds (Ramsar, 1971), the Convention on Biological Diversity (Rio de Janeiro, 1992), the Convention on the Conservation of Migratory Species of Wild Animals (CMS) (Bonn, 1979) and the Convention on Environmental Impact Assessment in Trans-boundary Context (Espoo, 1991), the Convention on Conservation of European Wildlife and Natural Habitats (Bern, 1997) and the Convention on International Trade in Endangered Species of wild Fauna and Flora (CITES), Washington, March 3, 1973.

A key element of the government’s overall strategy for agriculture is the revitalization of the agricultural sector through accelerated recovery and growth which in turn will reduce rural poverty. It aims to promote post-privatization agricultural support services as well as on-farm environmental management to create an enabling environment to fully realize the sector’s potential. The main objective of the Government’s program is to implement a model of development based on private sector growth and the development of export industries in areas in which Moldova has a comparative advantage. In the near term, the Government’s main priorities are to: (a) overcome the general crisis in the agriculture and processing industry; (b) improve national food security; (c) increase the production of competitive high, value-added agricultural and food exports; and (d) promote rural area development as a natural, social and cultural framework for the revitalization of the economy. In order to achieve this, the Government is committed, with support under SAC III and the RISP, to implementing reform oriented agricultural policies while correcting problems of the past decade. The Ministry of Ecology, Construction and Territorial Development (MECTD) and the Ministry of Agriculture and Food Industries (MAFI) support the APCP as strongly complementing the Rural Investment Services Project (RISP). The combined program of grants (APCP) & credits (RISP credit lines) will allow the Government of Moldova to mainstream environmental and public health considerations into its agricultural sector which has significant economic and social implications for the recovery of the economy.

### **3. Sector issues to be addressed by the project and strategic choices:**

*Sector Issues:* The Project would extend and deepen the ongoing and proposed reforms of the sector by addressing the following key issues:

- Integrating environmental concerns into agricultural practices to make them more sustainable, including use of tested, low-cost technologies to protect soils, reduce surface run-off, prevent break-down of soil organic matter levels and increase retention capacity so as to reduce over the long term the discharge of the nutrient load into the Moldovan ground and surface waters, and, ultimately, the Danube River and the Black Sea;
- Developing appropriate policies, policy reforms and initiating legislation, in order to create the enabling environment for mainstreaming environmental concerns in agriculture;
- Enforcement of relevant legislation regarding agro-processing plants and village-level waste management;
- Capacity building with private farmers to use modern resource management techniques and all-round more environment-friendly agricultural practices;
- Developing an understanding of the EU Directives and how the main principles can be incorporated in Moldovan agriculture.

*Strategic Choices:* A strategic choice to be made was whether to work with the Ministry of Ecology, Construction and Territorial Development or with the Ministry of Agriculture and Food Industries to prepare the project and which ministry should be entrusted with overall responsibility of project implementation.

It was agreed that since the proposed project addressed both environmental and agricultural issues, both MECTD and MAFI should be involved with project preparation and implementation. However, as in-house experience and capacity of MECTD to address environmental issues and implement environment projects was greater than that of MAFI, it was agreed that MECTD would serve as the line ministry with overall responsibility for project preparation. An increasing role for MAFI is envisaged during project implementation, including responsibility for policy and regulatory matters concerned with organic farming and the code of good agricultural practices. Clear agreements have been reached on the mandate of each ministry under the project .

This is the first instance where the two ministries are working together on a common objective of mainstreaming environmental considerations into Moldova's agricultural sector. The value added of such a combined effort is significant as experiences of both ministries can be brought to bear on the design and implementation of the project. Collaboration between the two ministries also has the added advantage of influencing support in the Ministry of Finance for environmentally sustainable development projects and to include such projects in the national portfolio. The potential for conflicting priorities and approaches to project preparation and implementation exist; however, the Agricultural Steering Committee made up of representatives from various ministries and national and local agencies involved in the proposed project (MAFI; MECTD; Ministry of Finance; National Bank of the Republic of Moldova; and National Association of Food Production and Processing) and the Consolidated Agricultural Projects Management Unit (CAPMU), in charge of overall implementation of Bank-supported agricultural projects (including the proposed project), provide an effective forum for discussing issues and reaching agreements. The mandate of the Committee is to provide project oversight advice and assistance in resolving issues associated with project implementation, and ensure commitment and active participation of the concerned ministries.

## C. Project Description Summary

### 1. Project components (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

*Project Area:* Project actions will be implemented at two levels:

country-wide in conjunction with RISP where the 400,000 farms (on 2.3 million ha), whether farmed individually or in association, as well as agro-processors would be potential beneficiaries of information on, and investments in, environment-friendly agricultural practices;

at a selected pilot watershed area in the Hincesti and Leova raions (counties) about 30 km south west of Chisinau.

Geographically, the watershed pilot area lies in central Moldova within the basin of River Lapusnita, a main tributary of River Prut which in turn is a large tributary of the Danube River. These raions were selected as they met the following criteria: (a) country representativeness in terms of agro-industrial practices as well as soil, climate and other geo-ecological conditions; (b) catchment represents national agricultural patterns - arable lands, grasslands, vineyards, orchards, processing industry (vine factories, mill processing, etc.); (c) nutrient pollution of ground and surface water excessive and typical of most streams in Moldova - studies revealed that nitrates pollute over 65% of the shallow wells within residential areas which exceeds national and international standards; (d) local authorities/communities aware and concerned about environmental problems and actively motivated to address these; (e) accessible road network and communication necessary for demonstration purposes and dissemination of project activities.

The pilot watershed area covers eleven communes located in the Hincesti (9 communes) and Leova (2 communes) raions and comprises about 50,000 hectares with a population of more than 43,000, or 14,000 households, in 18 villages. Over 66% of the pilot area is used for agricultural purposes. The principal activity of local farmers is crop farming; main crops include grains (mainly wheat and maize), vegetables (cabbages, cucumbers, beets and carrots) and fruits (grapes, tomatoes) grown on arable lands. Other important crops include tobacco, sugarbeet and soya beans. Vineyards and orchards comprise a significant share of the land: 17% and 7% respectively. Over 15% of the agricultural area comprises grasslands and pastures used for livestock grazing. Most of the livestock is held by private individual owners. Livestock in the watershed area include: cattle (over 5,000 heads); pigs (over 9,000 heads); sheep and goats (15,000 heads); horses (1,000 heads); and poultry (166,000 heads). The principal agro-industrial activity in the region is associated with wine production and a number of important wine making factories are situated within the pilot area. The agro-processing sector is also characterized by small enterprises such as flour mills, oil pressing plants, fruit and vegetable processing plants, canning factories, etc.

*Project Components:* The project will support activities under four components to be implemented over five years as follows:

**(i) Promotion of mitigation measures for reducing nutrient loads in water bodies.** The

component would be implemented at two levels: (a) in close association with the Rural Investment Services Project's components for business development, rural support services and rural finance; and (b) in a pilot watershed area in the Hincesti and Leova raions comprising part of the Lapusna tributary of the Prut river.

**(a) Activities under RISP**

The IDA-funded RISP, an Adaptable Lending Program, in the amount of US\$25.0 million is currently under implementation in Moldova. The first tranche in the amount of US\$10.5 million was approved in mid-2002; under the first tranche US\$3.93 million has been allocated for activities to be implemented in conjunction with APCP grants. RISP is providing post-privatization support to increase rural incomes and living standards by promoting rural entrepreneurship, agricultural production, economic diversification, and trade in the rural areas. These objectives are sought to be achieved through the provision of technical and financial assistance. The project comprises institutional beneficiaries, e.g. local NGOs of advisory and extension agencies, service providers, etc. as well as a broad range of private entrepreneurs in rural areas. RISP accords priority to high value commodities, such as fruits and vegetables with export potential. RISP's four components include: (i) Rural Advisory Services; (ii) Rural Business Development Services; (iii) Rural Finance; and (iv) Project Management. The Rural Finance Component is providing two credit lines, namely: (a) *General Commercial Credit Line* that is open to a broad range of rural entrepreneurs at commercial terms and conditions through commercial banks; and (b) a *Special Credit Line with a matching grant* targeted for newly formed farmer organizations and cooperatives, to support "new clients" without past credit history to access commercial credits and to be implemented through commercial banks. In addition, the component supports the provision of technical assistance to participating financial institutions, State Supervisory Body, and Savings and Credit Associations.

*RISP-APCP Collaboration.* APCP will comprise a GEF-funded environmental addition to the RISP with the objective of mainstreaming environmental considerations into agricultural activities undertaken by RISP. The RISP-APCP collaboration would broadly be on two levels: (i) Provision of grants to implement mitigation measures for nutrient discharge stemming from RISP-supported activities; and (ii) Training for rural advisory service providers and RISP credit officers.

(i) Provision of Grants. Entrepreneurs/enterprises who borrow under RISP (individual farmers, farmers organizations, co-operatives and agricultural processors) and wish to invest in environmentally sustainable agricultural practices would receive a grant from the GEF fund to offset the incremental cost of nutrient reduction investments. The GEF will provide grant funds of up to US\$2 million to support the Credit Line of the RISP, specifically to cover a reasonable cost of mitigation measures required to reduce nutrient discharge. These grants are to encourage and serve as a financial incentive for the installation of agricultural pollution mitigation structures and procedures to protect Moldova's environmental resources while encouraging agri-business development. The types of businesses that might benefit from this component would include animal production businesses that produce animal wastes that are

rich in nutrients, crop production of any kind that have a large nutrient discharge potential, processing units for juice production, vegetable oil extraction, and wine production (winery) that may produce biomass waste requiring appropriate disposal methods, etc. The eligibility criteria for the provision of a GEF grant will be primarily to support those activities that will reduce nutrient loads to waterbodies. The APCP environmental mitigation grant application and approval process would be conducted in two phases: phase I would determine the eligibility of RISP Credit applicants for the mitigation grant, determine the mitigation strategy to be implemented, and establish a cost basis for the grant. Phase II would involve signing of the grant agreement, implementation of the mitigation procedures and milestone-based disbursement of grant funds on a mutually-agreed schedule.

(ii) Training. The project will also train RISP-financed rural advisory service providers in several nutrient reduction practices, including crop nutrient management, conservation tillage practices, crop rotation and tree planting of buffer strips etc. Credit officers of the participating banks and rural business developers will be trained in the mechanisms of grant provision; the training will allow them to inform credit recipients of the availability of the grants, the eligibility criteria and the application procedures for grant funds.

The mechanism for APCP support and the eligibility criteria for the provision of a GEF grant are detailed in an Operational Manual and available with the Project Management Unit.

#### **(b) Promotion of Improved Watershed Management Practices**

This component would prepare and implement improved watershed management practices for the Lapusna basin in eleven communes of the Hincesti and Leova raions, with the objective of reducing nutrient loads into the Prut River. The project will provide for investments in:

- Manure Management Practices. This sub-component will finance and provide incentives for the installation of up to 8 improved manure storage facilities and equipment for manure collection and application in the eleven communes at both the household and commune level. Villages and households wishing to participate in the investment program would be selected against agreed criteria and cost-sharing arrangements. Community training and awareness on good practices for waste collection and manure management including composting, testing, and field application would be provided. (Details in Working Paper 5).
- Promotion of Environmentally-friendly Agricultural Practices. This sub-component will promote the adoption of environmentally friendly agricultural practices that would improve agricultural production while reducing nutrient discharge into waterbodies. Technical assistance and incremental operating costs will be provided for sustainable agricultural practices, including: (i) *nutrient management* – the application of animal waste materials on agricultural land areas at rates determined by the nutrient needs of crops and nutrient content of the waste; (ii) *conservation tillage*- crop production in which the crop residues from the previous crop remain on the soil surface to provide erosion protection; (iii) *integrated cropping management* – the use of crop rotations and

strip cropping to prevent erosion and provide adequate supplies of animal feed and forages in integrated farming systems; (iv) *vegetated buffer areas* – permanent vegetated strips would be established at field and stream riparian boundaries and in water courses that will reduce and help prevent soil loss and its associated nutrient loss loads, and (v) *promotion of organic farming* – as soon as organic farming certification procedures are defined at national level, small organic farming areas would be established in villages throughout the two raions to demonstrate and help educate farmers on appropriate procedures for the production of organic fruits and vegetables. (Details in Working Paper 4)

- Shrub and Tree Planting. This sub-component will support the development of a shrub & tree planting program that includes: (i) planting of forest belts for the protection of water bodies; (ii) anti-soil erosion forest belts; (iii) ecological reconstruction of forests; and (iv) agro-forestry practices. The APCP assistance would primarily consist of providing planting material, appropriate equipment and technical assistance. The program will be implemented by the State Forestry Service “Moldsilva” with significant contributions from local communities (Details in Working Paper 6).
- Wetland Restoration and promotion of sustainable management practices. This sub-component will enhance the nutrient filtration capacity of the wetland at the intersection of the Lapusna and Prut rivers and help to restore the degraded wetland to its former natural state. Activities under the sub-component include: (i) forestry activities such as planting of forest vegetation with species that have high capacity for nitrate uptake and retention both in floodplain areas and terraces exposed to erosion; (ii) hydrologic enhancement practices, such as embankment reinforcements for the stabilization of water level, small bridges to provide access to different parts of the wetland, etc. (iii) sanitation activities; and (iv) public awareness activities to educate local inhabitants of the importance and fragility of wetland ecosystems. (Details in Working Paper 7)
- Monitoring soil, water quality and environmental impacts. An extensive soil and water quality testing program will be established for the proposed pilot area to monitor the changing quality of surface and groundwater bodies (in response to the implementation of the new and better agricultural and livestock practices) that eventually drain into the Danube River. This sub-component will strengthen the capacity of MECTD (water quality laboratory and hydrological department of the Hydrometeorology State Service) as well as the central and regional laboratories of the State Environmental Inspectorate and Institute for Pedology and Soil Science to carry out comprehensive soil and water quality testing and monitor environmental requirements. Internationally approved monitoring procedures will be employed that will include the use of paired-watershed and upstream-downstream hydrologic and soil and water quality monitoring designs. A modeling sub-component will extend lessons learned from Lapusna basin to other watersheds in the country. (Details in Working Paper 8)

**(ii) Strengthening National Policy, Regulatory Enforcement and National Capacity.** The

project will also support strengthening of the national legislative, regulatory and institutional capacity of the government of Moldova in agricultural pollution control. It will assist MECTD and MAFI in developing the Code of Good Agricultural Practices and strengthening the capacity of the Government of the Republic of Moldova in its efforts to promote scientifically grounded organic farming and land use management. Certification procedures for internal and external marketing will also be developed under this component. Activities under this component would increase capacity of the government for addressing agricultural pollution control measures and honoring its international commitments to reduce pollution to the Danube River and Black Sea.

**(iii) Public Awareness and Replication Strategy.** A local and nationwide public information campaign will be undertaken to disseminate the benefits of proposed project activities and achieve replicability of the same. At the local level, the main audience will be the direct stakeholders of the project (local and county officials, farmers, community groups and NGOs). The efforts at the national level would concentrate on institutions and groups (Government agencies, national environmental or professional associations, academia, NGOs, etc.) and the population at large. The aim would be to familiarize the population with the project and its benefits and thereby raise the interest of potential future clients. Leveraging RISP project funds would improve the replicability of these practices among agricultural enterprises and small farmers nation-wide. The project will draw on the Agency for Consultancy and Training in Agriculture, entrusted with specific extension activities under RISP, to undertake a nation-wide public awareness campaign to disseminate information on proven low-cost, environmentally-sound technologies provided under APCP. The project will provide for the organization of national and regional workshops, field trips, visits, training, publication in international agriculture and environmental journals and other activities to promote replication of project activities in other similar areas of Moldova as well as Black Sea riparian countries. Watershed modeling based on developing management strategies from experience in the pilot watershed area, would be a component of the replication strategy. The project will work closely with ongoing similar efforts in Georgia, Bulgaria, Poland, Romania, Turkey and Ukraine, and the exchange of experiences will help in contributing significant reductions in the nutrient loads entering the Danube River and Black Sea.

**(iv) Project Implementation Unit.** The project would support a Project Implementation Unit (PIU) that will report directly to MECTD. The existing Project Preparation Unit, already established in the MECTD offices, would evolve into the PIU. GEF funds would provide support for hiring relevant staff to implement APCP activities who will work closely with the RISP implementing staff. The PIU staff for APCP will include: a Project Manager, Technical Specialist (who would also handle project monitoring/evaluation), Financial Management Specialist, Procurement Specialist, Accountant, Secretary/Translator and Drivers. The Consolidated Agricultural Projects Management Unit (CAPMU) will provide fiduciary support and the payment for services provided by CAPMU, including procurement and financial management, will be shared by APCP. The PIU will coordinate project implementation by the different implementing agencies, and will be responsible for procurement, financial management and monitoring/evaluation of the project.

Component	Indicative Costs	% of	Bank financing	% of Bank	GEF financing	% of GEF
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	(US\$M)	Total	(US\$M)	financing	(US\$M)	financing
Promotion of mitigation measures for reducing nutrient loads in water bodies - grant for agro-industries supported by RISP - training for RISP farm advisors - pilot watershed interventions	9.66	89.9	3.93	100.0	4.19	84.5
National Level Strengthening of Policy and Regulatory Capacity	0.09	0.8	0.00	0.0	0.07	1.4
Public Awareness, Capacity Building & Replication Strategy	0.37	3.4	0.00	0.0	0.28	5.6
Project Management Unit	0.62	5.8	0.00	0.0	0.42	8.5
<b>Total Project Costs</b>	10.74	100.0	3.93	100.0	4.95	100.0
<b>Total Financing Required</b>	10.74	100.0	3.93	100.0	4.95	100.0

Figures may slightly differ due to rounding

A PDF-B grant for project preparation in the amount of US\$300,000 was approved and successfully implemented towards project preparatory activities.

The total project cost is US\$10.74 million with contributions towards this as follows:

Source	Total (US\$ million)
Government of Moldova	1.04
Local Communities	0.72
Rural Investment Services Project (RISP)	3.93
Global Environment Facility	4.95
Local governments of Moldova	0.10
<b>Total</b>	<b>10.74</b>

## 2. Key policy and institutional reforms supported by the project:

The APCP component will complement actions of the RISP in assisting with the completion of sector reforms. In particular, the policy reforms sought under the APCP seek to create the enabling policy environment for commitment to environment-friendly agricultural practices on the part of both the local as well as national governments. Policies effected by APCP would relate to the strengthening of national capacity for enforcement of existing environmental laws. Also, Moldova has ratified the Partnership and Cooperation Agreement (PCA) with the EC and its member states in 1998. According to Article 50 of the PCA, Moldova shall endeavor to ensure that its legislation will be made compatible with that of the Community, in fields including environment. Towards this, a Code of Good Agricultural Practices will also be prepared. An issue of particular interest to MAFI is to harness the country's potential for organic farming. The project will assist in the development of standards and certification procedures for organic products.

Institutional reforms under the project emphasize the ongoing decentralization process in the

country by ensuring full local participation in the preparation and execution of project activities. The project would seek the commitment and direct engagement of local communities in the operation and maintenance of project supported investments. In order to build local ownership and capacity, and to be able to effectively monitor and evaluate the impact of project activities, implementation of project activities will be entrusted to relevant local institutions. Training will be provided to the staff of these entities as necessary to ensure effective planning and implementation of resource management activities under the project.

### **3. Benefits and target population:**

The project will yield benefits at the local, national and international level:

Locally benefits will accrue as follows: (i) at the farm level, additional income from effective use of organic waste (manure as fertilizer), crop rotations, and improved livestock grazing practices; (ii) in the crop sector, outcomes will include improved production efficiency through cost-effective inputs and better farm management; (iii) in the health sector, there will be improvements in health and sanitation as there will be an improvement in the drinking water and general hygiene of the villages; and (iv) through terrestrial and aquatic habitat enhancement, increased populations of flora and fauna of local economic and social importance.

Reducing nutrient run-off into surface and groundwater, protecting long-term fertility of soils by maintaining organic matter levels, fostering soil biological activity through use of legumes and vegetables in crop rotation, as well as effective recycling of organic materials, including crop residues and livestock wastes, is expected to raise income and reduce the need for purchased inputs.

Nationally, the country will benefit through: (i) improved quality of surface and underground water in the watershed pilot area and consequently in the River Prut; (ii) improved agricultural productivity through better agricultural practices; (iii) progress towards compliance with EU Directives; (iv) increased capacity building of local institutions, such as State Ecological Inspectorate and Public Health Ministry; and (v) sustainable rural growth and development through environmentally sound agricultural practices. The proposed project is the first instance where the Government of the Republic of Moldova is mainstreaming environmental considerations in agricultural practices. The synergy of such an approach will bring about greater benefits globally, regionally and locally vis-à-vis independent, discrete agricultural and environmental projects.

Internationally, benefits will accrue through: (i) a continual reduction in the discharge of nutrients and sediments into Danube River and Black Sea and the accompanying improvements in the local and Black Sea water quality; (ii) broad-based stakeholder participation that will increase public awareness and demand-driven approaches for protecting the Black Sea; (iii) improving habitat for migratory waterfowl and a variety of endangered species; and (iv) sequestering carbon in the grasslands, cropland and forests.

*Target Population:* (i) All agro-industrial enterprises benefiting from RISP credit lines and the farm households expected to obtain technical advice through RISP's rural services advisory

component; and (ii) the 45,000 rural inhabitants in the eleven communes of the Hincesti and Leova raions where the pilot watershed area is located. The proposed project is a demonstration activity that may be replicated in other similar areas of Moldova and countries of the Black Sea region. Thus, the project will have a larger geographic impact and benefit populations beyond Moldova.

