1. Country and Sector Background
Moldova is one of the poorest countries in Europe, with a per capita GDP of US$400. More than half (54%) of the population lives in rural areas and is dependent on the agricultural sector for its livelihood. Agricultural land covers 2.6 M hectares (76% of the republic) of which about 90% is privately owned. Despite their capacity to produce some of their own food, which has kept many rural poor out of extreme poverty - conditions in rural areas remain difficult. Poverty is highest in rural areas, which typically depends on agriculture for employment and subsistence. Degradation and erosion of agricultural lands is a serious problem which is adversely affecting the rural poor. Soil erosion is a problem on about one-third of all agricultural land: the decline in soil fertility has reduced crop yields by more than half in some areas and over the last 30 years the area of agricultural land has decreased by 120,000 hectares.

Forests in Moldova play an important role in watershed protection and provide fuelwood and non-wood products for local communities, especially those unable to afford household energy costs for gas and electricity for heating and cooking. Forests cover 325,000 hectares, less than 10% of the
Republic’s surface area, and are concentrated in the central region (60% of the forest estate) with lower coverage in the northern (26%) and southern regions (14%). A long-term trend (over the last 100 years) in deforestation has been gradually reversed during the last 50 years. Moldova’s forest policy calls for a further increase in forest cover through afforestation, and improved management of forests for watershed values. Timber harvesting is limited to small scale sanitation harvests, and fuel wood harvesting is carried out for use by local communities. The majority (88%) of forest lands are state-owned and managed by the State Forest Service (Moldsilva) and the rest (12%) belong to various local communities, farmers associations, and military organizations. There are no privately held forests.

The Government is working at the national and local levels to improve soil management and conservation efforts. In the agricultural sector, Government is preparing the Agricultural Pollution Control Project (APCP) to reduce erosion and agricultural nutrient runoff on private farms in Moldova. With respect to afforestation, Moldsilva has been planting about 500 hectares of land each year between 1997 and 2000. This was expanded to about 7,000 hectares in 2002. These current investments were preceded by a number of strategy and planning documents for soil conservation, afforestation, and environmental protection, including the Strategy on Forest Development (July 2001), Law on rehabilitation of degraded lands by afforestation (1041-XIV/June, 15, 2000), Land Act (no 350-XIV/July 12, 2001), Law of waters (no. 440-XIII/ April, 27, 1995) Forest Act (law no. 887/June, 21, 1996), Strategy on Forest Fund Development(2001), Strategy and Action Plan for Conservation of Biodiversity (no.112-XV/April 27, 2001), Strategy for sustainable development of Republic of Moldova(2000), National Action Plan for desertification prevention (2000), National Strategy for Desertification Prevention (2000) and Strategy for Agricultural and Rural Development (2000). Moldova also ratified several international treaties related to the global problems of land degradation and afforestation, in particular the UN Framework Convention on Climate Change; Convention on Biodiversity Conservation, and the Agreement on Danube Green Corridor (signed by Moldova, Romania, Ukraine and Bulgaria).

2. Objectives
The development objective is to promote sustainable soil conservation in and around degraded agricultural areas. In addition to improving soil quality and preventing further erosion, the project’s afforestation activities will support global objectives of carbon sequestration and reduction of greenhouse gas concentrations.

The proposed project is under the Prototype Carbon Fund (PCF) which was launched by the World Bank in 2000 to mobilize public and private investment to create a market for greenhouse gas emission reductions within the framework of the Kyoto Protocol, and to contribute to sustainable development.

3. Rationale for Bank’s Involvement
The Bank’s involvement in the project is warranted as trustee of the Prototype Carbon Fund, through its experience in carbon sequestration projects, and through the ability to link the investment under this projects to relevant projects in Moldova rural sectors (projects in agriculture, biodiversity, and social infrastructure).
Generally, the PCF is benchmarking the emerging carbon market, and has come to be respected in the field. It aims to deliver high-quality carbon emission reductions or carbon sequestration, i.e. cost-effective carbon emission reductions which are verified and certified, and which produce coincidental benefits. Specifically to this Project, the PCF is, at the current time, the only external financing instrument which makes a convincing case for government funding to expand/accelerate Moldova’s afforestation activities, particularly on the targeted degraded agricultural land. This would allow the Government as well as local communities to consider scaling-up the program. Without such support, Moldova might undertake a series of small scale afforestation activities that would fail to have a measurable broad impact.

