United Nations Development Programme

Country: Republic of Moldova

Project Document

Project Title:	Clima-East: Sustainable management of pastures and community forests in Moldova's first National Park Orhei to demonstrate climate change mitigation and adaptation benefits and dividends for local communities.
UNPF/CP Outcomes:	Outcome 3.2 - Low Emission and Resilient Development: Strengthened national policies and capacities, enable climate and disaster resilient, low emission economic development and sustainable consumption.
Expected UNPF AP Outputs:	UNPF Action Plan Output 3.2.2 - Policies, mechanisms and capacities strengthened at all levels for disaster risk management and climate change adaptation
Executing Agency/Implementing Partner:	Ministry of Environment of the Republic of Moldova

Brief Description

The project aim is to demonstrate a natural resource management model in the pastures and forests of Moldova which increases ecosystems' capacity to sequester carbon under pending climate risks, while at the same time retaining biodiversity and economic values. The project targets the pastures and forest degraded lands located in the Orhei National Park area (33,792.09 ha) and its buffer zone. The project will develop innovative pasture and community forest management systems on the whole territory of the park, including rehabilitation of 500 ha of pastures and afforestation of 150 ha of eroded and non-productive lands. The project will help avert further deterioration of natural resources (biodiversity, land, forest), sequestrate the carbon and reduce the emission of greenhouse gases, improve local pasture and forestry resources, promote better understanding of problems related to climate change impacts and contribute to local/regional sustainable development. The project activity is expected to enhance the GHG removals by preventing soil erosion, which is estimated to account for carbon storage in soil of 0.9 tC/ha/yr, accumulation of 0.45 t C/ha/yr of carbon in pasture vegetation and 9.12 t C/ha/yr accumulation in forest vegetation with continuous increase.

Programme Period:	2013-2017
Key Result Area (Strategic Plan)	Environment and Sustainable Development
Atlas Award ID:	00073227
Project ID:	00086149
PIMS	5234
Start date:	April 2013
End Date	December 2016
PAC Meeting Date	5 March 2013
Management Arrangements	National Execution

Total resources required:	EUR 535,000
Total allocated resources:	EUR 535,000
• European Union	EUR 500,000
GMS	EUR 35,000

Ministry of Environment of the Republic of Moldova

Gheorghe Şalaru

Minister

Date/Month/Year

UNDP:

Nicola Harrington-Buhay

UNDP Resident Representative

17. 6. 2013

Date/Month/Year

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ABBREVIATIONS

EC	European Commission
EU	European Union
EUR	Euro
FLEG	Forest Law Enforcement and Governance
GEF	Global Environmental Facility
GHG	Greenhouse gases
M&E	Monitoring and evaluation
MoEnv	Ministry of Environment of Republic of Moldova.
NGO	Non-governmental organization
PB	Project Board
PMT	Project Management Team
PPR	Project Progress Report
RCU	Regional Coordinating Unit
UNDP	United Nations Development Programme
USD	United States Dollar
WB	World Bank

I. SITUATION ANALYSIS

The Republic of Moldova (RoM) is a small landlocked country in Eastern Europe, among the most densely settled in the region with about 3.6 million people, 58.4 % of which live in rural areas (RoM, 2011a). About 42% of the rural population is affected by poverty, an increase since 2009 (IFAD, 2012), and many of them rely upon the use of biodiversity and natural resources for their livelihoods. There is a high rate of population migration in the country due to lack of job opportunities, and major parts of population is involved in agricultural activities, particularly cattle-breeding and husbandry which serve as the main source of income and livelihoods.

Moldova is located in a temperate continental climate zone, slightly modified by the proximity of the Black Sea and the intrusion of warm wet air from the Mediterranean. Climatic seasons are clearly defined with a short and soft low-snow winter and a long summer which can be very hot and dry. On the whole, Moldova is located in an insufficiently wet zone which results in a high frequency of droughts which negatively affect its economy. According to climate projections for Moldova[1] the annual mean air temperature in Moldova will increase under all emission scenarios. By the end of this century the increase may amount, on average, to 4.1–5.4°C. Depending on the GCM experiment, these values vary from 1°C to 6°C. Along with warming, a continuous annual fall in summary precipitations is expected, especially for the A2 emissions scenario. The most affected regions will be southern and eastern part of the country, and the central-eastern part of the country where National Park Orhei is located. The most affected sectors will be agriculture and forestry.

Moldova has one of the poorest coverage with forests in Europe (around 12% of the territory), which is highly fragmented. The following principle types of forests are represented in the forest sector: oak woods, durmast woods, beech woods, water meadows and mixed varieties woods. *The Strategy for Sustainable Development of Forestry (2001)* stated that the main function of forest resources in the country should be to maintain ecological balance. The current amount of forested area is insufficient to guarantee effective environmental protection.

The direct contribution of the forestry sector to the sustainable development of the Republic of Moldova in the result of climate change will be achieved through two basic strategic directions: restoration and bio-protective potential of forests and areas with forest expansion. Specific objectives to achieve these strategic directions clearly account for climate risk: (i) mitigation of the destructive effect of temperature changes, droughts and other negative climatic factors; (ii) reducing soil degradation by erosion, which is affecting over 80% of agricultural lands, impacting the loss of 40-60% of soil fertility; (iii) reducing and stopping the landslide; (iv) improving the quality of aquatic resources; (v) reducing the greenhouse gases emissions through carbon removals; (vi) conservation of biological diversity, as forest vegetation provides refuge and habitat for various species of wild plants and animals that are endangered as a result of anthropogenic impact; (vii) increasing resource potential and the volume of wood products accessories.