#### **4. Institutional and implementation arrangements:**

The MECTD and MAFI would be the main agencies responsible for project implementation; MECTD has been designated by the Ministry of Finance as the line ministry responsible for preparation and management of the proposed project.

*Project Steering Committee (PSC):* Co-ordination at the national level would be ensured by a Steering Committee established by the Government (Decision nr. 529, from 28.06.2001) that is in charge of supervising CAPMU activities. The Steering Committee comprises representatives from Ministry of Agriculture and Food Industry, Ministry of Ecology, Construction and Territorial Development, Ministry of Finance, National Bank of the Republic of Moldova, and National Association of Food Production and Processing. The Minister of Agriculture and Food Industry, who is also the country's Prime vice-minister is the chair of the Steering Committee. The Committee will be responsible for providing project oversight advice and assistance in resolving issues associated with project implementation, and will ensure commitment of the concerned Ministries.

*Project Co-ordination Committee (PCC) at Raion-level:* Co-ordination in the raions will be ensured by a Project Co-ordination Committee. The PCC will provide technical oversight and ensure cooperation and coordination of the implementing institutions at the local level, including local offices of Ministry of Agriculture, Ministry of Health, State Forestry Service “Moldsilva”, State Concern “Apele Moldovei” (Moldovan Waters), County Agencies, and other central and local institutions (See Annex 2, Table 1 for detailed implementation responsibilities by component).

The PCC will be chaired by the Prefect of Hincesti raion with the Head of Executive Council as vice-chair. Membership of the PCC will include Department for Agriculture and Food Industry, Department for Financial and Cadastral Relationships, Country Center for Preventive Medicine, Department for Education and Sports, Department for Environmental Protection and Natural Resource Utilization, Lapusna Territorial Ecological Agency, Regional Center for Consultancy and Scholarship in Agriculture and Mayors of the eleven communes. The Prefect would ensure coordination of local government agencies, while the Head of the Executive Council would ensure coordination of all communes participating in the project. The Project Manager will be the ex-officio Secretary of the PCC. The Project Co-ordination Committee was established in April 2002.

*Project Management:* The existing Project Preparation Unit, already established in the MECTD offices, would evolve into the Project Implementation Unit (PIU). It will comprise: a Project Manager, Technical Specialist (who would also handle project monitoring/ evaluation), Financial Management Specialist, Procurement Specialist, Accountant, Secretary/ Translator and Drivers.

The Project Implementation Unit will be entrusted with the responsibilities for assuring that GOM and World Bank procedures are followed in project implementation, provide financial management and procurement services, report on project activities, overall project monitoring against agreed performance indicators, and evaluation of the project's impact on beneficiaries. Responsibility for the technical monitoring of the impact on nutrient load reduction would be the responsibility of the Environmental Protection Inspectorate and the Public Health Directorate. The Consolidated Agricultural Project Management Unit (CAPMU) will provide fiduciary support to APCP and payment for such services will be provided by APCP. The role of each existing agency that will implement one or more project activities is set out in Annex 2.

At the national level, the Project Manager will report to the Minister (or his designated representative), MECTD; at the local level, the Project Manager will report to the Prefect of Hincesti who is the Head of PCC.

*Project financial management arrangements:* As it is mentioned in the project management part the fiduciary support will be provided by CAPMU team.

### **Funds flow**

There are two part of the funds flow scheme that should be considered at the project. The first part relates to the general scheme of the project financing and assumes that project funds will flow from: (i) the Bank, either via a single Special Account which will be replenished on the basis of SOEs or accompanied by supporting documentation for expenditures related to procurement requiring Bank prior review/approval; (ii) the Government, via the Treasury at the Ministry of Finance (MOF) on the basis of payment requests approved by the Foreign Debt Department of the MOF.

Sub-grant funds will be disbursed only to bank account in the name of the Grantee that has been opened and is utilized by the Grantee solely for the purpose of the grant on terms and conditions satisfactory to the PIU. Grant participants' accounts will be credited on the amount of Matching Grant advance in amount of about 30% with will be disbursed at loan approval under the RISP project; the second payment, in amount of 30% of the grant, will be provided following inspection and approval of the completion of the tasks set as conditions to the advance payment; the third and final payment will be provided following inspection and approval of second stage actions completion.

### **Audit arrangements**

CAPMU's previous and current auditing arrangements and findings are satisfactory to the Bank. The audit of the project will be conducted by the independent private auditor, acceptable to the Bank on terms of reference acceptable to the Bank. The annual audited project 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's implementation and thereafter is to be 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. TORs for the project audit has been drafted and agreed.

An audit opinion on the projects financial statements, statements of expenditures and Special Account will be required within six months to the end of the fiscal year and also of the closing of the project. The first audit report is planned to be provided by the 31 June 2005.

*Project Monitoring and Evaluation:* A well-designed monitoring and evaluation system will be critical for ensuring the project's timely and successful implementation, and enhancing its impact by a systematic analysis of lessons learned and their effective dissemination. Project monitoring and evaluation would be the responsibility of the PIU. Monitoring will be based on the baseline survey undertaken during preparation of the project. The Project Preparation Unit has developed performance indicators based on Annex 1. The PIU would annually monitor and evaluate project performance through conducting beneficiary surveys. The results of M&E activities will be fed back into the implementation process as improved practices.

The PIU will design a simple Management Information System for M&E, reporting formats for each component, including targeted annual performance objectives and monitoring indicators using Annex 1 details as the basis. These indicators include evaluating the project's impact by monitoring soil and water quality. Quarterly reports will cover progress in physical implementation, the use of project funds and project impact. The Quarterly reports will be consolidated by the PIU into half-yearly progress reports to be submitted through MWEP to the Bank within two months of the end of each six-month reporting period. These half-yearly progress reports will also include an implementation plan and work program for the next six months following the reporting period. The format of reports will be agreed with the Bank.

A mid-term review will be carried out to assess overall progress. Lessons learned, with recommendations for any improvements, would be used in restructuring the project, if necessary.

## **D. Project Rationale**

### **1. Project alternatives considered and reasons for rejection:**

Alternatives considered were to: (i) develop the APCP as a component of the RISP rather than as separate project; and (ii) to select more than one pilot watershed area for development.

With regard to (i), the preparation of the APCP did not start until most of the detailed preparation for the RISP had been completed. Nevertheless, preparation of the APCP started in January 2002 with the expectation that it would become a component of RISP, should final processing of the latter be delayed (which at the time was a strong possibility). However, the expected delays in the processing of RISP did not occur and negotiations were completed in May 2002. While APCP is now being prepared as a separate project, in view of the considerable synergies between the two projects it will be implemented in close association with RISP. This close association will be a key factor in promoting strong collaboration between MECTD and MAFI and mainstreaming environmental considerations in agriculture. With RISP becoming effective in August 2002, the first tranche of the APL has been approved and fully committed; in light of this, the timing of the APCP is extremely appropriate as it could now step in and provide grants to meet reasonable costs of mitigation measures for environmental concerns of agro-processors using the RISP credit line as well as provide funds for training RISP-financed rural advisory service providers in several nutrient reduction practices, including crop nutrient management, conservation tillage practices,

crop rotation and tree planting of buffer strips etc. RISP activities already undertaken and completed by the time of the GEF grant effectiveness would also qualify for the grant funds.

In respect of option (ii), it was concluded that associating APCP activities with RISP would make for a good balance of actions at the national level, while a package of investments in environment-friendly practices implemented in one select, well-defined pilot watershed would enable effective quantification and demonstration of the efficacy of project interventions on nutrient reduction from agricultural sources to surface and groundwater. Also, given the lack of experience in promoting and quantifying the impact of environmentally friendly agricultural practices, it was decided to target a select area of Moldova where the impact of the practices on reducing nutrient discharge could be demonstrated. As local and national capacity increased, project activities could then be replicated in other watersheds of the country.

## 2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned).

Sector Issue	Project	Latest Supervision (PSR) Ratings (Bank-financed projects only)	
		Implementation Progress (IP)	Development Objective (DO)
<b>Bank-financed</b>			
Agriculture	Agriculture I (completed)	S	S
Agriculture	Rural Finance (completed)	S	S
Agriculture	Agriculture Sectoral Adjustment Loan, Credit I and II (Completed)	S	S
Agriculture	SAC III	U	S
Social	Social Investment Fund	S	S
Public Sector Management	Private Sector Development I	S	S
Multisector	Private Sector Development II	S	S
Urban Development	First Cadastre	S	S
Biodiversity (GEF)	Biodiversity Conservation in the Lower Dniester Delta Ecosystem		
Environment Management Capacity	IDF Grant (IDA)		
<b>Other development agencies</b>			
Dniester Delta Ecosystem	Land Privatization; Agricultural Service Centers; Farm Shops; Post privatization Support		
EU TACIS	Export Promotion; Agricultural Marketing; Development of Agricultural Machinery Supply and Services, Advice Centers; Reform of Agricultural Education, Training and Research		
Japanese	Agricultural Equipment and Leasing		
British Know-How Fund	TA for Farmers Associations;		

IFC	Rural Livelihood Project;		
EBRD	Support for SCAs/SSB		
GTZ	INCON Project		
	Vininvest		
	ProComerz Technical		
	Assistance Project		
Soros Foundation	MMA Project; Farm Shops		
	Foundation Project		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

### 3. Lessons learned and reflected in the project design:

Key lessons learned from rural environmental and agricultural operations in the regions and reflected in the Proposed Project include:

- the early involvement of local administrations, communities and key decision makers in project preparation, is essential in order to ensure ownership and successful project implementation;
- successful investment in support services requires a strong Government commitment and the financial and operational sustainability of service providers with a gradually increasing self-financing ratio, and the strong participation by farmers' organizations from the planning phase;
- adoption of mitigation measures to reduce nutrient load should yield tangible benefits for key the expected users, specifically local communities, in order to ensure adoption;
- effective monitoring and evaluation mechanisms need to be developed and applied to measure project impact and feed lessons learnt into project design;
- decentralized responsibility for financial and project management (e.g., as in the Romania Danube Delta Biodiversity Project) builds local ownership and sustainability of project activities; and
- dissemination of information is critical to the widespread adoption of new technologies and practices.

The project will incorporate these experiences and build on them through a participatory and transparent approach to project preparation and implementation.

### 4. Indications of borrower and recipient commitment and ownership:

The successful launch of the RISP in 2002 demonstrates the Government of Moldova's strong commitment to addressing the development issues in the agriculture sector. The Government created the Consolidated Agricultural Project Management Unit to coordinate the experiences gained from a decade of loan support by various donors, and to maximize the effectiveness of future support. To actively supervise project preparation activities, the Government also established the Steering Committee, with representations from the key Ministries of Agriculture, Finance, and Economy, from non-governmental agencies, and from private organizations that support farmers. Further, the Government obtained and effectively used a Project Preparation Facility (PPF) to implement pilot operations of the rural business development, advisory services, and pilot credit line components, including the matching grant support. The Ministry of Finance has confirmed its commitment to make available the necessary government contribution to project costs upon project effectiveness.

With regard to the APCP component, the Government considers agricultural pollution control and wetland ecosystem protection as priorities and has committed itself internationally to reducing nutrient loads to the Danube River and the Black Sea from its territory. It has signed several international agreements to that effect and has developed the National Environment Action Plan to provide backing for the necessary actions. The Ministries of Ecology and Agriculture have confirmed their strong support for the project and are actively supporting the Project Preparation Unit established under CAPMU. Furthermore, the local officials in the Hincesti and Leova raions including the Prefects, as well as all eleven mayors of the project communes, are fully committed to the project and a Local Consultative Committee has been established to coordinate the various local agencies.

The Ministry of Agriculture (MAFI) has confirmed its wish to mainstream environmental concerns in the sector and use the linkages between the RISP and APCP to promote a healthier agro-industry and products that can be sold on the international market.

### **5. Value added of Bank and Global support in this project:**

Bank and GEF support for the Project will assist in synergizing efforts of the Danube River and Black Sea riparian countries to reduce nutrient loads from agricultural sources flowing into the Danube and Black Sea. The Agricultural Research, Extension and Training (ARET) Project in Georgia and the Agricultural Pollution Control Project in Romania are already implementing GEF-funded investment and training programs for the promotion of environmentally friendly agricultural practices to reduce nutrient loads to the Black Sea. Turkey and Russia are in the process of preparing similar investment and training programs. Several Bank projects under the Danube River Basin Environment Program and the Danube Pollution Reduction Program are also under currently implementation. The additional value added of Bank and GEF support will help facilitate regional workshops and study tours to allow the sharing of experiences, identification of common issues and constraints, possible remedial / mitigation measures to address transboundary water problems. The exchange of such information and lessons learned would help in establishing "good practices" for nutrient discharge measures and create a store of global knowledge that would be of much benefit to countries seeking to address nutrient reduction concerns.

## **E. Summary Project Analysis** (Detailed assessments are in the project file, see Annex 8)

### **1. Economic (see Annex 4):**

- Cost benefit      NPV=US\$ million; ERR = % (see Annex 4)
- Cost effectiveness
- Incremental Cost
- Other (specify)

An Incremental Cost Analysis has been undertaken for the project which compares the baseline scenario with the GEF Alternative scenario. The baseline scenario includes activities undertaken by the country to promote the adoption of mitigation measures for reducing nutrient loads from agricultural sources without GEF support. The GEF Alternative would provide the means (above and beyond the baseline scenario) for meeting the proposed project's goals. The difference between the total project cost (US\$10.74 million) and the cost of the baseline scenario (US\$5.74 million) provides the incremental cost of US\$4.95 million which would be funded by the GEF.

The project would benefit the farmers by promoting yield-enhancing agricultural practices by using inter alia, low-cost inputs (such as using manure as fertilizers) that will improve productivity and overall agricultural production. Such cost-effective project interventions will

have a favorable economic impact as they will assist in raising farm and household incomes and improving the standard of living in the project area.

## **2. Financial (see Annex 4 and Annex 5):**

NPV=US\$ million; FRR = % (see Annex 4)

### **Fiscal Impact:**

The government of Moldova is in full support of the project and has assured that counterpart funds would be made available during the life of the project. Since government contribution to the project is estimated at US\$1.0 million over the life of the project (a large percentage of which will be used to cover taxes) the fiscal impact is envisaged as low.

## **3. Technical:**

The project will establish a model of good practices to reduce nutrient run-off from agricultural practices and build national capacity to replicate these practices in other parts of Moldova. Initial studies in the pilot watershed have identified problems with livestock waste management, absence of crop nutrient management, soil erosion (a significant phosphate loss) on valley slopes cultivated with field crops, and the summer grazing pressures in the valley close to the water table. A menu of improved agricultural practices have been selected for testing and demonstration in 11 fields in three communes: Pascani, Negrea and Tochile Raducani. These practices include: nutrient management, which includes crop rotation and other elements, conservation tillage, integrated cropping management, buffer strips in vineyards, vegetated buffer areas, organic farming practices, and grazing management. These practices were selected as they met certain criteria, including inter alia, cost effectiveness, low input, and readily transferable technology. These are "tried and tested" effective solutions that are showing good results in other riparian countries such as Romania and Georgia where similar practices are under implementation.

## **4. Institutional:**

### **4.1 Executing agencies:**

The Ministry of Finance has designated the Ministry of Ecology and Territorial Development as the line Ministry responsible for implementation.

The Bank assessed the implementational capacity of the MECTD as well as MAFI and it was concluded that although such capacity was limited, it was sufficient for implementation of project activities. As in-house experience and capacity of the MECTD to address environmental issues was greater than that of the MAFI, it was agreed to designate MECTD as line ministry with overall responsibility for project implementation. MAFI, having greater experience with agricultural matters relating to organic farming, would be responsible for the organic farming aspects under the project. During project implementation, capacity of both ministries will be strengthened through relevant training programs and study tours.

## 4.2 Project management:

Day-to-day project management will be the task of the Project Implementation Unit (PIU) established under the umbrella of the CAPMU. The Steering Committee which has overall supervisory responsibility for the RISP would also supervise the APCP so as to facilitate the close association within the two projects. The Committee will be responsible for providing project oversight advice and assistance in resolving issues associated with project implementation, and will ensure commitment of the concerned Ministries. Co-ordination among the implementing institutions at the local level will be ensured by the Project Co-ordination Committee. The Project Manager will be the ex-officio Secretary of the PCC.

## 4.3 Procurement issues:

See Annex 6.

## 4.4 Financial management issues:

The financial management arrangements within the CAPMU will be assessed as acceptable to the Bank when CAPMU accounting system will be adjusted to provide accounting and reporting under the project.

CAPMU has an extensive experience in the WB project implementation and it has well-developed fiduciary functions that have been assessed as satisfactory during preparation for implementation of other projects. CAPMU's previous and current project audited financial statements are satisfactory and it has been agreed that such arrangements will be replicated for APCP project as well. The CAPMU has prepared financial reporting forms for the project (FMRs), prepared chart of account, terms of references for the audit.

## 5. Environmental:

Environmental Category: B (Partial Assessment)

5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and disclosure) and the significant issues and their treatment emerging from this analysis.

The environmental assessment was prepared which included undertaking visits to project sites and holding consultative discussions with stakeholders within the project area. The environmental situation in the project area is summarized in the EA which notes that poor agricultural practices are exacerbating soil and water erosion and a lack of appropriate fertilizers is depressing productivity. Organic fertilizers, which could replace up to a third of chemical fertilizers, are not being used because of a lack of transport and spreading equipment or because of poor organization to use existing equipment. Manure is being dumped along roads, rivers and streams due to an absence of such facilities. The concentrations of organic fertilizers are leaching into surface water and increasing the amount of N and P in the Danube Delta, thus intensifying eutrophication rates. Also, N and P from dung is percolating into groundwater and then into well water, causing potential health hazards. Also, existing animal numbers are greater than the carrying capacity of the land and pastures and woodland resources are being over-used. In addition, because 'commercial' fuel availability has decreased, wood and residues are being used as substitutes. This is further degrading forest areas and affecting the amount of residues being returned to the soil. Vineyards and orchards are also suffering due to lack of inputs and depressed producer prices. Agro-industries are experiencing declining profits as factories receive

poor quality or a lower volume of deliveries. These factories are also unable to afford proper disposal of effluents from (reduced) outputs and much effluent is being disposed of in inappropriate ways, although there are (environmental) laws that govern such disposals.

**The EA determined that the impacts of the proposed project are overwhelmingly positive as it would reduce the amount of nutrients leaching into the surface and groundwater flowing directly into the river systems and subsequently into the Black Sea.** All the project activities that may have direct environmental implications concern Component 1: *Promotion of Mitigation Measures to Reduce Nutrient Load in Surface and Ground Water*. (Component 2: *National Level Strengthening of Policy and Regulatory Capacity* and Component 3: *Public Awareness and Replication Strategy* will be used to facilitate and expand Component 1 activities). Therefore, only activities under Component 1 will be dealt with in detail in relation to the Environmental Management Plan. The EMP has been designed to monitor the soil and water quality and erosion so that immediate mitigation measures could be taken if the potential for environmental damage occurs. The environmental issues that are likely to require special attention include: leakage of the manure from the village-level storage facilities (if construction is not made according to specifications), inappropriate manure spreading in the fields and improper cleaning of the individual manure storage tanks and large manure platforms.

A comprehensive soil and water quality monitoring program has been developed to provide decision-makers and the public officials with reliable data on problems and trends in the quality of drinking water supplies and the Lapusna River and its tributaries. The project will monitor: (i) stream water quality and quantity at 4 measuring stations; (ii) groundwater with 18 piezometers to determine the trends in subsurface water; (iii) drinking water with the help of 12 piezometers; (iv) pollution (if any) from platforms using 32 piezometers; (v) soil monitoring [erosion and nutrient loss]; (vi) changes in woody biomass; and (vii) wetland through biomass changes, water quality analysis and sediment quality analysis. In addition climatic data will be recorded daily. Data from piezometers and surface water bodies will help the project in quantifying the reduction in nutrient loads entering the Prut river, a tributary of the Danube. Soil monitoring will be undertaken on seven farm practices and soil nutrient loss and erosion will be undertaken on five fields in the project area. The quality of manure will be determined from platform samples and plant growth will be analysed from demonstration plots. Environmental evaluation indicators have been reflected in the EMP, which meet the objectives and goals of this project.

## 5.2 What are the main features of the EMP and are they adequate?

The main feature of the EMP is to implement a comprehensive soil and water monitoring programme in the project area in order to evaluate the effects of different project activities on nutrient reduction to surface runoff and groundwater sources. Standardized soil and water quality monitoring tests have been developed by Moldova's scientific and government agencies. These tests will provide decision-makers and public officials reliable data on problems and trends of N, P and faecal quantities in:

- surface water, particularly the tributaries of the Danube River; and
- ground water, especially in relation to the quality of drinking water.

In addition information will be provided on the amount and type of soil particles being eroded from the project land and their mineral and humus content. Some of these efforts are hampered by the lack of adequate field, laboratory and monitoring equipment and chemicals for the operation and maintenance of soil and water quality monitoring laboratories of the Soil Institute, the MECTD (water quality laboratory and hydrological department of the Hydro-meteorology Service, central and regional laboratories of State Environmental Inspectorate) and the Institute of Forest Research and Forestry Planning and the 'Hydrometeo' service. The project will provide additional laboratory equipment, chemicals and supplies, and training to build capacity of the SEI. The project would fund a comprehensive soil and water quality monitoring plan for collecting data from fields, wells, piezometers, streams, rivers and the proposed wetland that drain nutrient loads into the Danube River and the Black Sea. These data will be analysed and made available to all stakeholders in a usable form. The project will develop and evaluate a watershed scale computer simulation model to predict and quantify the effects of agricultural activities in the watershed on the reduction of nutrients moving to the Danube River. The monitoring plan will be implemented by the PMU with technical assistance and equipment provided by the SEI, the Soil Institute, the Institute of Forest Research and Forestry Planning and the 'Hydrometeo' service.