4. Description
The Project consists of one component - afforestation of degraded agricultural lands. The aim is to afforest 14,354 ha of degraded lands in various regions across Moldova, targeting those lands that are too degraded for agricultural use. The land proposed for afforestation includes 16% of partially degraded land and 84% of largely or entirely degraded land primarily due to soil erosion.

In the short term, planting will reduce surface erosion, improve riverside areas and promote stream stabilization. In the medium- to long-term, the plantings will become multifunctional forests with positive local benefits (wood and non-wood products for local households and reduced soil erosion) and global benefits (climate change mitigation).

Afforestation activities, including site and soil preparation, seedling plantation, and maintenance will be undertaken by Moldsilva, the State Forestry Agency. The species to be planted were selected based on the site conditions. The species to be used are native species (Populus alba, Populus nigra, Salix alba, Quercus robur, and Fraxinus excelsior) and non-native species (Robinia pseudoacacia, Gleditschia triacanthos, Sophora japonica, Quercus rubra, Fraxinus viridis, Elaeagnus angustifolia, Pinus nigra). The success of afforestation of eroded lands relies strongly on indigenous brush species, which improve the structure of plantations as well as soil conditions. The native brush species to be used include Cotinus coggygria, Crataegus monogyna, and Rosa cannina. Experience in Moldova over the past 50 years has demonstrated that the use of the non-native species mentioned above offer the best chance for the success of plantations with respect to local ecological benefits, wood supply, soil and site stabilization, and improvement of rural landscapes. On the partially degraded sites, and wherever soil/site conditions allow, native species will be planted.

Project Monitoring: Monitoring (verification and certification) of project activities, including carbon sequestration, social and economic impact, soils and biodiversity aspects will be undertaken by a Verifier/Certifier contracted by the PCF throughout the 15 years of the Project.

Project Cost and Financing: The total project cost is estimated at US$10 M, financed by Moldsilva, State budgetary resources, and the Ministry of Environment’s Environment Fund. An estimated $5.6 M could be paid to Moldsilva by the Prototype Carbon Fund and other buyers pending verification that the carbon sequestration benefits are delivered as planned. The PCF’s pre-financing of the project preparation costs, including the baseline study, monitoring plan and validation will be charged back to the Project against annual payments for emission
reductions.
The table below summarizes the project scope and activities:

<table>
<thead>
<tr>
<th>Project objective</th>
<th>Soil conservation through afforestation of 14,354 ha of degraded agricultural lands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location</td>
<td>Sites throughout Moldova</td>
</tr>
<tr>
<td>Type of project</td>
<td>Afforestation of degraded agricultural lands and CO2 sequestration</td>
</tr>
<tr>
<td>Project baseline</td>
<td>Business as usual scenario: Continued low-quality grazing; only small scale afforestation would take place due to the very low internal rate of return on such investments.</td>
</tr>
<tr>
<td>Credit period</td>
<td>Fifteen years: The project seeks Certified Emission Reduction Units (CERs) under KP Art. 12 for a 15-year period.</td>
</tr>
</tbody>
</table>

**Estimated CO2 reductions (tones)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Reductions (ERs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003 - 2008</td>
<td>110,757</td>
</tr>
<tr>
<td>2008 - 2012</td>
<td>158,258</td>
</tr>
<tr>
<td>2013 - 2017</td>
<td>172,670</td>
</tr>
<tr>
<td><strong>15-year credit period:</strong></td>
<td></td>
</tr>
<tr>
<td>2002 - 2017</td>
<td>1,775,298</td>
</tr>
</tbody>
</table>

**Sources of ERs CO2.** ERs will be achieved through sequestering carbon in biomass and in soils.

**Sustainable development impact** The project contributes to sustainable development in Moldova through:

- Soil improvement through its protection against wind and water erosion, as well as landslides which will promote a basis for sustainable agricultural production
- Reconstruction of ecosystem affected by agriculture
- Income-generation from forest products
- Generation of employment from afforestation works and forests management

**Project financing**

- Estimated total project cost is US$10 million
- Financing will be provided by the National Forest Agency "Moldsilva", National Ecological Fund and local authorities.

**Project revenues (including sale of CO2 reductions)**

The project will generate revenues from the sale of timber from thinning and harvesting, as well as from non-wood forest products. Robinia is harvested after 30-35 years.

Sale of CO2 ERs to the PCF and other buyers at US$ 3.0/t CO2e is estimated at US$ 5.65 million in nominal terms in the 15 year crediting period. Estimated carbon value: US$5.65 million.