Most of the actions of the EMP will be implemented in the first year of the project. Environmental evaluation indicators have been reflected in the EMP, which meet the objectives and goals of this project.

### 5.3 For Category A and B projects, timeline and status of EA:

Date of receipt of final draft: May 2003

### 5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

The project preparation team ensured that all relevant stakeholders were regularly consulted and involved during the environmental screening process. Stakeholders agreed that interventions proposed in this project would be very useful for the region. All comunas have signed up for communal platforms and many farmers agreed to have individual platforms. Some of the stakeholders have offered their fields for demonstrations and monitoring purposes and mayors in selected villages have agreed that specific wells should be sampled for water quality. The draft EMP has been discussed with MECTD, MAFI, and Moldsilva, the Prefects of Hincesti and Leova and their staff and Mayors/vice Mayors of the comunas. The draft EMP was widely circulated to all interested parties for comments and inputs before finalization in line with the Government Regulation on Public Participation in Environmental Decision Making (January 2000). The EMP was translated into Moldovan in early May 2003.

### 5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

A comprehensive soil and water monitoring programme has been developed for implementation. Project activities will be intensively monitored to determine the impact of the project interventions on soil and water quality. The project will strengthen the capacity of the MECTD (water quality laboratory and hydrological department of the Hydro-meteorology Service, central and regional

laboratories of State Environmental Inspectorate) as well as the Soil Institute to carry out water and soil quality testing and monitor environmental requirements. It will support the incremental costs of:

- selecting and maintaining a set of water and soil quality monitoring sites in the project area;
- upgrading the equipment for monitoring of water and soil quality; and
- additional operating expenses for monitoring activities.

Stream water quality and quantity, groundwater, drinking water, pollution from platforms soil, tree planting and management, wetland restoration will be monitored and results evaluated. Details are provided in the EA and EMP on files.

### ***International Waterways.***

The World Bank's OP/BP 7.50 applies to this project as project interventions will be carried out in selected watershed areas of the Prut river which is an important tributary of the Danube river which drains into the Black Sea (international water body).

However, the proposed project falls within the exemption to the notification requirement under paragraph 7(a) of OP 7.50 due to the following reasons:

(i) project interventions will not engender extractation of water or alteration in the volume of waters of the Danube River and Black Sea. On the contrary, the project is designed to improve the quality of these international water bodies by reducing nutrient loads entering these water bodies.

(ii) The international arrangements that exist between Moldova and other riparians of the international waterways include the 1994 Convention on Cooperation and Sustainable Use of the Danube River (Danube River Protection Convention). It was determined that the agreement would not require notification for the activities envisaged under the project.

(ii) The Black Sea and Danube Commissions have identified excessive nutrient discharge as a major problem facing the Danube River and Black Sea. A *Strategic Action Plan* (SAP) has been developed by the Commissions to improve the waters of the Danube river and Black Sea which has been signed by all riparian countries. Towards this, the riparian countries have agreed to implement projects that specifically seek to reduce nutrient loads entering surface and groundwater bodies stemming from agricultural sources within their countries. To address the problem of nutrient discharge as outlined in the SAP, the World Bank and GEF established the *GEF Strategic Partnership Program for the Danube and Black Sea Basin* which has been endorsed by all riparian countries of the Danube River and Black Sea. The proposed project has been prepared under the umbrella of this Strategic Partnership which is essentially a tool to implement agricultural nutrient pollution control measures outlined in SAP in the Danube and Black Sea riparian countries. All riparian countries are kept regularly informed on ongoing activities/projects on agricultural nutrient control projects through GEF progress reports as well as Commission meetings.

## **6. Social:**

6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

A baseline household survey of 341 households and a less-formal needs assessment were prepared as a first step in identifying key social issues in the pilot watershed area. The survey highlighted the following:

- the high level of poverty in the area and agriculture geared primarily towards subsistence;
- about one third of farmers worked their land in association; about one quarter leased out their land holding;
- unauthorized dumping of household and livestock waste was considered the main environmental problem in the villages followed by pollution of drinking water;
- responsibility for resolving these problems was considered to lie with the Mayor and community;
- the village population had little appreciation of the range of environmental issues influencing their daily life; and
- with regard to sources of information, television featured prominently;

While the project focuses on reducing nutrient discharge, proposals will be aimed at introducing practices that will lead to more sustainable agricultural systems and higher farm incomes. Social development outcomes will also include improved health as the quality of drinking water wells is improved.

6.2 Participatory Approach: How are key stakeholders participating in the project?

Various stakeholders of the project have been consulted frequently during project preparation. These include small farmers, members of farming organizations, agro-processing factory managers, NGOs such as ACSA, and REC, the Prefects of Hincesti and Leova and their staff, Mayors and Vice Mayors of the eleven communes, officials of MECTD, MAFI, Moldsilva, Agency of Geology (AgeoM) the Meteorological Department, and international agencies like the EU and UNDP. These stakeholders were visited individually or in groups and 'village meetings' were held. A baseline survey and needs assessment program was undertaken (document available with Project Preparation Unit) where respondents were asked about their agricultural practices, livestock numbers, accessibility to markets, health issues, etc. The purpose of the project was explained and the need to address the ongoing soil and water quality problems in the region and their effect on the river system and the Danube Delta. A record of these visits and discussions are on the project files and in the various World Bank documents, including the Aide-memoires, Environmental Assessment and Baseline Household Survey.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

Project preparation is being undertaken with the full involvement and participation of government counterparts, various research institutions, NGOs and relevant civil society organizations. A program of regular consultation has been initiated and the conclusions of local consultants' initial recommendations were presented at a stakeholder consultative workshop held on April 29 – 30, 2002 in Chisinau. The Baseline Household Survey and Needs Assessment was prepared by the

local NGO, *Independent Sociological and Information Service - Opinia*.

#### 6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

The Project Management Unit will ensure full participation of beneficiaries in the implementation of the project. Proposals will be developed for the PMU to (a) annually monitor and evaluate project progress and measure the impact of project activities against the socio-economic baseline survey undertaken during project preparation; and (b) undertake a systematic analysis of the impact and achievements of project activities and the results of the M&E activities which will be fed back into the implementation process as improved practices.

#### 6.5 How will the project monitor performance in terms of social development outcomes?

Monitoring will be based on the baseline survey undertaken during preparation phase of the project. Extensive data from communes and villages has been collected and the Project Preparation Unit will develop performance indicators based on Annex 1. A well-designed monitoring and evaluation system that will include social indicators will be developed by the PMU with assistance from international consultants who have worked on similar projects in other Black Sea riparian countries such as Romania.

### 7. Safeguard Policies:

#### 7.1 Are any of the following safeguard policies triggered by the project?

Policy	Triggered
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	<input checked="" type="radio"/> Yes <input type="radio"/> No
Natural Habitats (OP 4.04, BP 4.04, GP 4.04)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Forestry (OP 4.36, GP 4.36)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Pest Management (OP 4.09)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cultural Property (OPN 11.03)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Indigenous Peoples (OD 4.20)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Involuntary Resettlement (OP/BP 4.12)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Safety of Dams (OP 4.37, BP 4.37)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	<input checked="" type="radio"/> Yes <input type="radio"/> No
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)*	<input type="radio"/> Yes <input checked="" type="radio"/> No

#### 7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

Environmental assessment carried out and an EMP developed. See Annex 11.

## F. Sustainability and Risks

### 1. Sustainability:

*Institutional sustainability* - The PIU, which will be established under the overall umbrella of the CAPMU, will work closely with the RISP-supported agencies in the implementation of components at the national level. With regard to interventions in the pilot watershed area, PIU will work with a Project Consultative Committee which comprises key local officials and stakeholders. The MOF, MECTD and MAFI at the national level as well as the local government agencies, communa Mayors and farming communities are in full support of the project. The project will provide assistance for capacity building in policy and regulatory matters which will enable MECTD and MAFI to establish a sound basis for overall management of the project.

*Social sustainability* - the project has emphasized the early involvement of key stakeholders in project preparation and implementation, including policy makers, local public officials and community leaders, farmers, their associations, NGOs. Such involvement will create a sense of ownership and contribute to social sustainability.

*Financial Sustainability* - The project would benefit the farmers by promoting yield-enhancing agricultural practices that will improve productivity and overall agricultural production. Also, the promotion of organic farming has the potential to open new markets for the local farmers. Such project interventions will assist in raising farm and household incomes and improving the standard of living in the project area. Sustainability of funding for watershed management operations after the life of the project will be ensured once the long-term economic benefits of project interventions become evident to the local and national populations and government.

**1a. Replicability:**

Project's activities have been developed to maximize the potential for replicability. A specific component on replication strategy has been developed under the project whereby a public awareness and communication campaign on project activities and benefits will be undertaken to generate interest for replication of project interventions both within and outside Moldova and in other riparian countries. This will be achieved through national and regional workshops, field trips, training, publication in international agriculture and environmental journals, participation in Global Distance Learning programs and other similar activities. In addition the location of the pilot watershed area makes it easily accessible for demonstrations which will help increase potential for replication of project activities.

**2. Critical Risks** (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

Risk	Risk Rating	Risk Mitigation Measure
<b>From Outputs to Objective</b>		
Low/inadequate commitment from national and local governments and institutes for project activities leading to increased pollution of the rivers draining into the Danube River and Black Sea, and failure of national and local authorities to avert further damage.	N	National public awareness program will be targeted at key audience, including policy makers to mobilize support for improving water quality. Participatory approach in developing plans and staff training
Implementing agencies may be unable to attract and retain qualified staff.	N	RISP project covers cost of farm advisors. Project will provide training and career development benefits.
Lack of fiscal resources may preclude replication of project activities in other similar sites of Moldova.	S	Project benefits will demonstrate efficacy and broader long-term benefits as well as need for replication which will help in garnering government support; exploration of possible donors.
Agro-processors & farmers don't have access to credit, machinery and inputs that would enable them to practice mitigation measures.	M	Agro-processors will receive 25 – 50% grant for costs of measures. Villages will receive grants for construction of solid waste manure stores. Cost sharing in kind by farmers will be encouraged, thus reducing the need for cash contributions.

<p><b>From Components to Outputs</b> Farmers are less willing to accept improved, environment-friendly agricultural practices.</p> <p>Beneficiaries cannot develop new manure handling and storage systems that are financially attractive.</p>	<p>N</p> <p>S</p>	<p>Regular social assessment; participatory approach to project implementation; careful validation of proposed environment -friendly practices and staff and farmer training; on-location advice; and advocacy of immediate and long-term benefits of project activities. Public awareness campaign to disseminate information on the benefits and results of environment-friendly agricultural practices. Early designs and pilots will be implemented to develop low-cost manure handling and storage systems that are financially attractive to farmers.</p>
<p><b>Overall Risk Rating</b></p>	<p>M</p>	

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

### 3. Possible Controversial Aspects:

There are no controversial aspects.

## G. Main Conditions

### 1. Effectiveness Condition

None

### 2. Other [classify according to covenant types used in the Legal Agreements.]

MECTD will maintain PIU with resources, composition and under terms of reference satisfactory to the Bank until project completion.

Any changes to the composition of the PIU will be undertaken upon agreement with Bank.

## H. Readiness for Implementation

- 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
- 1. b) Not applicable.
- 2. The procurement documents for the first year's activities are complete and ready for the start of project implementation.
- 3. The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
- 4. The following items are lacking and are discussed under loan conditions (Section G):

## I. Compliance with Bank Policies

- 1. This project complies with all applicable Bank policies.
- 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

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Aleksandar Nacev  
**Team Leader**

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Marjory-Anne Bromhead  
**Sector Manager/Director**

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Luca Barbone  
**Country Manager/Director**

**Annex 1: Project Design Summary**  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

Hierarchy of Objectives	Key Performance Indicators	Data Collection Strategy	Critical Assumptions
<p><b>Sector-related CAS Goal:</b>            Improve economic growth and reduce poverty and social hardship by promoting macroeconomic stability and growth, private sector development and public sector reform. Sustainable private sector development in agriculture with protection of natural resources, including reduced nutrient discharge. Assist Moldova in implementing the National Environment Strategy Plan 1995 -2020</p>	<p><b>Sector Indicators:</b>            Increased awareness of threats to pollution of trans-boundary water bodies from nutrients, from animal waste and agricultural chemicals</p> <p>Progress towards meeting environmental compliance targets with EU nitrates legislation.</p>	<p><b>Sector/ country reports:</b>            Agricultural statistics</p> <p>Periodic data collection on soil and water quality of major water bodies.</p> <p>National reports</p>	<p><b>(from Goal to Bank Mission)</b>            Improved practices in agro-industry and on-farm contribute to national economy through an increase in average incomes, and environmental enhancement.</p> <p>Policy standards adopted meet EU requirements</p>
<p><b>GEF Operational Program:</b>            The Project's objective of reducing nutrient discharge to the water bodies feeding into the Danube river and Black Sea is consistent with OP No. 8, <i>Water body based Operational Program</i> which focuses mainly on threatened water bodies and the most important trans-boundary threats to their ecosystems. Project goals are also consistent with OP No. 9, <i>Integrated Land and Water Multiple Focal Area</i> which supports comprehensive approaches for restoring and protecting the international waters environment.</p>	<p><b>Outcome / Impact Indicators:</b>            Gradual Improvements in soil and water quality</p>	<p>Agricultural Statistics            Regional Surveys and collection of periodic data on water quality from major water bodies.</p> <p>Regional Surveys</p>	<p>Government's ability to mobilize resources to reduce threats to water bodies and build institutional capacity for future environmental challenges</p> <p>Sustained effort to raise the public awareness and demand for protection and improvement to environmental factors</p>
<p><b>Global Objective:</b>            The Project's development objective is to significantly increase the use of mitigation</p>	<p><b>Outcome / Impact Indicators:</b>            Improved water quality (N&amp;P levels will be measured and</p>	<p><b>Project reports:</b>            Agricultural statistics</p>	<p><b>(from Objective to Goal)</b>            Project-developed interventions are replicated on a wide scale.</p>

<p>measures by agro-industry and farmers to reduce nutrient discharge into the surface and ground water bodies in Moldova.</p> <p>The global environmental goal is to reduce, over the long-term, the discharge of nutrients and other agricultural pollutants into the Danube River and Black Sea through (i) collaboration with agro-industry and farmers benefiting from RISP and (ii) interventions in a pilot watershed area.</p>	<p>compared against baseline data gathered during initial project implementation)</p> <p>Improved soil quality through erosion control</p> <p>Improved quality of drinking water</p> <p>Enhanced biodiversity through the establishment of improved habitat through tree planting and sustainable wetland management</p> <p>Increased awareness of environmental issues in agro-industry and among farmers</p> <p>Increased number of agro-processors adopting mitigation measures, and increased area of agricultural land with resource conservation technologies, and increased production of organically-certified products.</p> <p>High satisfaction rate among participating agro-processors and farmers.</p> <p>Demand for project interventions by farmers outside pilot watershed area and from other riparian countries.</p>	<p>Social Survey/Assessment</p> <p>Annual regional and national reports</p> <p>Interviews with agro-processors, farmer groups and local governments</p>	<p>Adoption of improved environmental policies by government to address non-point agricultural pollution control.</p>
<p><b>Output from each Component:</b></p> <p><b>1. Implementation of Mitigation Measures for reducing nutrient load</b></p> <p>Development and provision of mitigation measure packages</p>	<p><b>Output Indicators:</b></p> <p>8 commune/village stores constructed together with 1200 household stores</p> <p>60% of farmers trained in application of</p>	<p><b>Project reports:</b></p> <p>Quarterly reports</p>	<p><b>(from Outputs to Objective)</b></p> <p>Technologies respond to agro-processors' and farmers' needs.</p>

<p>for agro-processing plants</p> <p>Development and provision of environmentally friendly agricultural practices for pilot watershed area.</p> <p>Training of agricultural extension staff</p>	<p>environmentally friendly agricultural practices</p> <p>2 embankments reinforced in wetland area; 3 concrete and 10 wooden bridges installed to provide access.</p> <p>Installation of 18 piezometers to determine trends in surface and ground water quality as it moves from communal, residential and agricultural land towards Lapusna river.</p> <p>255 hectares of forests rehabilitated with species that have high capacity for nitrate uptake; 50 hectares of pasture lands brought under controlled management to restrict cattle access to water, thus reducing the impact of grazing on existing pastures.</p> <p>Increased number of agro-processors adopting mitigation measures and increased area of agricultural land with resources conservation technologies</p> <p>Increased production of organically-certified products.</p> <p>Local people aware and broadly involved in project interventions. Packages developed and tested/demonstrated in outreach program</p> <p>A monitoring system to determine the impact of project interventions on soil quality installed. Relevant laboratory staff trained.</p>		
<p><b>2. Development and</b></p>			<p>Continued support and</p>

<p><b>Implementation of National Policy, Increased Regulatory Enforcement and Institutional Capacity</b> Support to MECTD for work on application of EU Nitrates Directive</p> <p>Stricter enforcement of legislation related to non-source pollution control</p> <p>Development of Code of Good Agricultural</p> <p>Strengthening of institutional arrangements for Organic farming</p> <p><b>3. Increased Public Awareness &amp; Development of Replication Strategy</b></p> <p>Increased knowledge &amp; awareness of ways to reduce nutrient pollution of water body at local and national level</p> <p>Increased Awareness and demand for replication in the region.</p>	<p>Policy framework for non-source pollution meeting EU criteria in place.</p> <p>Adoption of code of good Agricultural practices.</p> <p>Standards developed, certification process established and legislation in place.</p> <p>Public awareness and adoption of environment-friendly agricultural practices</p> <p>Public and farmers aware of the potential to improve income while protecting the environment.</p> <p>Workshops, field visits, study tours to pilot area and other Black Sea riparian countries already implementing similar projects to share experiences and promote replication.</p>	<p>Supervision Reports</p>	<p>enforcement of policy</p> <p>Provide resources to monitor and regulate standards.</p> <p>Farmers and leaders in other countries become interested in reducing non-point source pollution from agriculture and allocate resources to replicate project activities.</p>
<p><b>4. Project Management</b> Well-managed project.</p>	<p>Continued support from the Project Steering Committee</p>		<p>Adequate availability of necessary institutional support government agencies Project incentives are sufficient to motivate farmers to participate in the project Enforcement of land-use plan Implementing agencies may be unable to attract and retain qualified staff, inadequate laboratory facilities Continued support and will</p>

			for enforcing policy Timely availability of counterpart funds
<b>Project Components / Sub-components:</b>	<b>Inputs: (budget for each component)</b>	<b>Project reports:</b>	<b>(from Components to Outputs)</b>
1. Promotion of Mitigation measures for Reducing Nutrient Loads in Waterbodies	US\$9.66 million	Progress reports	
2. Strengthening National Policy, Regulatory Enforcement and Institutional capacity	US\$0.09 million	Progress reports	
3. Public Awareness and Replication Strategy	US\$0.37 million	Progress reports	
4. Project Implementation Unit	US\$0.62 million		

## **Annex 2: Detailed Project Description**

### **MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

#### **Project Area:**

The Agricultural Pollution Control Project (APCP) will be implemented at two levels:

*At country level* APCP will be closely associated with the IDA credit-financed Rural Investment and Services Project (RISP), an Adjustment Lending Program (APL) for US\$25.0 million. From the already approved first tranche of US\$10.5 million, an amount of US\$3.93 million has been allocated for APCP activities. RISP provides post privatization support to increase rural incomes and living standards by promoting rural entrepreneurship, agricultural production, economic diversification, and trade in the rural area. These objectives are sought to be achieved by providing two credit lines: (a) General Commercial Credit Line opened to a broad range of rural entrepreneurs at commercial terms and conditions through commercial banks; and (b) a Special Credit Line with a matching grant targeted for newly formed farmer organizations and cooperatives, to support “new clients” without past credit history to access commercial credits and to be implemented through commercial banks. Entrepreneurs/enterprises who borrow under RISP (individual farmers, farmers organizations, cooperatives and agricultural processors) and wish to invest in environmentally sustainable agricultural practices, would receive a grant from the GEF fund to offset the incremental cost of nutrient reduction investments.

*At a selected pilot watershed area in the Hincesti and Leova raions* that lie in central Moldova within the basin of River Lapusnita, a main tributary of River Prut which in turn is a large tributary of the Danube River. The two raions were selected as the pilot watershed areas as they met the following criteria: (a) country representativeness in terms of agro-industrial practices as well as soil, climate and other geo-ecological conditions; (b) catchments represent national agricultural patterns - arable lands, grasslands, vineyards, orchards, processing industry (vine factories, mill processing, etc.); (c) nutrient pollution of ground and surface water excessive and typical of most streams in Moldova - studies revealed that nitrates pollute over 65% of the shallow wells within residential areas which exceeds national and international standards; (d) local authorities/communities aware and concerned about environmental problems and actively motivated to address these; (e) accessible road network and communication necessary for replication of project activities.

The pilot watershed area covers eleven comunas and comprises about 50,000 hectares with a population of more than 43,000, or 14,000 households, in 18 villages. Over 66% of the pilot area is used for agricultural purposes. The principal activity of local farmers is crop farming; main crops include grains (mainly wheat and maize), vegetables (cabbages, cucumbers, beets and carrots) and fruits (grapes, tomatoes) grown on arable lands. Other important crops include tobacco, sugarbeet and soya beans. Vineyards and orchards comprise a significant share of the land: 17% and 7% respectively. Over 15% of the agricultural area comprises grasslands and pastures used for livestock grazing. Most of the livestock is held by private individual owners. Livestock in the watershed area include: cattle (over 5,000 heads); pigs (over 9,000 heads); sheep and goats (15,000 heads); horses (1,000 heads); and poultry (166,000 heads). The principal

agro-industrial activity in the region is associated with wine production and a number of important wine making factories are situated within the pilot area. The agro-processing sector is also characterized by small enterprises such as flour mills, oil pressing plants, fruit and vegetable processing plants, canning factories, etc.

### **By Component:**

#### **Project Component 1: Promotion of Mitigation Measures for Reducing Nutrient Loads in Water bodies - US\$9.66 million**

This component would be implemented at two levels: first, in close association with the Rural Investment Services Project's components for business development in agriculture and/or agro-industry, rural support services and rural finance; second, in a pilot watershed area comprising part of the Lapusna tributary of the Prut River where an integrated watershed management plan will be implemented for agricultural pollution control and nutrient reduction investments.

#### **A. Activities under RISP**

Rural Investment and Services Project (RISP). The project would be closely associated with the IDA credit-financed Rural Investment and Services Project (RISP) that has been negotiated as an Adjustment Lending Program for a total amount of US\$25.0 million IDA credit. The first tranche of US\$10.0 million has already been committed. The project is providing post-privatization technical and financial support to increase rural incomes and living standards by promoting rural entrepreneurship, agricultural production, economic diversification, and trade in the rural areas. The project has both institutional beneficiaries, e.g. local NGOs of advisory and extension agencies, service providers, etc. and a broad range of private entrepreneurs in rural areas. RISP accords priority to high value commodities, such as fruits and vegetables with export potential. RISP's four components include: (i) Rural Advisory Services; (ii) Rural Business Development Services; (iii) Rural Finance; and (iv) Project Management. The Rural Finance component is providing two credit lines, namely: (a) *General Commercial Credit Line* that will be open to a broad range of rural entrepreneurs at commercial terms and conditions through commercial banks; and (b) a *Special Credit Line with a matching grant* targeted for newly formed farmer organizations and cooperatives, to support "new clients" without past credit history to access commercial credits and to be implemented through commercial banks. In addition, this component would support the provision of technical assistance to participating financial institutions, State Supervisory Body, and Savings and Credit Associations

*APCP Support under RISP:* Entrepreneurs/enterprises who borrow under RISP (individual farmers, farmers organizations, cooperatives and agricultural processors) and wish to invest in environmentally sustainable agricultural practices, would receive a grant from the GEF fund to offset the incremental cost of nutrient reduction investments. Thus the purpose of the APCP Environmental Mitigation Grant Program is to provide supplemental nutrient discharge mitigation grants which will serve as a financial incentive to borrowers under RISP to implement agricultural pollution mitigation structures and procedures with the aim of protecting Moldova's environmental resources while encouraging agribusiness development.

The GEF facilities will provide grant funds of up to US\$2 million in support of the Special Credit Line of the RISP, specifically to cover most of the cost of mitigation measures required to reduce nutrient discharge. These grants are to encourage and serve as a financial incentive for the installation of agricultural pollution mitigation structures and procedures to protect Moldova's environmental resources while encouraging agri-business development. The types of facilities that might benefit from this component would include wineries, livestock slaughter houses, meat packaging plants, chicken units, animal feed processing plants, etc. The credit-grant package would be administered by the local commercial credit institutions that participate in the RISP. The project will train RISP-financed rural advisory service providers in several nutrient reduction practices, including crop nutrient management, conservation tillage practices, crop rotation and tree planting of buffer strips etc. Credit officers of the participating banks and rural business developers will be trained in the mechanisms of grant provision; the training will allow them to inform credit recipients of the availability of the grants, the eligibility criteria and the application procedures for grant funds.

The eligibility criteria for the provision of a GEF grant will be primarily to support those activities that will reduce nutrient loads to waterbodies. Briefly, the eligibility criteria for the APCP Environmental Mitigation Grants are as follows:

**A:** Businesses with potential nutrient discharge may be those projects having the following characteristics or be the following types:

- 1) Animal production (milk, meat, etc);
- 2) Crop production (orchards, vineyard, vegetables, flowers (horticultural), etc.)
- 3) Processing units/mills/or plants for agricultural products (juice production, vegetable oil extraction, wine production, etc.);
- 4) Irrigation projects that will introduce water as a nutrient transport medium;
- 5) Green house projects that introduce nutrient leaching below the organic bed.

**B:** Adaptability for the implementation of the mitigation measure:

- 1) Availability of existing mitigation measures;
- 2) Applicability of nutrient mitigation measures to the project site.

The APCP Environmental Mitigation Grant application and approval process will be conducted in two phases. Phase I will determine the eligibility of RISP Credit applicants for an Environmental Mitigation Grant, determine the mitigation strategy to be implemented, and establish a cost basis for the APCP grant. Phase II will involve the disbursement of the grant, determination of design criteria for the mitigation procedures, and implementation of the mitigation. These phases are briefly summarized in the following two sections.

**Phase I:** The Agricultural Pollution Control Project Grant Application will be initiated concurrently with the RISP Business Sub-loan Credit Application with assistance to grant applicants provided by trained members of the RISP preparation teams. An easy-to-use APCP

Environmental Eligibility Questionnaire will facilitate the initial determination of APCP eligibility. After completion, the RISP team will forward the Eligibility Questionnaire form to the APCP office. The APCP team and their specialists will review the responses on the questionnaire form and check them against designated Environmental Mitigation Eligibility Criteria (EMEC). If the applicant does not meet EMEC and qualify for the APCP grant program, the RISP team will be notified immediately. Projects meeting the EMEC will be reviewed further to identify proper nutrient discharge mitigation measures. A site visit will likely be necessary to evaluate needs for manure storage facilities, soil and water conservation measures, and nutrient management planning. A section in the Environmental Mitigation Grant Guidelines Operational Manual is composed of cost evaluation tables that may be used to estimate costs associated with implementation of the nutrient discharge control measures. The cost evaluation tables and unit rate descriptions will help provide a cost basis for the APCP Environmental Mitigation Grant. The detailed grant documentation (including detailed design, bill of quantities and cost estimates), developed with assistance of technical experts, will be reviewed by the Grants Evaluation Committee (GEC). The GEC is assigned to review grant applications, prioritize the applications, and agree on the final list of grant recipients. The GEC will comprise of: APCP PIU staff, RISP PMU staff, CAPMU staff and an independent Environmental Expert.

**Phase II:** The grant would be disbursed to the applicant at three separate stages of the implementation period:

(a) An initial payment totaling an agreed percentage of the APCP grant would be disbursed at grant signing (no more than 30%). This disbursement would pay for the initial cost of the mitigation measures implementation including tendering, purchase of the required materials, and initiation of the work.

(b) Following APCP inspection and approval of the tasks described in item (a), a second payment would be disbursed in an amount equal to an agreed percentage of the total APCP grant. Upon receipt of the second payment, the applicant should start construction and/or field implementation of the mitigation measures. Definite progress should be made towards implementing the identified mitigation measure(s).

(c) Following APCP inspection and approval of the tasks described in item (b), the last payment in an amount of the balance percentage of the total APCP grant would be dispersed. The APCP appointed specialist should verify that the two previous payments have been used to accomplish the tasks related to the implementation of the mitigation measure(s).

Failure to complete the mitigation implementation would generate a warning letter from either the commercial bank or the APCP Project Management Unit and sent to the grantee. This letter will provide a warning and notify the grantee that he/she has an additional six months to initiate the mitigation measures. If the mitigation is not initiated within six months and completed within twelve months, the grant would be terminated and the grantee would be required to return the amount of the grant plus the accrued interest (at the rate of the RISP loan) to the designated account by the APCP Project Management Unit. Amount accumulated in this account would be granted to other RISP sub-loan applicants who meet the nutrient discharge eligibility criteria using

the standard procedures described in this document.

If based on the demand for RISP credit, the total demand for APCP grants is less than US\$2.0 million, the balance funds would be used for other activities within the general framework of APCP.

## **B. Activities in Pilot Watershed Area.**

Manure Management Practices. This sub-component will provide grants for the installation of up to 8 communal and 1200 household platforms and equipment for manure collection, transportation and application. Grants on a cost-sharing basis of about 70% of total costs would be provided for the construction of village-level manure facilities and small storage bunkers with effluent collection facilities at the household level, as well as supply of equipment for manure handling and spreading. Villages and households wishing to participate in the investment program would be selected against agreed criteria and cost-sharing arrangements. The project would provide for materials for the construction of village and household platforms, equipment (loader, tractor, spreader, trailer, tanker, shredder), technical assistance and training while the Government contribution would consist of exemption from taxes and fees as well as salaries for environmental inspectorate agencies and other governmental staff, who would be involved in evaluation and monitoring activities. The community would contribute in particular with labor, improving the access roads to the platforms and circulation of the necessary documents.

The project will provide for a training program for mayors, farmers, householders and operational staff before any investments in materials or equipment will be authorized. The training program would seek to: (i) educate the public that have made appropriate investments in changing their practices and improving the quality of life for their communities; (ii) achieve a high level of participation in household and commune level platform use; (iii) encourage recycling of wastes to the land for improved crop production; (iv) promote the correct use of the facilities; (v) maximize the number of households served; (vi) safeguard the quality of materials for recycling; (vii) ensure sufficient land will be made available for the recycling of stored waste materials; (viii) encourage responsible recycling.

### Promotion of Environmentally Friendly Agricultural Practices.

This sub-component will promote the adoption of environment-friendly agricultural practices that will improve agricultural production while reducing nutrient discharge into waterbodies. Technical assistance and financial support will be provided for sustainable agricultural practices, including: (i) nutrient management – the application of annual waste materials on agricultural land areas at rates determined by the nutrient needs of crops and nutrient content of the waste; (ii) conservation tillage – crop production in which the crop residues from the previous crop remain on the soil surface to provide erosion protection; (iii) integrated cropping management – the use of crop rotations and strip cropping to prevent erosion and provide adequate supplies of animal feed and forages in integrated farming systems; (iv) vegetated buffer areas – permanent vegetated strips would be established at field and stream riparian boundaries and in water courses that will reduce and help prevent soil loss and its associated nutrient loss loads, and (v) promotion of

*organic farming* – as soon as organic farming certification procedures are defined at national level, small organic farming areas would be established in villages throughout the two raions to demonstrate and help educate farmers on appropriate procedures for the production of organic fruits and vegetables.

### Agro-Forestry Practices

This sub-component mainly would invest in:

- (i) Planting of forest belts for the protection of water bodies;
- (ii) Tree planting on degraded land;
- (iii) Ecological reconstruction of forests – 255 ha;
- (iv) Agro-forestry practices - 53 ha.

Shrub and tree planting will primarily be done by the State Forestry Service “Moldsilva” as the only agency which has the necessary technical facilities. It will contribute with equipment, samples, and other reproductive material as well as technical assistance. The communes will mainly contribute with labor and other available means as necessary. The Mayors will be responsible for the organization of planting on commune land. The supervision and general technical assistance will be performed by an agro-forest engineer contracted by PIU in accordance with State Forestry Service “Moldsilva.”

*Silvo-pastoral activities:* These activities include planting of shrub and trees inside and on the perimeter of the pasture as green hedge in the scope to restrict cattle access to the water, thus reducing the impact of grazing on existing pastures. The proposed total surface area of pasture to be properly managed is of 50 hectares.

Wetland Restoration. This sub-component will enhance the nutrient filtration capacity of the wetland at the intersection of the Lapusna and Prut rivers and help to restore the degraded wetland to its former natural state. Activities under the sub-component include: (i) forestry activities such as planting of forest vegetation with species that have high capacity for nitrate uptake and retention both in floodplain areas and terraces exposed to erosion; (ii) hydrologic enhancement practices, such as embankment reinforcements for the stabilization of water level, three concrete and ten wooden bridges to provide access to different parts of the wetland, etc. (iii) sanitation activities, including removal of the existing waste dump to the commune platforms; and (iv) public awareness activities to educate local inhabitants of the importance and fragility of wetland ecosystems.

Soil and Water Quality Monitoring in the Hincesti and Leova Raions: This project will strengthen the capacity of the Ministry of Ecology, Construction and Territorial Development (water quality laboratory and hydrological department of the Hydrometeorology State Service, central and regional laboratories of State Environmental Inspectorate) as well as Institute for Pedology and Soil Science to carry out water and soil quality testing and monitor environmental requirements. The project will support the incremental costs of:

- (i) selecting and maintaining a set of water and soil quality monitoring sites in the project area;
- (ii) upgrading the equipment for monitoring of water and soil quality; and
- (iii) incremental operating expenses for monitoring activities.

Two paired watersheds, named Balceana and Old Negrea, have been selected for small watershed monitoring scheme. The Balceana tributary will serve as a control sub-basin, which is associated with the control segment of the Lapusna catchment (Sofia commune). The Old Negrea tributary will be used as a treated sub-basin.

*Soil and Water Monitoring Program:* An extensive soil and water quality testing program will be established for the proposed project area consisting of eight communes to monitor the changing quality of surface and ground water bodies (in response to the implementation of new and better management practices in the project area) that eventually are draining into the Danube River. Taking into consideration the balance between advantages and disadvantages for various monitoring strategies, number of local and site specific conditions, and the guidelines provided by the US Environmental Protection Agency (Spooner, et. al., 1985), Paired-Watershed and Upstream/Downstream designs will be used under the project. A combination of these two designs should provide appropriate data for determining the effects of the improved environmentally-sound agricultural practices as well as watershed-level trend analyses for identifying the severity of the pollution problem.

*Groundwater Monitoring:* Groundwater quality monitoring scheme is designed to include three transects of wells (piezometers). Each transect will consist of 6 piezometers (3 piezometers to the left and 3 piezometers to the right of the river bank). These piezometers will be installed up-gradient from the edge of the river to the edge of the village or to the edge of agricultural fields. A total of 18 piezometers will be constructed to determine the trends in the subsurface water quality as it moves from the communal residential and agricultural land towards the Lapsuna river. Samples collected from these piezometers will be used to determine the trend of pollutant transport via subsurface flow, thus helping to assess the impact of the pasture area on the quality of base-flow entering the Lapsuna river. In addition, the piezometer data will enable the project to determine the beneficial impact of combined practices on reducing the pollutant levels in the river.

In addition to the 18 monitoring piezometers constructed along the river basin, a set of piezometers also will be used to assess the impacts of nutrient and bacteriological pollution sources on the existing drinking water wells situated within the residential areas. The goal of this monitoring scheme is to identify the pathways and sources of pollution to the shallow drinking water wells. It is hypothesized that drinking water wells in the residential areas are contaminated either at the well head area (by yard runoff or by direct polluted water dump near the well) or via subsurface movement of pollutants from the pollution sources such as animal waste storage pile, livestock stable area, and outhouse toilets. Two piezometers will be installed in the direction of the groundwater flow near an existing shallow drinking water well (one near the pollution source and another near the drinking water well). Drinking water well, selected in the lower part of village, will also serve as an additional sampling point. This monitoring scheme will be replicated three times in the communes selected in the control portion of the pilot watershed (Balceana or

Sofia) and three times in the treated portion of the pilot watershed (Negrea). In all, 12 constructed piezometers and 6 existing drinking water wells will be monitored to assess the seriousness and sources of contamination to the drinking water at the households and villages.

**Project Component 2: Strengthening National Capacity, Regulatory Enforcement and Institutional Capacity (US\$0.09 million).**

The project will assist the Ministry of Ecology, Construction and Territorial Development (MECTD) and Ministry of Agriculture and Food Industry (MAFI) in: (i) developing the Code of Good Agricultural Practices; and (ii) strengthening the capacity of the Government of the Republic of Moldova in its efforts to promote scientifically grounded organic farming and land use management.

The Republic of Moldova ratified the Partnership and Cooperation Agreement (PCA) with the European Community and its member states in 1998. According to Article 50 of the PCA, Moldova shall endeavor to ensure that its legislation will gradually be made compatible with that of the Community, with regard to several sectors, including the environmental sector. The project will also provide technical assistance to MAFI and logistical support for the preparation of a Code of Good Agricultural Practices. MAFI will be the responsible agency for the development of the Code in close cooperation with MECTD.

Organic farming. The project will assist the Government of Moldova in its efforts to promote organic farming, including production, certification and marketing. Moldova has the necessary pre-requisites for promotion of organic farming such as warm climate, fertile soils, and traditional knowledge on avoiding excessive use of fertilizers, pesticides and herbicides, etc. However, farmers encounter problems related to the export of ecologically clean products in the EC market. Recently, the Government received a grant within TACIS Program for a pilot project which aims to prepare recommendations for strengthening the policy and regulatory capacity at the national level for promoting organic agriculture, including production, certification and marketing of organic products. APCP will help the government in these efforts and define the necessary timing, costs and institutional responsibilities in the preparation and implementation of these recommendations which will assist in the strengthening of the policy and regulatory system at the national level and a sound strategy for the marketing of organically produced goods.

**Project Component 3: Public Awareness and Replication Strategy - US\$ 0.37 million**

The project will support public awareness efforts at the local, national and regional level to disseminate benefits of project interventions and promote replication of the pilot activities in similar areas of Moldova and other Black Sea riparian countries.

**Local Level - Hincesti and Leova raions.** The objectives of the public awareness campaign at local level are to familiarize the population and help induce the behavioral changes necessary to the success of the project (use of household manure storage bunkers and village-level livestock waste stores, respecting the environment-friendly agricultural practices, etc.) in the eight selected communes and support the replication of this component in Lapusna Judet.

The project will develop a three-step approach to the public communication strategy and a layering of the message so that the targeted audiences recognize the effects of agricultural pollution and the importance of environment-friendly practices for the life of their communities. The first step will be the preparation of the campaign, involving the identification and recruiting of experts, preparation of materials, etc. The second step will be an informational campaign aimed to raise the interest of the target groups, while the third step will reinforce and consolidate the behaviors suggested and concentrate on replication efforts based on the results achieved.

**National Level.** The Lapusna pilot area would serve as a model for practical development of environment-friendly agricultural practices to be replicated in other similar regions of the country. A broad, nationwide public information campaign will be undertaken to disseminate the benefits of proposed project activities. One of the objectives of the public awareness campaign would be to have relevant entities buy into the project concept and activities and disseminate beneficial results of project interventions through their communication efforts. This is an essential strategy of the campaign, as the interests and efforts of others can naturally extend the impact and overall effectiveness of the project. Activities under this sub-component will include:

- (i) public awareness programs on the need for and menu of environment-friendly agricultural practices;
- (ii) promoting cooperation with national and local NGOs in order to support the objectives of the APCP;
- (iii) broadcasting the “APCP one step forward” advertisement during the launching stage of the project at prime-time viewing and listening hours on national TV and radio;
- (iv) purchasing time slots at the national level (printed press, radio and national TV) for short programs related to APCP objectives, rationale and benefits;
- (vi) producing and launching a special monthly issue at the national level - "NATURE AND AGRICULTURE”.

The efforts at national level will be concentrated on institutions and groups (Government agencies, national environmental or professional associations, academia etc.) that may influence the replication of the project in other areas. Information will be delivered (as a public service or sponsored programs) through the public broadcasting institutions, including a regular supply of information to the mass media on the progress of the project. This approach will build a general goodwill for the project and its benefits, and will raise the interest of potential future clients. The delivery of the national media campaign will be done by a specialized PR/Media Agency to be contracted under the grant, which in addition to the campaign will also deliver capacity building programs within the Ministry of Ecology, Construction and Territorial Development (MECTD).

### **Replication Strategy**

APCP replication at the national and regional level is a complex process based on identification of zones, regions and ecosystems with characteristics similar to the Hincesti and Leova raions as well as interest of local communities and authorities to initiate similar projects in their areas. In the second year of project implementation, a series of informational messages related to the project will be intensely disseminated to generate interest of the population, NGOs and authorities in the identified ecosystems for replication of APCP activities. At the national level, replication would

include: (i) three demonstrative seminars (PY2-4) organized on certain aspects of APCP (e.g. nutrient reduction as a health factor, ecological manure management, environment friendly agricultural practices); (ii) a scientific conference (PY4), which would synthesize APCP experiences over four years of implementation and offer recommendations for the project replication in all regions of Moldova (participants: local and central authorities, farmers, managers, researches, NGOs, mass media, etc); (iii) distribution of informational materials to agricultural NGOs with branches all over the country (PY 2-4); (iv) demonstration and exhibition of APCP-funded environment-friendly agricultural practices at annual international and republican exhibitions in the field of agriculture and environment which will be organized in Chisinau; (v) a regional meeting for the exchange of experiences between neighboring countries that have similar project; (vi) establishment of web-site that would be updated quarterly as well as the production and launch of a CD-ROM about the Website and other related informational and educational materials (end of PY-2).

*At the regional level:* (i) connect Moldova APCP to the regional informational network of similar GEF projects; (ii) launch and regularly update a website on the proposed project activities; (iii) produce a CD-ROM that provides informational, educational and instructive materials on the project's activities; (iv) organize a study-tour within the countries of the Black Sea basin that have experience in nutrient discharge reduction and environment-friendly agricultural practices; (v) organize a regional meeting for the exchange of experiences with the countries of the Black Sea basin that have similar projects; and (vi) exchange of informational literature, press releases, photo library.