**Host country approval**

The Project Concept Note was endorsed by the Ministry of Ecology, Construction and Territorial Development which is the focal point in Moldova for climate-change-related matters and for the GEF, as well as by the State Forests Agency "Moldsilva". Moldova is ready to ratify the Kyoto Protocol; the relevant ratification documents were approved by the Government (Government Decision # June, 2002) and submitted to the Parliament.

**Project start** Spring 2003. Afforestation activities will commence in Spring 2003, and will be completed within 5 years from start of project.

5. Financing

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount (US$m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BORROWER</td>
<td>$10.00</td>
</tr>
<tr>
<td>IBRD</td>
<td></td>
</tr>
<tr>
<td>IDA</td>
<td></td>
</tr>
<tr>
<td><strong>Total Project Cost</strong></td>
<td>$10.00</td>
</tr>
</tbody>
</table>
6. Implementation
The Project will be implemented by the State Forestry Agency, "Moldsilva". Moldsilva is the central authority responsible for forestry activities in the country, and is directly subordinated to the Government. A Project Implementation Unit (PIU) will not be established. The proposed afforestation activities will be administered by Moldsilva within its existing institutional framework. With regard to monitoring and supervision of the project, both the PCF and Moldsilva will undertake these activities. The PCF will contract an independent group, which will analyze the outcomes of the project on an annual basis. Internally, Moldsilva (through its Forestry Institute) will also conduct M&E of project activities, study the environmental and social impacts of the project and lessons learned will be fed back into the implementation process.

7. Sustainability
Institutional sustainability. The main stakeholders - local communities and Moldsilva - are committed to the project. Given the relatively modest institutional requirements for the project, there are good prospects for sustainability in this area. The principal issue will be to ensure that the project delivers the benefits identified and that local communities and Moldsilva have clear roles and responsibilities for forest maintenance.

Financial sustainability. The project will be financed from a combination of sources - government budgetary sources, Moldsilva’s Forest Fund, Ministry of Ecology’s National Environmental Fund and in-kind contributions provided by the local authorities. However, taking into account the high level of poverty in the country, limited available budgetary resources, and unstable forest revenues, the financial risk of the project is high.

Social sustainability of the project would be built by promoting strong public and local community involvement and participation, and by raising public awareness.

8. Lessons learned from past operations in the country/sector
The project will incorporate the following lessons learned from the Bank’s rural development operations in Moldova and elsewhere:

- the early involvement of local administrations, and communities in project preparation, is essential in order to ensure ownership and successful project implementation;

- decentralized responsibility for financial and project management builds local ownership and sustainability of project activities;

- there is little appreciation of the benefits of improved environmental management at local level and the dissemination of information is critical to the widespread adoption of new technologies and practices.

- providing for a monitoring plan based on detailed and quantified indicators and procedures, is essential for the success of the project.

9. Environment Aspects (including any public consultation)
Issues: The project would have a positive environmental impact by restoring vegetative cover on degraded sites and reducing soil erosion. The environmental issues to be addressed during preparation are: (i) whether any of the sites selected for afforestation support natural habitats that could be adversely affected by the project; and (ii) the potential impact of using Robinia, a non-native species, to afforest highly degraded lands. This is a tree species from North America that is used widely in Europe (including Moldova) to stabilize soils. In general, the main issue is that Robinia has lower biodiversity value than native species, and there is some concern that it could spread from its planted site to surrounding areas where it could compete with native species. However, Robinia was introduced in Moldova more than 50 years ago, and is not known to be highly invasive there. The preparation report will evaluate the significance of these issues and adjust the project design accordingly to ensure there are no residual impacts. Also, as part of project preparation a Baseline Study will be prepared that includes specific monitoring and evaluation for biodiversity.

The key stakeholders for the environmental analysis are Moldovan environmental NGOs and state agencies responsible for environmental protection. Selected international NGOs are interested in how carbon sequestration/climate change benefits of the project can be optimized along with biodiversity values.

10. Contact Point:

   Task Manager
   Phillip Bryliski
   The World Bank
   1818 H Street, NW
   Washington D.C. 20433
   Telephone: 202-473-7031

11. For information on other project related documents contact:
   The InfoShop
   The World Bank
   1818 H Street, NW
   Washington, D.C. 20433
   Telephone: (202) 458-5454
   Fax: (202) 522-1500
   Web: http://www.worldbank.org/infoshop

Note: This is information on an evolving project. Certain components may not be necessarily included in the final project.

This PID was processed by the InfoShop during the week ending March 14, 2003.