The project would thus provide assistance in conducting regional workshops, field trips, training, publication in international agriculture and environmental journals and other activities to promote replication of project activities in other Black Sea riparian countries. The pilot activity will aim to serve as a model to be replicated in these countries, which will help contribute to significant reductions in the nutrient loads entering the Danube River and Black Sea. The organization of these international events will be a part of the assignment of a PR/Media Agency contracted for the purpose.

#### **Project Component 4: Project Management Unit. - US\$0.62 million**

The existing Project Preparation Unit, already established in the MECTD offices, would evolve into the Project Implementation Unit (PIU) and will comprise: a Project Manager, Technical Specialist (who would also handle project monitoring/evaluation), Financial Management Specialist, Procurement Specialist, Accountant, Secretary/Translator and Drivers. Payment for fiduciary services provided by CAPMU, including procurement and financial management, will be shared by APCP. The Project Implementation Unit will be entrusted with responsibilities for ensuring that GOM and World Bank procedures are followed in project implementation, provide financial management and procurement services, report on project activities, overall project monitoring against agreed performance indicators, and evaluation of the project's impact on beneficiaries. Responsibility for the technical monitoring of the impact on nutrient load reduction would be the responsibility of the Environmental Protection Inspectorate and the Public Health Directorate.

At the national level, the Project Manager will report to the Minister (or his designated representative), MECTD; at the local level, the Project Manager will report to the Prefect of Hincesti who is the Head of the Project Coordination Committee.

### Implementation Arrangements

FUNCTION/COMPONENT	IMPLEMENTATION RESPONSIBILITIES'
<p><b>1. Hincesti and Leova raions:</b> 1.1. Activities under RISP</p>	<p><b>PIU of APCP</b> in close conjunction with <b>PMU of RISP</b> has prepared an Operational Manual for APCP Matching Grants for the applicants of RISP Special Credit Line. The program will encompass a cooperating mechanism between the two projects, including:</p> <ul style="list-style-type: none"> <li>(i) selecting criteria for GEF funds accession;</li> <li>(ii) official documentation to circulate (business plan, environmental protection/mitigation plan; etc.);</li> <li>(iii) implementation procedures (responsibility of each part involved);</li> <li>(iv) monitoring and evaluation mechanism;</li> <li>(v) reporting procedures (MF, MECTD, MAFI, World Bank)</li> </ul> <p><b>A representative selecting commission</b> would be established to consider and recommend to PIU the requests for GEF grants.</p>
<p>1.2. Manure Management Practices</p>	<p><b>PIU</b> working with the Hincesti and Leova prefects and County Council would provide for final design of waste stores, would contract with commune Mayors'/councils' wishing to install waste stores and would handle procurement through national competitive bidding (stores) and national shopping (building materials for household bunkers). The <b>Mayors' office</b> would be responsible for overseeing construction of household livestock waste bunkers and for operating the platform once constructed. <b>Householders</b> would provide labor for building livestock waste bunkers and would be responsible for segregating waste and delivering solid livestock waste to the platform.</p>
<p>1.3. Promotion of Environment-friendly Practices</p>	<p><b>PIU</b> would contract an agency to take responsibility for implementing the component, contract participating farmers to implement demonstrations on their own and other farms, and carry out procurement and overall m/e of component performance. The <b>Contracted Agency</b> would provide design, day-to-day supervision of implementation and m/e of results at demonstration and farm level.</p>
<p>1.4. Promotion of Environment-Friendly Agro-forestry Practices</p>	<p><b>Communes</b> would contract with <b>PIU</b> to undertake tree planting in fragile areas. Technical supervision would be provided by the State Forestry Service "Moldsilva". Planting material (production to be tendered) and a tractor-mounted planting tool would be provided by the project. All labor and other costs would be provided in kind by beneficiaries.</p>

<p>1.5. Wetlands Restoration</p>	<p><b>PIU</b> will provide partial financial assistance from GEF funds to cover expensive for civil work (e.g. construction of dams; concrete and wood bridges) as well as procurement of necessary samplings for ecological reconstruction of the existing forests. GEF funds will be also used for purchasing of monitoring equipment and assisting of public awareness activities (e.g. information boards; workshops; education leaflets; and environmental oriented lectures).</p> <p><b>Mayor of Tochile-Raducani</b>, will provide the labor and will assist <b>PIU</b> in getting the necessary legal arrangements for program implementation, including adoption of local regulation of grazing, public access to the area, etc. The Mayoralty will also mobilize its available means for cleaning up of the area as well as rehabilitation of roads and other access facilities.</p> <p>The ecological reconstruction of forests and their maintenance will be technically supervised by the <b>State Forestry Service “Moldsilva”</b>.</p>
<p>1.6. Monitoring of Soil and Water Quality and Environmental Impacts</p>	<p><b>PIU</b> will provide equipment for strengthening the capacity of Hydrometeorology Service and Institute of Soil for water and soil quality monitoring.</p> <p><b>The laboratories of Hydrometeorology Service</b> will deal with water and sediment sampling and analysis. The soil sampling and analysis will be performed by <b>the Institute of Soil</b>. These institutions will be contracted following the national procedures and in full compliance with World Bank’s rules.</p> <p><b>The State Ecological Inspectorate</b> (Lapusna Territorial Ecological Agency) will be involved in samples collection and their transportation to the laboratories. Some periodical monitoring could be done by the laboratories of local environmental protection agency as well as Judet Public Health Department as necessary.</p> <p><b>The Ministry of Health</b> would be involved in monitoring program through the Department for Preventive Medicine as required.</p>
<p><b>2. Strengthening National Policy &amp; Regulatory Capacity</b></p>	<p>Designated units in <b>MECTD</b> and <b>MAFI</b>.</p>
<p><b>3. Public Awareness Activities &amp; Replication Strategy</b></p>	<p><b>PIU</b> would contract <b>NGO</b> to implement the program.</p>



**Annex 3: Estimated Project Costs**  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

<b>Project Cost By Component</b>	<b>Local US \$million</b>	<b>Foreign US \$million</b>	<b>Total US \$million</b>
Promotion of mitigation measures for reducing nutrient loads in water bodies	5.97	2.84	8.81
National Level Strengthening of Policy and Regulatory Capacity	0.02	0.06	0.08
Public Awareness, Capacity Building and Replication Strategy	0.14	0.18	0.32
Project Management Unit	0.45	0.10	0.55
<b>Total Baseline Cost</b>	<b>6.58</b>	<b>3.18</b>	<b>9.76</b>
<b>Physical Contingencies</b>	<b>0.18</b>	<b>0.01</b>	<b>0.19</b>
<b>Price Contingencies</b>	<b>0.57</b>	<b>0.22</b>	<b>0.79</b>
<b>Total Project Costs<sup>1</sup></b>	<b>7.33</b>	<b>3.41</b>	<b>10.74</b>
<b>Total Financing Required</b>	<b>7.33</b>	<b>3.41</b>	<b>10.74</b>

<b>Project Cost By Category</b>	<b>Local US \$million</b>	<b>Foreign US \$million</b>	<b>Total US \$million</b>
<b>Goods</b>	1.07	0.39	1.46
<b>Works</b>	0.82	0.23	1.05
<b>RISP - grants</b>	3.30	2.20	5.50
<b>Training</b>	0.20	0.06	0.26
<b>Technical Assistance</b>	0.37	0.28	0.65
<b>Operating Costs</b>	0.82	0.02	0.84
<b>Physical Contingencies</b>	0.18	0.01	0.19
<b>Price Contingencies</b>	0.57	0.22	0.79
<b>Total Project Costs<sup>1</sup></b>	<b>7.33</b>	<b>3.41</b>	<b>10.74</b>
<b>Total Financing Required</b>	<b>7.33</b>	<b>3.41</b>	<b>10.74</b>

<sup>1</sup> Identifiable taxes and duties are 0.68 (US\$m) and the total project cost, net of taxes, is 10.06 (US\$m). Therefore, the project cost sharing ratio is 39.06% of total project cost net of taxes.

## **Annex 4: Incremental Cost Analysis**

### **MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

#### **Overview.**

The global environmental objective of the GEF Alternative is to protect the quality of the Black Sea by reducing the discharge of nutrients (nitrogen and phosphorous) and other agricultural pollutants from the Lapusna tributary catchment area situated in the Lower Prut River basin, which flows into the Danube. The proposed project aims to significantly increase the adoption of environmentally-friendly agricultural practices and promote ecologically sustainable land use in the project area and thereby reduce pollution from agricultural sources including erosion in the Lapusna River basin and hence into to the Danube and the Black Sea. Towards this end, the project will:

- Promote the adoption of environmentally-friendly agricultural practices by individual farmers and farmers' associations in eleven communes of the Hincesti and Leova raions (counties).
- Convert a floodplain in Tochile-Raducani commune between the Lapusna and Prut Rivers back to its former wetland status.
- Protect the fragile soils including riparian areas through planting of perennials and grasses.
- Strengthen national policy and local regulatory capacity.
- Promote a broad public awareness campaign to disseminate the benefits of project activities.
- Promote regional collaboration.

Thus, the GEF funding will remove institutional, financial, market and knowledge barriers, which currently act as disincentives to the adoption of environmentally-friendly agricultural practices, protect fragile riparian, pasture and forest areas and rejuvenate a wetland. The GEF Alternative intends to achieve this at a total incremental cost of US\$4.95 million.

#### **Context and Development Goals.**

During the past few decades, the Black Sea has suffered severe environmental damage, mainly due to coastal erosion, eutrophication, insufficiently treated sewage, introduction of exotic species, and inadequate resource management, all of which led to a decline of its biological diversity, loss of habitat and long-term ecological changes. There is broad agreement that eutrophication, caused by an increase in nutrient flux down the major rivers in the late 1960s, through poor management of animal waste and a marked increase in mineral fertilizer and chemical use, is the most serious problems facing Danube River and the Black Sea over the medium to long-term. The effect of eutrophication on the north-western shelf of the Black Sea is generally recognized as disastrous and is primarily related to nutrient loads carried by Danube River. A GEF Partnership on Black Sea and Danube Basin was established in May 2001 to take coordinated action for the rehabilitation of the Danube/Black Sea environment. The Partnership is led by the GEF and its implementing agencies, the World Bank, UNDP and UNEP and funded with a US\$95 million GEF grant over several tranches. The WB executed US\$70 million Investment Fund for Nutrient Reduction in the Danube Basin/Black Sea is financing investments to improve agricultural practices, wastewater treatment and wetland restoration as well as policy and legal revisions and capacity building for enhancing monitoring and enforcement.

***Nutrient flow from the Danube River.*** The Black Sea Environmental Programme (BSEP) Studies revealed that 58% of the total dissolved nitrogen and 66 % of the total dissolved phosphorous flowing into the Black Sea come from the Danube basin. More than half of all nutrient loads into the Danube River

originate from agriculture, about one fourth from private households and about 10 – 13 % from industry. The most important pathways into the Danube basin for phosphorous are direct discharges (33% of the total flow, predominantly from agriculture), erosion/runoff (31%, mainly agriculture) and sewage treatment plant effluents (30%). Nitrogen loads come from: direct discharges (35%), erosion/runoff and sewage treatment plant effluents in more or less equal shares, again agriculture being the source for more than half the total nitrogen run-off in many countries.

***Nutrient flow from Moldova.*** The Trans-boundary Diagnostic Analysis carried out on the basis of a pollution source inventory for the BSEP reveals that Moldova only plays a modest role in nutrient discharge (about 2%) into the Black Sea. Principally, this is because its surface area is only 1.6% of the 'Danube River' countries. However, agriculture in Moldova contributes significantly to N and P emission, accounting for about 90% of its total discharge. In addition, because much agriculture is undertaken on hilly land with poor soil conservation techniques, erosion is significant with some of the topsoil being carried by the river system into the delta area.

Agriculture is the mainstay of the Moldova's economy, primarily due to its fertile soils. Seventy percent of the land is under agriculture of which 81% are arable, 10% vineyards and orchards and 9% pastures. Groundwater polluted with nitrates and microbial organisms from agriculture has social significance from the point of view of drinking water supply for rural settlements in Moldova. Also, low levels of sanitation and lack of hygiene are increasing the transmission of enteric germs, a principal cause of bowel diseases including acute diarrhoeic disease (ADD).

Following the political and social upheaval caused by the transition to a market economy, and the accompanying economic decline in the region, riparian countries have reduced the overall discharge of nutrients into the Danube River and the Black Sea. Largely because of this, and also because of the success of nutrient load reduction programmes, particularly in the upper Danube countries, there has been a partial recovery of coastal ecosystems. Nevertheless, the overall discharge of nutrients is still higher than what it was in the 1960s. The economic downturn in the coastal countries is temporary; this offers a window of opportunity for actions aimed at improving the marine ecosystems and avoiding the return to the previous situation of chronic eutrophication.

***Government Strategy.*** The project will assist Moldova in meeting its international commitments to reduce nutrient loads to the Danube River and the Black Sea. Moldova has assumed its international obligations under the Convention on Co-operation or the Protection and Sustainable Use of the Danube River (Sofia 1994). It is signature to the Statement on the Lower Danube Green Corridor (Bucharest 2000), is a member of the Danube Commission for the Protection of the Danube River and is moving towards compliance with the European Union Directives. In addition, as a member, Moldova is committed to the overall goals of the joint Danube-Black Sea Working Party to reduce nutrient and hazardous substances to such levels necessary to permit the Black Sea eco-system recovery to similar conditions as those observed in the 1960s.

Agricultural pollution control, especially nutrient run-off into the Danube and Black Sea has been identified as a Government priority as well as being an essential part of the Black Sea and Danube River Basin Strategic Action Plans. Wetland restoration in proximity to the Danube River has been identified as one of the most effective ways to reduce nutrient loads into the Danube and Black Sea. The project's selected site for promoting ecologically sustainable land use, the Tochile-Raducani floodplain will demonstrate the effectiveness of such an initiative: this is also in line with the governments strategy of wetland ecosystem protection. In addition, the project will protect riparian areas and fragile lands through planting of trees, shrubs and grasses and the improved management of pastures and forests. The Ministry of Ecology,

Construction and Territorial Development (MECTD) is in the process of harmonizing the environmental legislation with that of the EU and is paying particular attention to the Nitrates Directive which is one of the most important Directives under the EU accession process. On-farm environmental management is an integral part of the Government's overall strategy for the agricultural sector, which is aimed at creating enabling conditions to fully realize the sector's yet unfulfilled potential. A key part of the government's overall strategy for agriculture is the development of post-privatisation agricultural support services as well as on-farm environmental management aimed at creating enabling circumstances to realize fully the sector's potential. To this end, MECTD and the Ministry of Agriculture and Food Industries (MAFI) support the Agricultural Pollution Control Project (APCP) as strongly complementing the Rural Investment Services Project (RISP). The combined program of grants through APCP and credits through RISP will allow the government to mainstream environmental and public health considerations into the agricultural sector and the synergy of such an approach will bring greater benefits locally, regionally and globally.

### **Baseline Scenario.**

The baseline scenario includes activities that will promote Moldova's agricultural sector without GEF support. The Government's agricultural strategy has significant implications for the organization and management of an improved agricultural sector. Farmers and processing industries have witnessed a sharp decline in viability since privatization through the reduction of inputs, especially fertilizers and machinery. However, it is essential that if they are going to compete on the world market, farmers must have access to appropriate knowledge, skills and technologies. Only then will Moldova's agriculture be competitive and efficient. However, as only a few of the new farm owners have management skills, and even fewer have access to capital, measures are included under the on-going Bank's Rural Investment Services Project (RISP) to strengthen the extension and training system. RISP will make the entities delivering these services more responsive to the needs of farmers, including access to information and cost effective agricultural technologies and practices, which, while increasing productivity, promote conservation and sustainable use of the country's natural resource base. However, this could encourage non-point source pollution through increased agricultural productivity, contributing additional nutrients loads into the Black Sea that may lead to increased eutrophication and the ecological damage and economic losses associated with this process. The long-term implication will be continued degradation of a globally significant international water body and its associated bio-diversity in the shared coastal and marine environment of the Black Sea. The Baseline Scenario does not include an effective mechanism to address this issue even though on paper it is the policy of government.

The GEF Alternative would go beyond the Baseline Scenario by allowing the project to establish a mechanism for coordinating the approach, funding and support of activities designed to reduce non-point source pollution from agriculture and advise on the reduction of point source pollution from agro-industries. This alternative while promoting increased productivity will do so without the concurrent increase of pollution into ground and surface water by promoting environmentally friendly practices.

**Costs.** The total cost of the project is US\$10.74 million. The total expenditure under the Baseline Scenario is estimated at US\$5.79 million. The Incremental Costs are estimated to be US\$4.95 million.

### **Global Environmental Objective.**

The global environmental objective of the project is to promote the adoption of environmentally-friendly on-farm agricultural practices to reduce nutrient loads entering the Black Sea. The dissemination and outreach features of the project will contribute to its replicability. The role of the GEF in this project is to reduce farmers' perceived risks in adopting environmentally-friendly agricultural practices and remove

barriers for their adoption. The project will demonstrate that farmers who adopt these measures are able to maximize outputs and minimize negative environment impacts, while improving the health of the Black Sea ecosystem. In addition a wetland will be rejuvenated and fragile riparian systems, pastures and forests will be protected and better managed for the benefit of the environment and to the well-being of the people. This should lead to a sustainable increase in economic activities such as increase agricultural output, improve fishing and tourism in the wetland and surrounding areas and to a healthier and wealthier population. At the same time, the project should enhance bio-diversity and facilitate carbon sequestration. But above all, the activities promoted under the GEF Alternative will facilitate the sharing of experiences for feasible and affordable solutions to deal with point and non-point sources of pollution to surface and ground water and hence to international water bodies from agro-industries and agriculture.

**Scope.** Above and beyond the Baseline Scenario, the GEF Alternative will provide the means to meet the proposed project's goals. Specifically, the project will:

- Install improved manure storage facilities and equipment for manure collection, storage and application.
- Provide manure spreaders/applicators for efficient and cost-effective use of manure on croplands, together with judicious use of mineral fertilizers.
- Conduct on-farm trials and demonstrations to promote the use of improved sustainable agricultural practices, including reduced tillage, better chemical management systems, terracing, contour ploughing and buffer strips for water quality benefits.
- Develop a specific land use management plan for the integrated management of the reopened Tochile-Raducani wetland between the Lapusna and Prut Rivers.
- Strengthen national policy and regulatory capacity to address agricultural pollution control.
- Promote regional collaboration.
- Undertake a broad public awareness campaign to disseminate benefits of the project activities.

## **Benefits.**

**Domestic and International Benefits.** The GEF Alternative would go beyond the Baseline Scenario by allowing the project to promote environmentally friendly agricultural and rural practices. These will reduce non-point (and point) pollution sources to the Black Sea as well improving groundwater, biodiversity and carbon sequestration all of which have strong benefits for the global climate and human health. Given the country's precarious budgetary situation, the government can ill-afford to spend scarce funds as financial incentives to farmers to reduce nutrient loads for regional and global gains. The GEF funds will allow additional investments in sustainable farm management practices and manure storage etc. in the selected project area of Lapusna Judet that will have an impact on the Black Sea and provide willing farmers with sustainable alternate technologies. Under the GEF Alternative, the promotion of improved sustainable agricultural practices and a decrease of manure leaching into water systems will provide greater environmental benefits and augment the demonstration potential of the exercise. It should also improve farm profitability. The GEF Alternative will promote a public awareness program to effectively explain the benefits of improved environmental practices at farm level. It will also allow the development of a strategy for project replication within Moldova and internationally.

The proposed project is a demonstration activity in the South-western part of Moldova, close to the Romania border. The eleven communes in the project area have about 21,360 ha of arable land out of a total area of 41,600 ha. It has a total population in 2000 of 43,230 in 14,740 households. The project will support activities for nutrient reduction and monitoring in 16 villages, as well as to reopen Tochile-Raducani wetland between the Lapusna and Prut Rivers. This wetland of about 130 ha comprises

a former floodplain area, drained and transformed into agricultural land in the late sixties. The plants have the capacity to absorb minerals from the water and the flora and fauna could reduce faecal and colloidal substances.

Through improved farming practices, there will be an annual saving of dissolved nutrients flowing into the Black Sea. It is assumed that in the project area, about 50,000 t of wet manure out of an estimated current annual production of 86,000 t will be collected in platforms through manure management in place of being dumped by the road and riverside. This 50,000 t contains an estimated 280 t of N and 70 t P and it will be judiciously spread on about 5,000 ha of agricultural land (out of 21,400 ha). In addition the correct dosages of chemical fertilizers will be applied to the various annual and perennial crops. Thus, once the project is fully operational up to 280 t of N and 70 t P could be taken up by plants and saved from being flushed into the river systems and hence into the Black Sea. Also, the plants will absorb most chemical fertilizers. Even if some of this N & P from manure and mineral fertilizer finds its way into the river system, the Tochile-Raducani the flora and fauna of the wetland has the capacity to absorb up to 100 kg N and 10 kg P per hectare each year. More detailed assessment will be undertaken in quantifying accrued environmental (social and economic) benefits during project implementation (and beyond). Such quantifiable benefits include the reduction of minerals and other pollutants in surface and ground water, erosion reduction, increase in biodiversity and perhaps additional carbon sequestration.

#### **Incremental Costs.**

The difference between the cost of the Baseline Scenario of US\$5.79 million and the cost of the GEF Alternative of US\$10.74 million is US\$4.95 million. This amount represents the incremental cost of achieving the global environmental benefits of reduced degradation of local and international waters, decreased erosion, more appropriate land use and increased biodiversity.

#### **Incremental Cost Matrix**

<b>Component</b>	<b>Cost Category</b>	<b>US\$ (M).</b>	<b>Domestic Benefit</b>	<b>Global Benefits</b>
1. Promotion of Mitigation Measures for Reducing Nutrient Loads in Water Bodies - RISP-supported activities - Promotion of Improved Watershed Management Practices (manure management; promotion of environmentally friendly agricultural practices; shrub and tree-planting; wetland restoration; monitoring soil and water quality)	Baseline	5.47	Improved local capacity and knowledge to respond to the need for environmentally sound agricultural practices  Improved land-use practices and water quality.  Reduced soil erosion.  Increased profitability of agriculture production.  Increased rural incomes.	Reduced nutrient loads into the Black Sea  Protection of natural habitat.  Increased biodiversity
	With GEF	9.66		
	Incremental	4.19		

2. Strengthening National Policy, Regulatory Enforcement and National Capacity	Baseline	0.02	Strengthened policy and structural framework for agricultural practices designed to reduce nutrient loads to Black Sea	Reduced nutrient loads due to compliance with regulatory and enforcement measures
	With GEF	0.09		
	Incremental	0.07		
3. Public Awareness and Replication Strategy	Baseline	0.09	Increased potential to replicate project activities in similar areas of Moldova	High potential to replicate project activities outside Moldova, in other Black Sea, Danube river and Baltic Sea riparian countries
	With GEF	0.37		
	Incremental	0.28		
4. Project Management n Unit	Baseline	0.20	Increased capacity for successful project management and implementation	
	With GEF	0.62		
	Incremental	0.42		
<b>Total</b>	<b>Baseline</b>	<b>5.79</b>		
	<b>With GEF</b>	<b>10.74</b>		
	<b>Incremental</b>	<b>4.95</b>		

The proposed project is closely linked with the US\$25.0 million Rural Investment and Services Project and permits activities under this project to result in trans-boundary as well as local benefits.

**Annex 5: Financial Summary**  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**  
**Years Ending**

	IMPLEMENTATION PERIOD						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>Total Financing Required</b>							
<b>Project Costs</b>							
<b>Investment Costs</b>	1.6	2.0	2.1	2.4	1.6	0.0	0.0
<b>Recurrent Costs</b>	0.2	0.2	0.2	0.2	0.2	0.0	0.0
<b>Total Project Costs</b>	1.8	2.2	2.3	2.6	1.8	0.0	0.0
<b>Total Financing</b>	1.8	2.2	2.3	2.6	1.8	0.0	0.0
<b>Financing</b>							
<b>IBRD/IDA</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Government</b>	0.3	0.3	0.2	0.2	0.1	0.0	0.0
<b>Central</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Provincial</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Co-financiers</b>	0.5	1.0	1.2	1.3	1.0	0.0	0.0
<b>GEF</b>							
<b>User Fees/Beneficiaries</b>	0.1	0.2	0.2	0.1	0.1	0.0	0.0
<b>RISP</b>	0.9	0.7	0.7	1.0	0.6		0.0
<b>Total Project Financing</b>	1.8	2.2	2.3	2.6	1.8	0.0	0.0

**Main assumptions:**

Figures may slightly differ due to rounding

**Annex 6(A): Procurement Arrangements**  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

**Procurement**

**A. Procurement Guidelines**

The procurement of goods and works financed the World Bank shall be done in accordance with the Bank's Guidelines for Procurement under IBRD Loans and IDA Credits, (issued in January 1995 and revised in January and August 1996, September 1997, and January 1999). Consulting Services and Training contracts will be awarded in accordance with the provisions of the Bank's Guidelines for the Selection and Employment of Consultants by World Bank Borrowers, (issued in January of 1997 and revised in September 1997, in January, 1999 and in May 2002).

The Bank's Standard Bidding Documents and Standard Requests for Proposals etc. will be used. A General Procurement Notice (GPN) will be published in the UN Development Business in January 2004.

**B. Implementation**

The Ministry of Ecology, Construction and Territorial Development (MECTD) and Ministry of Agriculture and Food Industries (MAFI) would be the main agencies responsible for project implementation. (MECTD) has been designated by the Ministry of Finance as the line ministry responsible for management of the project. These ministries will be the implementing agencies and will manage the project through Project Management Unit (PMU) with a cross support on fiduciary issues provided by already existing Consolidated Agricultural Projects' Management Unit (CAPMU) which is experienced with the Bank's requirements.

The PMU would collect and record information regarding procurement administration, and would send quarterly reports based on this information to the Bank. These reports would indicate:

- (i) status of procurement
- (ii) an updated procurement plan; and
- (iii) compliance with aggregate limits on specified procurement methods.

CAPMU's existing computerized procurement monitoring system will be expanded for tracking procurement actions as well as to prepare periodic progress reports.

**C. Procurement Arrangements**

The project includes procurement of the following civil works, goods and services :

- Civil works for manure management structures, including manure pits for private farms and communes' manure platforms that will be scattered in terms of location and timing, small structures for wetlands restoration, and installation of piezometers for monitoring water quality;

- Goods will include agricultural machinery, field and laboratory equipment for testing/demonstration of new practices as well as monitoring their impact on the environment, vehicles, and various types of agricultural and forestry inputs and planting materials;
- Consulting services and training will include several contracts with agencies to provide implementation services for new practices and subsequent monitoring of impact, for individual local and international consultants to provide specific technical advice, for training programs and for monitoring overall project impact.

The following procurement arrangements will apply for the procurement of goods, works and services:

***Procurement of Civil Works:***

*International Competitive Bidding (ICB):* Works contracts estimated to cost US\$200,000 each or more shall be procured through ICB in accordance with the Guidelines.

*National Competitive Bidding (NCB):* The contracts for procurement of construction works estimated to cost less than US\$200,000 equivalent per contract but more than US\$50,000, would be procured under contracts awarded in accordance with the provisions of paragraph 3.3 of the Guidelines. Rehabilitation and construction works will be grouped into regional lots as much as possible considering the economies of scale.

*Minor Works:* Civil Works estimated to cost less than \$50,000 equivalent per contract may be procured under lump-sum, fixed-price contracts awarded on the basis of quotations obtained from three (3) qualified domestic contractors in response to a written invitation. The invitation shall include a detailed description of the works or services, including basic specifications, the required completion date, a basic form of agreement acceptable to the Bank, and relevant drawings, where applicable. The award shall be made to the contractor who offers the lowest price quotation for the required work, and who has the experience and resources to complete the contract successfully.

***Procurement of Goods:***

*International Competitive Bidding (ICB):* Goods and equipment estimated to cost US\$100,000 each or more shall be procured through ICB in accordance with the Guidelines.

*International Shopping (IS):* Readily available off-the-shelf goods and equipment estimated to cost less than US\$100,000 equivalent per contract may be procured under contracts awarded on the basis of international shopping procedures in accordance with paragraphs 3.5 and 3.6 of the Guidelines.

*National Shopping (NS):* Locally available off-the-shelf goods and equipment estimated to cost less than US\$50,000 equivalent per contract may be awarded on the basis of national shopping procedures in accordance with paragraphs 3.5 and 3.6 of the Guidelines. Items covered by NS procedures would include office furniture, office equipment, minor supplies and vehicles as well

as small field and laboratory equipment.

***Procurement of Consultants' Services and Training:***

*Quality- and Cost-based Selection (QCBS):* Consultant services shall be procured under contracts awarded in accordance with the provisions of the Bank's Consultant Guidelines. Assignments estimated to cost less than US\$100,000 equivalent can be procured based on shortlists comprising entirely national firms.

*Least Cost Selection (LCS):* Auditing services and project monitoring estimated to cost less than \$100,000 equivalent per contract may be procured under contracts awarded in accordance with the provisions of paragraphs 3.1 and 3.6 of the Consultant Guidelines.

*Selection based on Consultants Qualifications (CQ):* Contracts for consulting services, such as preparation of management plans, assistance for soil and water monitoring, etc., estimated to cost less than US\$50,000 equivalent per contract may be procured using selection based on consultants' qualifications in accordance with paragraphs 3.1 and 3.7 of the Guidelines.

*Individual Consultants:* Services of individual consultants for tasks that meet the requirements set forth in paragraph 5.1 of the Consultant Guidelines shall be procured under contracts awarded in accordance with the provisions of paragraphs 5.1 through 5.3 of the Consultant Guidelines. For individual consultants to be hired for more than six months duration, the positions will be advertised for expressions of interest in international and/or national media depending on the expertise required and selection will be based on comparison of those expressing interest.

*Single Source Selection (SS):* The consulting services which: (i) would be a natural continuation of work carried out by the firm; (ii) must be selected rapidly due to an emergency need, (iii) has an exceptional nature where only one firm is qualified or has experience of exceptional worth for the assignment, (iv) is estimated to cost less than US\$50,000 equivalent per contract, may, with the Bank's prior agreement, be procured in accordance with the provisions of paragraph 3.8 through 3.11 of the Consultant Guidelines.

***Procurements under Sub-grants:***

*Commercial Practices:* Works and goods required for implementation of the environmental mitigation sub-grants to be financed in conjunction with the RISP credit line supported investments and estimated to cost less than US\$50,000 equivalent per contract may be procured at competitive prices in accordance with commercial practices of the respective beneficiaries, per paragraph 3.12 of the Guidelines. Provided that such practices involve obtaining quotations from more than one supplier or contractor; and with due account being taken, in addition to prices, of other relevant factors such as delivery and efficiency and reliability thereof and availability of maintenance and spare parts. Sub-borrowers shall use the World Bank's standard and sample bidding documents, evaluation reports, contracts etc., wherever possible, with the necessary modifications agreed with the PMU. Works and goods estimated to cost US\$50,000 or more per contract shall be procured in accordance with the procurement procedures set forth above for civil

works and for goods and equipment, in accordance with the cost of the contract.

***Procurement from Government-Owned Agencies:***

Under the scope of this project, some services and agricultural inputs will be procured from government-owned agencies, because of the following reasons: a) lack of private sector in these fields in the country, b) the estimated cost of these contracts are relatively small and may not attract foreign companies or institutions, c) the nature of services such as water quality monitoring or supply of seedlings require the well establishment of the service providers at the regional and local level, in other words any centrally located institution can not perform the required services. Therefore, the below named government-owned agencies will be directly contracted for the implementation of components for promotion of environmentally friendly practices, shrub and tree planting, wetland rehabilitation and monitoring the impact of these measures on water and soil quality.

Moldsilva (State Forestry Services) is the central authority responsible for the forestry in Moldova and directly subordinated to the Government. It is the only Moldovan institution with relevant capacity for afforestation works and it consists of 15 state forestry enterprises, which cover 69 forest districts and 1068 forest cantons. Moldsilva will be responsible to carry out tree planting program and it will supply seedlings for the project activities estimated to cost about \$130,000. The price quotations will be collected from number of district nurseries located in the vicinity of the project area and seedlings will be procured from the lowest priced nursery meeting the requirements.

Soil Science Institute is a state entity with number of technically qualified researchers with many specialized laboratories and research stations at the district level. It is subordinated to the Ministry of Agriculture, but operating on a self financing basis. It has its own laboratory and it is the only institution which has experience and capacity in conducting various soil analysis including soil/manure nutrient content, monitoring soil quality, measuring nutrient loss and soil erosion which are the key activities under the implementation of improved watershed management practices and its monitoring. The cost of its services to be awarded under direct contracting procedures will be about \$80,000.

Hydrometeorology Service Center is a central agency operating as a department under the Ministry of Ecology, Construction and Territorial Development (MECTD) and it is responsible for the monitoring of all ecosystem medias in order to assess their general status and trends in water quality and quantity. The laboratories of Hydrometeorology Service Center will carry out water quality monitoring and meteorological data collection and cost of these services will be about \$125,000, which will be awarded under direct contracting procedures.

For all of the these above mentioned agencies, annual service/supply contracts will be signed and will be renewed every year upon satisfactory performance.

***Training, Workshops and Study Tour Expenditure:***

The PMU shall prepare a detailed training program for every six months in consultation with the implementing agencies. The training program shall contain time schedules for workshops, seminars, study tours and travels etc., including detailed information on the content, itinerary, location, number of beneficiaries, cost estimates for each activity etc. These training programs shall be submitted to the Bank for review and clearance before implementation. After the Bank's clearance the training, workshops and study tours shall be carried in accordance with the agreed procedures without requiring Bank's clearance of each sub-component of the training program. The status of the training program will be included as part of progress reports and will be updated and/or modified as agreed with the Bank.

***Incremental Operating Costs:***

The operating costs for APCP covering staff salaries (excluding Government employees), staff travel costs, supplies, utilities, and equipment maintenance etc. would be procured on the basis of annual budgets to be agreed with the World Bank.

**Procurement methods (Table A)**

**Table A: Project Costs by Procurement Arrangements**  
(US\$ million equivalent)

Expenditure Category	Procurement Method <sup>1</sup>				Total Cost
	ICB	NCB	Other <sup>2</sup>	N.B.F.	
<b>1. Works</b>	0.00 (0.00)	1.00 (0.72)	0.04 (0.03)	0.04 (0.00)	1.08 (0.75)
<b>2. Goods</b>	0.58 (0.46)	0.00 (0.00)	0.47 (0.38)	0.37 (0.00)	1.42 (0.84)
<b>3. Services and Training</b>	0.00 (0.00)	0.00 (0.00)	1.50 (1.20)	0.00 (0.00)	1.50 (1.20)
<b>4. Grants to support credit line under RISP</b>	0.00 (0.00)	0.00 (0.00)	6.00 (2.00)	0.00 (0.00)	6.00 (2.00)
<b>5. Operating Costs</b>	0.00 (0.00)	0.00 (0.00)	0.35 (0.20)	0.40 (0.00)	0.75 (0.20)
<b>Total</b>	0.58 (0.46)	1.00 (0.72)	8.36 (3.81)	0.81 (0.00)	10.75 (4.99)

<sup>1/</sup> Figures in parentheses are the amounts to be financed by the Bank Credit/Grant. All costs include contingencies.

<sup>2/</sup> Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs.

**Table A1: Consultant Selection Arrangements (optional)**  
(US\$ million equivalent)

Consultant Services Expenditure Category	Selection Method							Total Cost <sup>1</sup>
	QCBS	QBS	SFB	LCS	CQ	Other	N.B.F.	
<b>A. Firms</b>	0.30 (0.25)	0.00 (0.00)	0.00 (0.00)	0.03 (0.02)	0.64 (0.51)	0.20 (0.16)	0.00 (0.00)	1.17 (0.94)
<b>B. Individuals</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.40 (0.35)	0.00 (0.00)	0.40 (0.35)
<b>Total</b>	0.30 (0.25)	0.00 (0.00)	0.00 (0.00)	0.03 (0.02)	0.64 (0.51)	0.60 (0.51)	0.00 (0.00)	1.57 (1.29)

<sup>1)</sup> Including contingencies

Note: QCBS = Quality- and Cost-Based Selection  
QBS = Quality-based Selection  
SFB = Selection under a Fixed Budget  
LCS = Least-Cost Selection  
CQ = Selection Based on Consultants' Qualifications  
Other = Selection of individual consultants (per Section V of Consultants Guidelines), Commercial Practices, etc.  
N.B.F. = Not Bank-financed  
Figures in parentheses are the amounts to be financed by the Bank Credit/Grant.

**Prior review thresholds (Table B)**

**D. Procurement Review.**

**Prior Review:** The following procurement action and documentation would be subject to Prior Review by the World Bank:

*Goods, Works and Technical Services:* Prior review of all International Competitive Bidding, first National Competitive Bidding and first Minor Works contracts for works, first International Shopping, and first National Shopping contracts for goods and technical services.

*Consulting Service:* With regard to consultant services and training, prior Bank review will be required for all Terms of Reference, irrespective of contract value. For contracts with firms estimated to cost US\$50,000 or more and for contracts with individuals estimated to cost US\$25,000 or more, the qualifications, experience, terms of reference and terms of employment shall be furnished to the Bank for its review and approval prior to contract signature.

**Post Review:** Contracts not subject to Bank's prior review will be reviewed ex-post by Bank supervision missions on sampling basis, i.e. 1 out of every 5 contracts. The frequency of procurement supervision should be every twelve months.

**Table B: Thresholds for Procurement Methods and Prior Review<sup>1</sup>**

<b>Expenditure Category</b>	<b>Contract Value Threshold (US\$ thousands)</b>	<b>Procurement Method</b>	<b>Contracts Subject to Prior Review (US\$ millions)</b>
<b>1. Works</b>	<200	NCB	1/200
	<50	MW	1/50
<b>2. Goods</b>	>100	ICB	3/583
	<50-<100	IS	1/100
	<50	NS	1/50
<b>3. Services</b>	>200	QCBS	1/300
	<100	LCS	1/30
	<50	CQ	1/50
	<25	Individual	2/50

**Total value of contracts subject to prior review:** US\$1,413

**Overall Procurement Risk Assessment:** Average

**Frequency of procurement supervision missions proposed:** One every six months  
(includes special procurement supervision for post-review/audits)

**E. Procurement Monitoring and Reporting**

The PMU will keep a complete and up-to-date record of all procurement documentation and relevant correspondence in its files, which will be reviewed by the Bank staff during supervision missions. The

Procurement Plan for the project shall be prepared by the PMU and furnished to the Bank for its

review and approval in accordance with the provisions of the Bank's Procurement Guidelines. The Procurement Plan, which indicates the procurement arrangements, contract packaging, applicable procurement method, scheduling of procurement process, estimated cost etc, will be updated annually by the PMU. All procurements shall be undertaken in accordance with the Procurement Plan. Monitoring reports on procurement progress will be submitted as part of progress reports on program implementation. The report shall include all information related with the completed, on-going and planned contracts.

## **F. Action Plan to Build up Agencies Capacity**

The Consolidated Agricultural Projects Management Unit (CAPMU) was created in 1999 as the result of the consolidation of the project implementation units in charge of the prior agricultural projects. CAPMU is currently in charge of managing Rural Investment Services Project in the agriculture sector, and will be managing Youth Inclusion Project after its effectiveness. CAPMU will also started to work for the preparation of APCP and will be responsible for its management. CAPMU has developed considerable experience in the procurement of works, goods and services in accordance with Bank procedures.

The following actions need to be taken in the given order to alleviate the risks for poor implementation of procurement under the project:

- The procurement file containing up to date procurement documents (guidelines, manuals, templates of procurement notices, standard bidding documents for procurement of goods and works, standard request for proposal documents for consultants services, evaluation report formats, regional and simplified procurement documents etc.) shall be prepared by the Bank and provided to PMU at the time of Project Launch Workshop. The PMU is recommended to visit the Bank's web-site frequently to ensure using the most updated procurement documents.
- CAPMU will provide assurance that the procurement specialist will devote at least 30% of his time for APCP procurement activities, especially at the early stages of the project.
- The work load of procurement specialist shall be assessed for a period of 6 months after the effectiveness of the project. In case of shortcomings, two options will be considered i) a new full-time procurement specialist will be hired who will be working solely for APCP, or ii) a full-time procurement assistant will be hired to assist the part-time procurement specialist.

The procurement specialist of CAPMU, had some training on Bank's procurement procedures given by ILO in Turin. However, he has a limited experience on procurement of civil works contracts. To gain knowledge on procurement of civil works project, he will attend related procurement courses provided by ILO in Turin.

- Bank procurement specialist will be a member of the project team throughout the project cycle. During project implementation, the Bank procurement specialist should be involved in the supervision missions.

## Overall Procurement Risk Assessment

<b>Section 1: Capacity of the Implementing Agency in Procurement and Technical Assistance requirements</b>				
The capacity of the implementing agency to conduct procurements has been assessed. The overall procurement assessment is high-risk. The following action plan is recommended as a result of this assessment. a) CAPMU will provide assurance that the procurement specialist will devote at least 30% of his time for APCP procurement activities, especially at the early stages of the project. b) The work load of procurement specialist shall be assessed for a period of 6 months after the effectiveness of the project. In case of shortcomings, two options will be considered i) a new full-time procurement specialist will be hired who will be working solely for APCP, or ii) a full-time procurement assistant will be hired to assist the part-time procurement specialist. c) The procurement specialist, who is currently working in CAPMU, had some training on Bank's procurement procedures given by ILO in Turin. To gain knowledge on procurement of works project, he will attend procurement trainings provided by ILO in Turin for procurement of works.				
Country Procurement Assessment Report or Country Procurement Strategy Paper status: <b>The CPAR is finalized in June 2003</b>			Are the bidding documents for the procurement actions of the first year ready by negotiations <b>YES NO X</b>	
<b>Section 2: Training, Information and Development on Procurement</b>				
Estimated date of Project Launch Workshop: <b>May/June 2004</b>	Estimated date of Publication of General Procurement Notice: <b>5/15/2004</b>	Indicate if there is procurement subject to mandatory SPN in Development Business <b>Yes X No</b>	Domestic Preference for Goods: <b>Yes X No</b>	Domestic Preference for Works, if applicable. <b>Yes No X</b>
Explain briefly the Procurement Monitoring System: Procurement implementation progress will be monitored through progress reports and supervision missions. Each supervision mission will include the project procurement specialist for updating the procurement plan and conducting post review.				
Co-financing: <b>None</b>				
<b>Section 3: Procurement Staffing</b>				
Indicate name of Procurement Staff or Bank's staff part of Task Team responsible for the procurement in the Project: <b>Elmas Arisoy (ECSPS)</b>				
Explain briefly the expected role of the Field Office in procurement: There is no procurement specialist in the Country Office. Procurement supervision shall be handled by HQ based PAS.				

<sup>1)</sup> Thresholds generally differ by country and project. Consult "Assessment of Agency's Capacity to Implement Procurement" and contact the Regional Procurement Adviser for guidance.

## **Annex 6(B): Financial Management and Disbursement Arrangements MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

### **Financial Management**

#### **1. Summary of the Financial Management Assessment**

The financial management arrangements within the CAPMU will be assessed as acceptable to the Bank when CAPMU accounting system will be adjusted to provide accounting and reporting under the project.

CAPMU has an extensive experience in the WB project implementation and it has well-developed fiduciary functions that have been assessed as satisfactory during preparation for implementation of other projects. CAPMU's previous and current project audited financial statements are satisfactory and it has been agreed that such arrangements will be replicated for APCP project as well. The CAPMU has prepared financial reporting forms for the project (FMRs), prepared chart of account, terms of references for the audit.

The annual audited project 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 period.

Project Special Account will be opened before project effectiveness by the CAPMU in the commercial bank acceptable to the World bank.

Grant Matching Scheme that represents a part of actions provided in line with a RISP project will be administered by the PIU working under CAPMU. These Grants will be provided on the basis of eligibility criteria and for the participants credited under RISP project. Each Grant will be financed on a conditional basis and assumes 3 step financing that should allow to provide control over conditions execution and eligibility of expenses provided.

#### **Funds flow**

There are two part of the funds flow scheme that should be considered at the project. The first part relates to the general scheme of the project financing and assumes that project funds will flow from: (i) the Bank, either via a single Special Account which will be replenished on the basis of SOEs or accompanied by supporting documentation for expenditures related to procurement requiring Bank prior review/approval; or (ii) the Government, via the Treasury at the Ministry of Finance (MOF) on the basis of payment requests approved by the Foreign Debt Department of the MOF.

#### **Sub-grant Disbursements**

Sub-grant funds will be disbursed only to bank account in the name of the Grantee that has been opened and is utilized by the Grantee solely for the purpose of the grant on terms and conditions satisfactory to the PMU. Payments out of the bank account shall be made exclusively for eligible expenditures for the work determined in the sub-grant agreements.

The grants to RISP credit recipients will be disbursed in tranches. The first tranche payment will be made immediately upon signing of the sub-grant agreement by the parties. Disbursements will be made on the basis of tranche disbursement requests (invoices) that the Grantee will send to the PMU when the milestone for the particular tranche has been met. The Grantee shall also provide the PMU any documents that they may require to ascertain whether the expenditure incurred under the previous tranche is reasonable. The PMU may withhold scheduled payments in the event that the Grantee's expenditure reports show a large cash balance in the sub-grant account, or may delay the next scheduled grant payment(s).

Expenditure of sub-grant funds must adhere to the specific line items in the approved budget. Transfers among line items of the approved budget are restricted to a cumulative total of 20% of the item. If a transfer in excess of this restricted level becomes necessary, or the Grantee wishes to establish a new line item, the Grantee shall promptly request authorization from the PMU by letter.

Only incremental operating costs incurred for execution of the sub-project will be financed by the grant funds and existing operating costs of the Grantee can not be financed by grant funds. All interest generated by sub-grant activities shall be applied to the project funded by the sub-grant or other similar activities conducted by the Grantee.

Sub-grant participants' accounts will be credited on the amount of Matching Grant advance in amount of about 30% with will be disbursed at loan approval under the RISP project; the second payment, in amount of 30% of the sub-grant, will be provided following inspection and approval of the completion of the tasks set as conditions to the advance payment; the third and final payment will be provided following inspection and approval of second stage actions completion.

### **Accounting policies and procedures**

The accounting books and records are maintained on a cash basis and project financial statements are presented in United States dollars (and MDL as necessary). CAPMU has instituted a set of appropriate accounting procedures and internal controls including authorization and segregation of duties.

Accounting policies that to be applied on the project will include the following major assumptions:

- cash accounting as the basis for recording transactions;
- reporting should be done in US dollars;
- consolidated financial reports should be prepared for all components;
- reports to be prepared are FMRs, the format of which should be developed and agreed;
- reports to be submitted to the WB on a quarterly basis
- all counterpart funds should be reflected in the financial statements

The CAPMU should adjust their accounting software to reflect the APCP project specifics, as well as to adjust a chart of accounts appropriate for the project. Chart of accounts for the project as well as financial reporting forms have been developed and have been agreed.

CAPMU's produces all financial reports and SOEs directly from the project accounting software 1C. CAPMU has demonstrated in its previous projects that it is able to report on project expenditures with this system and it was assessed that the system works fine but this accounting system require minor adjustments to be capable to provide reporting forms for the APCP.

Project management-oriented Financial Monitoring Reports (FMRs) will be used for project financial reporting, monitoring and supervision and the indicative formats of these reports has been developed and found acceptable. These reporting forms are included in the CAPMU accounting manual designed for the APCP project needs. CAPMU will produce a full set of FMRs every three months throughout the life of the project.

## **2. Audit Arrangements**

CAPMU's previous and current auditing arrangements and findings are satisfactory to the Bank. The audit of the project will be conducted by the independent private auditor, acceptable to the Bank on terms of reference acceptable to the Bank. The annual audited project 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's implementation and thereafter is to be 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. TORs for the project audit has been drafted and agreed.

An audit opinion on the projects financial statements, statements of expenditures and Special Account will be required within six months to the end of the fiscal year and also of the closing of the project. The first audit report is planned to be provided by the 31 June 2005.

In addition, the Moldovan Court of Accounts, the country's supreme audit institution will provide control over the project according to their plans. The usual practice assumes one audit of the project per year.

## **3. Disbursement Arrangements**

### **Allocation of credit/grant proceeds (Table C)**

The allocation of Grant proceeds is given in Table C, which also indicates the GEF financing by expenditure category. The project will be executed over a period of five years during which the full Grant amount of US\$4.95 million will be disbursed. Activities under the Project are expected to be completed by June 30, 2009 and the expected closing date for the project will be December 31, 2009 after which no disbursements will be made.

The project will initially use transaction-based disbursement procedures (direct payments, reimbursements and replenishments to the Special Account with full documentation or SOEs) and produce FMRs for reporting and management information only and not for disbursement purposes.

The FM System will be assessed in end 2004 for the eligibility for FMR-based disbursements.

Subsequently the Recipient and the Bank will review the possibility of disbursing on the basis of the FMRs.

**Table C: Allocation of Credit/Grant Proceeds**

<b>Expenditure Category</b>	<b>Amount in US\$million</b>	<b>Financing Percentage</b>
1. Works	0.75	100%
2. Goods	0.84	100% of foreign expenditures; 100% of local expenditures (ex-factory)
3. Consulting Services and Training	0.67	100% of foreign firms and foreign individual consultants; 96% of local firms and local individual consultants
4. Grants to support credit line of RISP	2.00	100%
5. Incremental Operating Costs	0.40	(a) Salaries of PIU staff --80% (b) Other -- 97%
6. Unallocated	0.29	
<b>Total Project Costs with Bank Financing</b>	4.95	
<b>Total</b>	4.95	

Figures may slightly differ due to rounding.

\* GEF grant will finance 90% of the mitigation measure to be undertaken by the RISP-credit recipients.

The Project is exempted from VAT under Moldovan law. The disbursement percentages applicable to local expenditures have been calculated on the basis of the VAT exemption and include an assumed 5% import duty for category 2 and 3% import duty for category 5(b).

**Use of statements of expenditures (SOEs):**

Statement of Expenditure (SOE) would be used for all expenditures on procurements not requiring Bank prior review/approval as follows:

- (i) goods estimated to cost less than US\$100,000 per contract;
- (ii) firms contracts costing less than US\$50,000;
- (iii) individual consultant contracts costing less than US\$25,000;
- (iv) training;
- (v) incremental recurrent costs; and
- (vi) all grants to support credit line of RISP.

Full documentation to support expenditures would be retained by the PMU for the life of the project. This information would be available for review during supervision by Bank staff, and for annual audits, which will be required to specifically comment on the propriety of SOE disbursements and the quality of the associated record keeping. Invoices supporting disbursements against SOEs should be kept for at least one year after the Bank has received the last audit report under the grant.

**Special account:**

In order to facilitate disbursements, the Recipient will open and maintain a Special Account

(SA), with an acceptable bank in Moldova on terms and conditions acceptable to the Bank. The Special Account will be drawn upon to meet payments to contractors, suppliers and consultants under the project. The initial allocation to the SA would be US\$300,000 and the ceiling in the SA would be limited to US\$500,000. Funds from the Special Account will be disbursed by submitting the relevant withdrawal applications. Replenishment applications should be submitted monthly or at the latest once every three months and must include reconciled bank statements as well as other appropriate supporting documents.

### **Supervision plan**

During project implementation, the Bank will supervise the project's financial management arrangements in two main ways: (i) review the project's six-monthly financial management reports as well as the project's annual audited financial statements and auditor's management letter; and (ii) during the Bank's supervision missions, review the project's financial management and disbursement arrangements (including a review of a sample of SOEs and movements on the Special Account) to ensure compliance with the Bank's minimum requirements. As required, a Bank-accredited Financial Management Specialist will assist in the supervision process.

### **Action plan**

Actions required	Responsibility	Deadline
Integrate the FMRs and chart of accounts in the current Financial information System developed in CAPMU	CAPMU financial manager (accountant)	Before board presentation.

**Annex 7: Project Processing Schedule**  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

<b>Project Schedule</b>	<b>Planned</b>	<b>Actual</b>
<b>Time taken to prepare the project (months)</b>	24	
<b>First Bank mission (identification)</b>	09/15/2000	09/20/2000
<b>Appraisal mission departure</b>	10/15/2003	10/01/2003
<b>Negotiations</b>	12/17/2003	
<b>Planned Date of Effectiveness</b>	03/31/2004	

**Prepared by:**

Aleksander Nacev, Jitendra Srivastava, Meeta Sehgal, Rohan Selvarathnam, Alexander Jolondovich, Sergiu Magdil, John Cole, Keith Openshaw

**Preparation assistance:**

Sharifa Kalala

**Bank staff who worked on the project included:**

<b>Name</b>	<b>Speciality</b>
Aleksander Nacev	Technical
Jitendra Srivastava	Technical
Meeta Sehgal	Technical
Doina Rachita	Technical
Rohan Selvarathnam	Project Costs
Nora Dudwick	Social Specialist
Elmas Arisoy	Procurement
Bogdan Contantinescu	Financial Management
Nadim Khouri	Peer Reviewer
Jacob Kampen	Peer Reviewer
Majory-Anne Bromhead	Quality Assurance

**Annex 8: Documents in the Project File\***  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

**A. Project Implementation Plan**

Draft prepared - to be finalized after negotiations.

**B. Bank Staff Assessments**

**C. Other**

Working Paper 1:	Basic Data on Pilot Watershed Area
Working Paper 2:	Community Needs Assessment
Working Paper 3:	Baseline Household Survey / Social Assessment
Working Paper 4:	Test and Demonstration Program for Soil Management Program
Environment-friendly	Agricultural Practices
Working Paper 5:	Manure Management System
Working Paper 6:	Shrub & Tree Planting Program
Working Paper 7:	Wetlands Management Program
Working Paper 8:	Water and Soil Quality Monitoring Program
Working Paper 9:	National Level Strengthening of Policy & Regulatory Capacity
Working Paper 10:	Public Awareness Program
Working Paper 11:	Legislative and Certification Arrangements for Promoting Organic Farming
(TACIS)	
Working Paper 12:	Project Cost Tables
Working Paper 13:	Project Procurement Plan
Working Paper 14:	Financial Management System
Working Paper 15:	Project Monitoring & Evaluation System
Working Paper 16:	Environmental Assessment & Mitigation Plan; Incremental Cost Analysis

\*Including electronic files

**Annex 9: Statement of Loans and Credits**  
**MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**  
27-Oct-2003

Project ID	FY	Purpose	Original Amount in US\$ Millions		Cancel.	Undisb.	Difference between expected and actual disbursements <sup>a</sup>	
			IBRD	IDA			Orig	Frm Rev'd
P073626	2003	TRADE & TRANS FACIL IN SE EUR	0.00	7.21	0.00	7.51	0.00	0.00
P074122	2003	AIDS CONTROL	0.00	0.00	0.00	5.88	0.21	0.00
P074469	2003	WS & SAN	0.00	12.00	0.00	12.58	0.00	0.00
P060434	2002	RURAL INV & SERVS (APL #1)	0.00	10.50	0.00	2.27	-7.35	0.00
P051174	2001	HEALTH INVST FUND	0.00	10.00	0.00	8.80	3.87	0.24
P044840	1999	SIF	0.00	15.00	0.00	0.91	-0.08	0.00
P051173	1999	SOC PROT	0.00	11.10	0.00	7.63	6.57	0.00
P035771	1998	FIRST CADASTRE	0.00	15.90	0.00	5.10	5.07	-0.32
P035811	1997	PSD 2	0.00	9.00	0.00	2.33	2.48	0.00
P008558	1997	GEN EDUC	16.80	0.00	5.53	2.47	3.31	-0.43
Total:			16.80	90.71	5.53	55.47	14.10	-0.51

**MOLDOVA**  
**STATEMENT OF IFC's**  
**Held and Disbursed Portfolio**  
**June 30 - 2003**  
**In Millions US Dollars**

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
2000	FinComBank	1.50	0.00	0.00	0.00	1.50	0.00	0.00	0.00
1997	INCON	4.93	2.00	0.00	0.00	4.93	2.00	0.00	0.00
2002	MEC Bank Moldova	0.00	1.37	0.00	0.00	0.00	0.00	0.00	0.00
2000	MEC Moldova	0.00	0.10	0.90	0.00	0.00	0.10	0.90	0.00
2000	Moldindconbank	2.44	0.00	0.00	0.00	2.44	0.00	0.00	0.00
2001	UF Moldova	25.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00
2001	Victoriabank	4.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00
2001	VoxTel	0.00	0.00	0.13	0.00	0.00	0.00	0.13	0.00
1999/00/01									
	Total Portfolio:	37.87	3.47	1.03	0.00	22.87	2.10	1.03	0.00

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

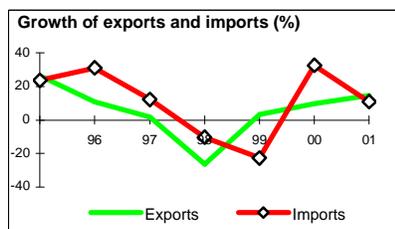
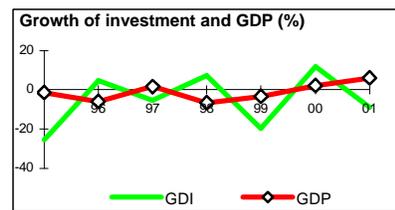
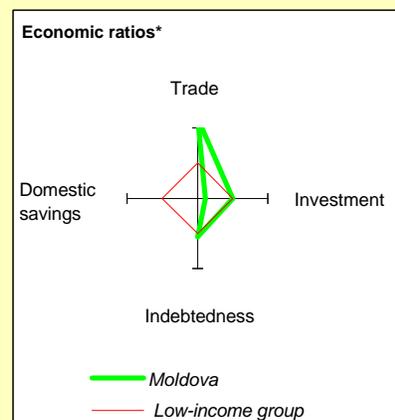
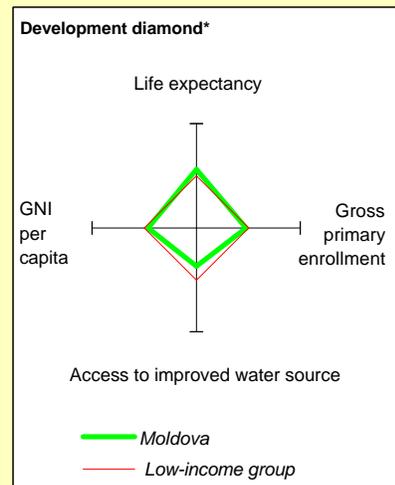
## Annex 10: Country at a Glance

### MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT

POVERTY and SOCIAL	Europe & Central Asia				
	Moldova	Central Asia	Low-income		
<b>2001</b>					
Population, mid-year (millions)	4.3	475	2,511		
GNI per capita (Atlas method, US\$)	400	1,960	430		
GNI (Atlas method, US\$ billions)	1.5	930	1,069		
<b>Average annual growth, 1995-01</b>					
Population (%)	-0.3	0.1	1.9		
Labor force (%)	-1.8	0.6	2.3		
<b>Most recent estimate (latest year available, 1995-01)</b>					
Poverty (% of population below national poverty line)	55	..	..		
Urban population (% of total population)	45	63	31		
Life expectancy at birth (years)	66	69	59		
Infant mortality (per 1,000 live births)	16	20	76		
Child malnutrition (% of children under 5)	..	..	..		
Access to an improved water source (% of population)	56	90	76		
Illiteracy (% of population age 15+)	2	3	37		
Gross primary enrollment (% of school-age population)	92	102	96		
Male	90	103	103		
Female	93	101	88		
<b>KEY ECONOMIC RATIOS and LONG-TERM TRENDS</b>					
	<b>1981</b>	<b>1991</b>	<b>2000</b>	<b>2001</b>	
GDP (US\$ billions)	..	..	1.3	1.5	
Gross domestic investment/GDP	..	29.0	23.9	20.1	
Exports of goods and services/GDP	..	32.4	50.0	50.0	
Gross domestic savings/GDP	..	27.4	-1.4	-4.4	
Gross national savings/GDP	..	..	15.7	12.7	
Current account balance/GDP	..	..	-8.2	-7.3	
Interest payments/GDP	..	..	3.6	3.2	
Total debt/GDP	..	..	96.7	82.9	
Total debt service/exports	..	..	18.0	17.4	
Present value of debt/GDP	..	..	91.7	79.9	
Present value of debt/exports	..	..	153.4	127.3	
	<b>1981-91</b>	<b>1991-01</b>	<b>2000</b>	<b>2001</b>	<b>2001-05</b>
(average annual growth)					
GDP	1.6	-7.0	2.1	6.1	5.0
GDP per capita	0.7	-6.8	2.4	6.5	8.7
Exports of goods and services	..	1.2	9.5	14.7	7.8

STRUCTURE of the ECONOMY				
	1981	1991	2000	2001
(% of GDP)				
Agriculture	..	42.7	29.0	26.0
Industry	..	33.3	21.7	24.1
Manufacturing	..	..	16.3	18.2
Services	..	23.9	49.2	49.8
Private consumption	..	57.1	91.1	92.1
General government consumption	..	15.1	10.3	12.3
Imports of goods and services	..	34.0	75.4	74.4
(average annual growth)				
Agriculture	..	-9.5	2.3	4.3
Industry	..	-11.5	6.6	17.5
Manufacturing	..	-3.4	15.9	17.8
Services	..	0.3	-3.8	-0.5
Private consumption	..	9.1	18.3	8.2
General government consumption	..	-11.4	2.0	15.6
Gross domestic investment	..	-14.1	11.9	-8.8
Imports of goods and services	..	5.6	32.6	10.9

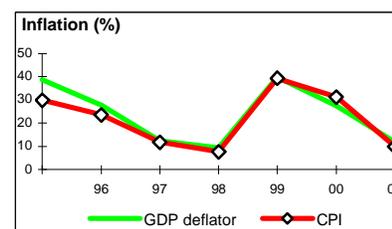


Note: 2001 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

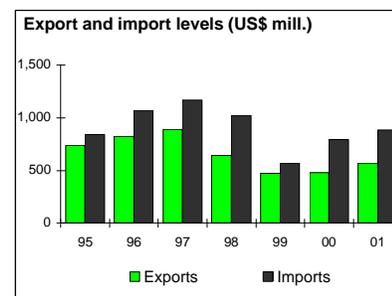
## PRICES and GOVERNMENT FINANCE

	1981	1991	2000	2001
<b>Domestic prices</b>				
<i>(% change)</i>				
Consumer prices	..	..	31.3	9.8
Implicit GDP deflator	..	142.8	27.3	11.9
<b>Government finance</b>				
<i>(% of GDP, includes current grants)</i>				
Current revenue	..	24.7	30.7	29.1
Current budget balance	..	3.1	-0.7	1.7
Overall surplus/deficit	..	0.4	-2.9	-0.5



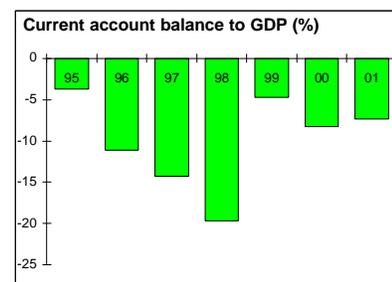
## TRADE

	1981	1991	2000	2001
<i>(US\$ millions)</i>				
Total exports (fob)	..	..	477	569
Live animals and animal products	..	..	23	18
Vegetable products	..	..	66	79
Manufactures	..	..	106	115
Total imports (cif)	..	..	793	882
Food	..	..	26	38
Fuel and energy	..	..	192	201
Capital goods	..	..	97	120
Export price index (1995=100)	..	..	266	275
Import price index (1995=100)	..	..	237	245
Terms of trade (1995=100)	..	..	112	112



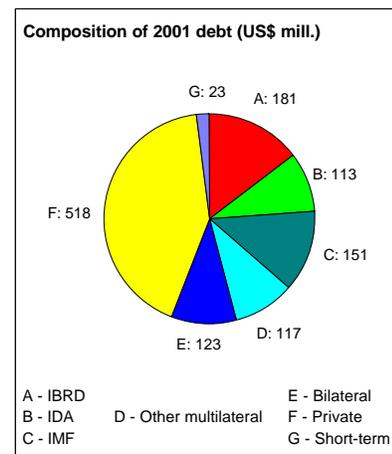
## BALANCE of PAYMENTS

	1981	1991	2000	2001
<i>(US\$ millions)</i>				
Exports of goods and services	..	..	644	739
Imports of goods and services	..	..	971	1,101
Resource balance	..	..	-327	-362
Net income	..	..	63	101
Net current transfers	..	..	157	152
Current account balance	..	..	-106	-108
Financing items (net)	..	..	153	118
Changes in net reserves	..	..	-47	-10
<b>Memo:</b>				
Reserves including gold (US\$ millions)	..	..	218	229
Conversion rate (DEC, local/US\$)	..	..	12.4	12.9



## EXTERNAL DEBT and RESOURCE FLOWS

	1981	1991	2000	2001
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	..	..	1,246	1,226
IBRD	..	..	191	181
IDA	..	..	103	113
Total debt service	..	..	139	162
IBRD	..	..	16	17
IDA	..	..	1	1
Composition of net resource flows	..	..	..	..
Official grants	..	..	75	132
Official creditors	..	..	36	3
Private creditors	..	..	80	-4
Foreign direct investment	..	..	143	149
Portfolio equity	..	..	3	0
World Bank program	..	..	..	..
Commitments	..	..	10	5
Disbursements	..	..	36	18
Principal repayments	..	..	5	7
Net flows	..	..	31	11
Interest payments	..	..	12	11
Net transfers	..	..	19	0



**Additional GEF Annex 3: Summary of Environmental Assessment  
and Environmental Management Plan  
MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

**A. Environmental Assessment**

The environmental assessment was prepared in 2003 through visits to project sites and intense consultative discussions with stakeholders within the project area. The environmental situation in the project area, which is detailed in the Environmental Assessment Report on files, may be summarized thus: Poor agricultural practices are exacerbating soil and water erosion and a lack of appropriate fertilizers is depressing productivity. Organic fertilizers, which could replace up to a third of chemical fertilizers, are not being used because of a lack of transport and spreading equipment or because of poor organization to use existing equipment. Manure is being dumped along roads, rivers and streams due to an absence of such facilities. The concentrations of organic fertilizers are leaching into surface water and increasing the amount of N and P in the Danube Delta, thus intensifying eutrophication rates. Also, N and P from dung is percolating into groundwater and then into well water, causing potential health hazards. Also, existing animal numbers are greater than the carrying capacity of the land, especially as feed and fodder from outside are no longer available or affordable. Pastures and woodland resources are being over-used to the detriment of the quality of the soil. In addition, because 'commercial' fuel availability has decreased, wood and residues are being used as substitutes. This is further degrading forest areas and affecting the amount of residues being returned to the soil. Apart from arable agriculture being adversely affected, vineyards and orchards are also suffering due to lack of inputs and depressed producer prices. The resultant loss in the volume and quality of crops is also having repercussions on the existing agro-industries that are experiencing declining profits as factories receive poor quality or a lower volume of deliveries. These factories are also unable to afford proper disposal of effluents from (reduced) outputs. Much effluent is being disposed of in inappropriate ways, although there are (environmental) laws that govern such disposals. Some of this untreated or partially treated effluent finds its way into surface and ground water, adding to the pollution problem.

Agricultural areas within the country are on a downward economic and environmental spiral. But with some external assistance, coupled with the proper use of existing resources, improved arable, pasture and forestry practices, better co-operation with agro-industries and the full co-operation of local people, assisted by local and central government, there is good potential to stem and reverse this downward trend. The principal thrust of the APCP is to demonstrate how this can be achieved.

The EA determined that the impacts of the proposed project are overwhelmingly positive as it would reduce the amount of nutrients leaching into the surface and groundwater flowing directly into the river systems and subsequently into the Black Sea. All the project activities that may have direct environmental implications concern Component 1: *Promotion of Mitigation Measures to Reduce Nutrient Load in Surface and Ground Water*. (Component 2: *National Level Strengthening of Policy and Regulatory Capacity* and Component 3: *Public Awareness and Replication Strategy* will be used to facilitate and expand Component 1 activities). Therefore, only activities under Component 1 are dealt with in detail in relation to the Environmental Management Plan. The EMP has been designed to monitor the soil and water quality and erosion so that immediate mitigation measures could be taken if the potential for environmental damage occurs. The environmental issues that are likely to require special attention include: leakage of the manure from the village-level storage facilities (if construction is not made according to specifications), inappropriate manure spreading in the fields and improper cleaning of the individual manure storage tanks

and large manure platforms.

## B. Environmental Management Plan for Moldova APCP Project

Issues	Anticipated/Potential Environmental Impacts	Effects on Environment	Actions or Mitigation Measures
Surface water quality	<p>i) Surface water quality will improve with the reduction in nitrogen and phosphorus from cattle, pigs, sheep/goats and poultry manure disposal sites. Agricultural areas treated with organic and inorganic fertilizers, as better nutrient management practices will be implemented by the project.</p> <p>ii) Water draining into Lapusna, Prut and Danube Rivers improves.</p> <p>iii) Overall effects on the quality of Danube river will be positive. <b>Probability of occurrence: High</b></p>	<p>i) Increased quality and availability of Danube River water and Black Sea coastal waters will result in increased use of beaches by public and increased harvest of better quality fish.</p> <p>ii) Increased utility of water for downstream users and fisheries if any.</p>	<p>i) Develop and implement improved manure management and environmentally sound agricultural management practices in Hincesti and Leova counties of the Lapusna River basin.</p> <p>ii) Undertake a rigorous surface water quality monitoring programme for Lapusna River and other surface water bodies that drain into Danube River to establish a baseline database of the quality of surface waters, lakes, wetlands and the Danube River as affected by better agricultural and manure management practices.</p>
Ground-water	<p>i) Reduction in nutrient leaching to groundwater quality will occur with the introduction of better manure storage and handling, and nutrient management practices.</p> <p>ii) Quality of drinking water supplies will improve with the reduction of nitrate and bacteria in groundwater as a result of collecting manure from individual farmer's homesteads and storing in communal platforms. <b>Probability of occurrence: High</b></p>	<p>i) Increased quality and availability of groundwater for human and animal consumption.</p> <p>ii) Groundwater is the main source of drinking water for rural population and decreased levels of nitrate and bacteria in water will reduce water borne diseases in Lapusna region such as nitrate poisoning and acute diarrhoea.</p>	<p>i) Implement environmentally sound agricultural and manure management practices in the project area.</p> <p>ii) Implement wellhead protection programmes for rural drinking wells.</p> <p>iii) Establish extensive groundwater monitoring programme in the highly intensive agricultural and animal production areas to determine the effect of better nutrient management practices.</p> <p>iii) Monitor groundwater quality in piezometers and wells in areas with improved agriculture and animal waste management systems</p>
Soil Quality	With the introduction of better	Better productive lands with	Undertake soil monitoring

	farming systems, soil quality will improve, erosion decreased <b>Probability of occurrence: High</b>	increased organic matter and carbon sequestration, reduce humus and soil loss.	of selected areas to establish the effect of better farming systems on soil erosion and soil and water quality.
Wetland establish-ment	With the re-establishment of a wetland in the lower reaches of the Lapusna and Prut rivers will act as a filter for chemical and faecal material. Increase in the flora/fauna <b>Probability of occurrence: High</b>	Decrease of N & P, and faecal matter flowing into the Danube basin. More sustainable use of habitat.	Undertake monitoring of water quality and flora and fauna.
Bio-diversity	Increased biodiversity will occur because of better manure management systems, introduction of conservation tillage systems, forest areas, buffer strips etc. <b>Probability of occurrence: High</b>	Increased biodiversity and migratory bird population.	Observe impact on new plant and animal populations, and soil worm and microbial activity. Measure effects on soil organic matter and carbon contents, and possibly water quality.

### C. INSTITUTIONAL STRENGTHENING

#### 1. Equipment Purchases. (*Justification is Included in the Project documents*)

Field equipment is to be purchased for soil erosion monitoring and chemical analysis, (\$5,300), ground and surface water monitoring for nutrient faecal content and leaching (\$92,549), and wetland monitoring (\$2,255). In addition there will be purchases of other equipment not specified above. A cost breakdown is as follows.

Type of Equipment	Number of units	Unit cost US\$	Total Cost US\$	Purchase: Local or International
<b>Equipment for recording soil and run-off losses (sets)</b>	<b>10</b>	<b>530</b>	<b>5,300</b>	Local
<b>Equipment for wetlands monitoring</b>				
Primary Analysis Devices (Microscope, Dendrometer etc.)	1	506	506	Local
Equipment for Collection and Store Water and Sediment Samples	1	424	424	Local
Weather Data Collecting Devices	1	265	265	Local
Computer	1	795	795	Local
Printer	1	265	265	Local
<b>Total</b>			<b>2,255</b>	
<b>Equipment for surface and ground water sampling and analyses</b>				
Manual Pump for Ground Water Sampling	1	320	320	Local
Equipment for Meteorological Post	3	427	1,281	Local
Automatic Flow Meter and Sampler	4	10,680	42,723	Local
Equipment for Manual Hydrological Post	1	1,068	1,068	Local
Equipment for Microbial Analyses	1	1,602	1,602	Local
Vacuum Filtration	1	107	107	Local

Bi-distiller	1	53	53	Local
Field pH meter	1	534	534	Local
Automatic Ion Analyser (Lachet Type)	1	37,384	37,384	Local
Laboratory Consumables and Reagents Standards	Lump sum	7,477	7,477	Local
<b>Total</b>			<b>92,549</b>	

Apart from the above costs, there are costs for equipment installation, technical services and other activities. The total cost of monitoring and evaluation is given as US\$ 637,000. A breakdown of the costs is as follows:

Item	Equipment US\$	Civil works US\$	Technical Services \$	Technical Assistance \$	PMU and Miscellaneous	Total US\$
Soil Institute	5,300	5,300	75,725	58,300 (national) 26,500 (int.)		
Wetland	2,255	12,180	12,035			
Soil/Water	92,549	10,672	254,736			
Total	100,104	28,152	342,496	84,800	81,448	637,000

#### D. SCHEDULE

The various mitigation & monitoring plans are described in detail in the PIP and the working papers. All mitigation activities will commence in year 1 and continue to year 5. Similarly monitoring activities will start when the project commences. It is recommended that monitoring should continue beyond the lifetime of the project, because it may take ten years or more before meaningful results are obtained for some of the activities. There is little training, most of it is on-the-job. This will start in year 1 and continue as necessary. The GIS training will be in year 1.

#### E. INSTITUTIONAL ARRANGEMENTS

The PMU is in overall charge of monitoring and evaluation. However, the institutions responsible for undertaking much of the field and laboratory work and analysing the data are:

1. MECTD (The Water Quality Laboratory and Hydrological Department of the Hydro-meteorological Service, and the Central and Regional Laboratories of the State Environmental Inspectorate).
2. The Soil Institute.
3. Moldsilva.
4. Institute of Forest Research and Forest Planning.
5. Hydrometeo service.

These institutions have developed an implementation plan and are ready to start as soon as the project is approved. The monitoring and mitigation plans outlined above documented 10 monitoring activities. In addition, there is going to be continual collection of meteorological data for the use of project staff and beneficiaries.

The various institutions undertaking the monitoring and evaluation shall produce quarterly progress reports detailing past activities and future plans. All information will be kept in the PMU office and be available in written form and on line. As relevant monitoring information becomes available it will be conveyed to the field staff and the beneficiaries. Such information could alter or reinforce certain initiatives of the programme. This information will also be conveyed to GEF and the World Bank who could use it in other projects. If certain initiatives give poor results, then the PMU could take a decision to terminate this particular activity. Thus, monitoring and evaluation is a most useful tool in determining if the environmental response is as predicted.

At the end of each year, all monitoring data will be summarised in usable form for the benefit of

stakeholders including the World Bank, MECTD, MAFI, LDPH, Moldsilva, NSCPM, other interested parties within Moldova and other Black Sea countries. The MECTD (SEI) will have the authority to shut down/change operations to facilitate the implementation of a mitigation plan in case problems arise or a change of course is warranted.

## **F. CONSULTATION WITH LOCAL NGOs AND PROJECT-AFFECTED GROUPS**

Various stakeholders of the project have been consulted frequently. These include small farmers, members of farming organisations, agro-processing factory managers, NGOs such as ACSA, and REC, the Prefects of Hincesti and Leova raions and their staff, Mayors and Vice Mayors of the 11 communes, officials of MECTD, MAFI, Moldsilva, Agency of Geology (AgeoM) the Meteorological Department, and international agencies like the EU and UNDP. These stakeholders were visited individually or in groups and ‘village meetings’ were held. The purpose of the project was explained and the individual functions elaborated, especially in relation to the ongoing soil and water quality problems in the region and its effect on the river system and the Danube Delta. The record of these visits are on the project files and in the various World Bank documents, especially the Aide-memoires of the Bank’s Task Manager/Environmental Expert. Both conducted missions where they met people from many concerned agencies including ministries, departments, scientific institutes and NGOs as well as officials and farmers in Lapusna Judet.

All the stakeholders agreed that interventions of proposed in this project were necessary for the region. All the communes have signed up for communal platforms and many farmers agreed to have individual platforms. Some of the stakeholders have offered their fields for demonstrations and monitoring and mayors in selected villages have agreed on the specific wells that would be sampled for water quality. The draft EMP was discussed with MECTD, MAFI, and Moldsilva, the Prefects of Hincesti and Leova raions and their staff and Mayors/vice Mayors of the communes. The final product has been widely circulated to all interested parties within the country.

## **Additional GEF Annex 4: STAP Roster Technical Review MOLDOVA: AGRICULTURAL POLLUTION CONTROL PROJECT**

### **Scientific and technical soundness**

The scientific and technical basis of the project is sound. The objective is to reduce nutrient pollution of the Danube River system and the Black Sea. The implementation of the proposed is linked to and complements a larger IDA funded Rural Investment and Service Project and would be a key Moldovan contribution to the regional “Strategic Action Plan for the Protection and Rehabilitation of the Black Sea” (BSSAP), formulated with the assistance of the Global Environment Facility (GEF).

The proposal builds upon and extends the practical demonstration of implementation and benefits of pollution reduction in a number of projects in the Baltic and Danube/Black Sea areas. It seeks to introduce and expand a number of agricultural pollution reduction methods and technologies that have been tested and successfully introduced in other programs in the region and elsewhere. The use of practical peer to peer communication through site visits to areas where similar techniques have been implemented elsewhere is particularly welcomed.

### **Global environment benefits and costs**

Nutrient pollution of the Black Sea has been identified as an environmental issue of global significance. If this project achieves its objectives it will have clear benefits in addressing a source of nutrient pollution of the Black Sea. Although the Moldovan agricultural lands in the Danube catchment comprise 1.67% of the total the proposal indicates that they contribute more than 2% of the nutrient pollution reaching the Black Sea through the Danube.

Implemented successfully and with success in comparable projects being undertaken in other country catchments draining into the Black Sea this project will contribute substantially to the global goals of reduced agricultural pollution of the Black Sea

### **The context of GEF goals and guidelines**

The project clearly addresses the objectives of the integrated land and water and water quality within the context of watershed agricultural and environmental management. It addresses the objectives of providing a basis for achieving sustainability and it applies the guidelines with respect to incremental costs and the log-frame. GEF Operational Program

Number 8, “*Waterbody Based Operational Program*”, which focuses “on seriously threatened water-bodies and the most important trans-boundary threats to their ecosystems”. The Project is also consistent with GEF Operational Programs 12 “*Integrated Ecosystem Management*” and 9 “*Integrated Land and Water Multiple Focal Areas Operational Program*”.

### **Regional Context**

Discussed above. The project is important in the context of the rehabilitation of the *Black Sea*.

## **Replicability**

This project builds on experience of projects addressing agricultural pollution and watershed rehabilitation of major river systems draining into the Baltic Black and Mediterranean Seas. It replicates many aspects of those projects and should in turn be readily replicable in other Judet of Moldova and elsewhere

## **Sustainability**

This is a key element of project design. The ongoing sustainability will depend on demonstration of benefits, on community adoption of the better practices demonstrated and particularly on appreciation by local people and decision-makers of the economic, environmental and social benefits of alternative agricultural methods and on a reasonably equitable flow-on of those benefits to the various sectors of the agricultural community..

## **Contribution to future strategies and policies**

Success with this project should contribute to the broader adoption of pollution minimising agricultural practices in the catchments of the Black Sea.

## **Involvement of stakeholders**

The project proposal has relatively little discussion of stakeholder involvement but the design indicates that there will be reasonable levels of take up by and involvement of the community in manure management and tree planting activities. The extent of investment in this component is not indicated because the proposal lumps most of the activities including manure management grants, promotion of organic farming, tree planting and wetland restoration into a single line item which accounts for \$9.95million of a total \$10.95 million budget. Given that this encompasses grants to RISP loan recipients, who are likely to be formally constituted businesses, as well as communal manure management grants more likely to be given to more traditionally organised village communities it is difficult to evaluate clearly the likely involvement of the various stakeholder sectors. Similarly, I am not aware of socio-economic and labour force conditions in the area and I could not gain a clear understanding of the allocation of work. Specifically, the extent to which the work of construction of manure management facilities, tree planting or wetland restoration would be done broadly by community members or on a specialist basis by employees of participating agencies was not clear to me.

I consider that further consideration of the proposal would be helped by a breakdown of figures to indicate the proportions likely to be allocated to the various activities and some indication of likely community participation in activities and the employment opportunities these might provide.

My specific concern is to be clear that there is some rationale to ensure that there are not disproportionate benefits to organised businesses capable of achieving RISP loans at the cost of activities in more traditionally organised rural activities.

## **Conclusion**

This is a soundly designed project drawing on the experience of similar projects to tackle critical issues of agricultural pollution in ways that appear to be appropriate to the target area. Subject to satisfaction with a specific budgetary breakdown for the main project activities and an understanding of community participation in activities I recommend that it should proceed.

R A Kenchington  
 RAC Marine Pty Ltd  
 2 November 2003

**Bank Response to Comments Received from STAP Reviewer**

The project preparation team was pleased to receive comments from the STAP Reviewer that endorsed the technical and scientific soundness of the project. Three issues were raised by the reviewer which have been addressed below:

Issue 1. *"The project proposal has relatively little discussion of stakeholder involvement..."*

Bank Response. Various stakeholders of the project have been consulted frequently during project preparation. These include small farmers, members of farming organizations, agro-processing factory managers, NGOs such as ACSA, and REC, the Prefects of Hincesti and Leova raions and their staff, Mayors and Vice Mayors of the eleven communes, officials of MECTD, MAFI, Moldsilva, Agency of Geology, the Meteorological Department, and international agencies like the EU and UNDP. These stakeholders were visited individually or in groups and ‘village meetings’ were held. A baseline survey and needs assessment program was undertaken (document available with Project Preparation Unit) by the local NGO, *Independent Sociological and Information Service - Opinia*. where respondents were asked about their agricultural practices, livestock numbers, accessibility to markets, health issues, etc. The purpose of the project was explained and the need to address the ongoing soil and water quality problems in the region and their effect on the river system and the Danube Delta. A record of these visits and discussions are on the project files and in the various World Bank documents, including the Aide-memoires, Environmental Assessment and Baseline Household Survey.

Issue 2. *"...breakdown of figures to indicate the proportions likely to be allocated to the various activities and some indication of likely community participation in activities and the employment opportunities these might provide".*

Following is the breakdown of allocations under Component 1- Promotion of Mitigation Measures for Reducing Nutrient Loads in Water Bodies:

Activity	<u>Amount (US\$million)</u>	
	Total	GEF
● RISP-supported activities	6.0	2.0
● <u>Improved Watershed Management Practices</u>		
Manure Management Practices	2.20	1.31
Promotion of Environmentally-friendly agricultural practices	0.50	0.31

Wetland restoration	0.16	0.05
Monitoring soil, water quality and environmental impacts	0.74	0.42

Implementational arrangements under the project have been designed to ensure stakeholder/community involvement throughout the life of the project through the instrumentality of which project beneficiaries would be provided gainful employment. For example, project beneficiaries would be key participants in the implementation of manure management practices, including provision of their labor for building livestock waste bunkers, storage and handling. The Project Implementation Unit will contract participating farmers to implement on-farm demonstrations of environmentally friendly agricultural practices and carry out procurement and overall M&E of such activities. An NGO would be contracted to undertake public awareness activities and implement the replication strategy. These are just some of the activities designed under the project to ensure beneficiary participation and provide opportunities for raising household incomes.

Issue 3. *"ensure that there are not disproportionate benefits to organised businesses capable of achieving RISP loans at the cost of activities in more traditionally organised rural activities".*

On an average, the percentage of APCP grants provided to the "smaller beneficiaries" is nearly double than that to the Rural Investment Services Project (RISP) credit recipients. Under RISP, grants of approximately 36% of the total cost of the mitigating measure(s) will be provided to the credit recipient. For activities undertaken by non-RISP recipients, for example for manure management practices, GEF will provide a grant of up to 70% to cover cost of construction of manure facilities.