Researchers expect that even small changes in temperature and precipitation could greatly affect future forest growth and survival, especially at ecosystem margins and threshold areas such as Moldova's forests. The potential lack of summer precipitation with consequent droughts is the main constraint factor on forest growth and productivity. Temperature increase and changes in precipitation are the main factors predisposing forests to various insect pests and fungal diseases. The effect of climate change on individual species can be either positive or negative, depending on the site conditions and regional climate changes. According to the vulnerability assessment of the magnitude of the impact with the probability of risk due to possible climate change on the forest sector, the most vulnerable regions in the Republic of Moldova will be Centre and South.

According to the experts also opportunities associated with climate impacts on forest sector have to be taken into account: the forests with native species (e.g durmast) will be the most resistant to the risks associated to climate change. According to the *Second National Communication to the UNFCCC (2009)*, durmast may accumulate 10-20% more biomass than normal until 2040 in the central part of the country that will have a positive impact in terms of climate benefits and biodiversity conservation.

The Carpathian Mountains have major influence on the relief and geology of Moldova. The terrain is uneven with sharp changes in topography and soil erosion and landslides are common features throughout the country. About 877,644 ha of lands are affected by erosion in the country (of which 114,165 ha are heavily eroded). The annual loss of soil from erosion is estimated at 26 million tonnes, equivalent to 2,000 ha of

[1] National Human Development Report 2009/2010: Climate Change in Moldova. Socio-Economic Impact and Policy Operations for Adaptation and Second National Report (UNDP 2009)

chernozem soil. The impact of soil loss in terms of the lost annual agricultural production is estimated at US$ 53 million.

Areas affected by soil erosion and landslides were covered with forest or steppe vegetation in the past, but have been subjected to wind and water erosion, landslide, gully and ravine formation. The soil erosion is observed in the form of mass movement (landslides and soil creep) and particle movement (through-wash, rain splash, rain flow, rill wash and gully erosion) throughout the country. The erosion and unsustainable land use practices contributed to loss of soil organic carbon each year and are a major factor contributing to about 40-60% loss in soil productivity. Considering the very slow rate of soil formation, loss of more than 1 t of soil /ha/yr can be considered irreversible over a period of 50-100 years. On the slopes with inclination above 70^{O}, erosion processes are proceeding very quickly with annual losses of 50 t/ha of soil and 1.5 t/ha of organic matter, equal 0.9 t/ha of carbon loss.

The Government of Moldova recognized the land degradation problems in the country and adopted a country wide *Programme for conservation and increase the soil fertility for 2003–2010.* Due to lack of funding, only about 5% of activities under this programme were implemented to date. Considering the serious problems of the quality of soil, it was decided to extend the Programme up to 2020. Programme goal is to implement measures to halt the degradation and increasing soil fertility through the implementation of modern techniques and technologies and environmental friendly practices. Along with other activities mentioned in programme, it states that soil erosion problems could be solved through afforestation activities on lands affected by landslide and ravine formation and effective grassland restoration and management. According to the *Action Plan of the Programme for conservation and increase the soil fertility for 2011 – 2020*, approx. 12,800 ha of community degraded lands in the country will be afforested during the period 2013-2016 and approx. 50,000 ha are envisaged to be improved through different agricultural techniques (incl. pasture management). The species for afforestation are selected based on suitability to soil and climate and adaptability to the sites.

The *National Strategy for Sustainable Development of the Agricultural Complex of the Republic of Moldova for 2008-2015* recognizes that climate change can affect food security by erosion, droughts and floods, resulting in dramatic reduction or collapse of agricultural production because of natural disasters. Furthermore, the Strategy includes a range of adaptation measures integrated in Chapter 4 ‘diminishing agriculture vulnerability related to risk factors and environment protection’, including measures to combat erosion and drought, diminishing flood risks, and options for risk transfer. According to the vulnerability assessment of the magnitude of the risk/opportunities of the climate change on agricultural production (NHDR 2010), the most vulnerable regions in the Republic of Moldova due to possible climate change will be South (the Plain of Southern Moldova, terraces of the inferior Prut and Dniester Rivers) and Center (Sub-zone II-a, the Plain of Central Moldova and Codrii region, and Sub-zone II, Terraces of the Dniester, Prut, Raut, Prut, Bic, Botna etc. rivers) for which as a result of expert judgment revealed the greatest amount of risks with high probability related to climate change.

For agriculture, five of the identified risks are considered to be high priority:

- Increased risk of drought and water scarcity;
- Increased irrigation requirements;
- Soil erosion, salinisation, desertification;
- Increased risk of agricultural pests, diseases, weeds; and
- Forage yield decrease.

Pastures are the most affected by the climate change factors (e.g. drought) that became very frequent for the country in the recent years. Although there are designated pasturelands in most of the communities, often these resources are depleted and the herds are moved into fragile areas like forests, steppes and wetland edges to forage. All main types of ecosystems (forests, wetlands and patches of steppes) are under pressure of over-grazing and uncontrolled grazing throughout the country. According to FLEG Office Moldova (2010), pastures (lands suitable for hay and grazing) occupy 14% of the total land fund of Moldova and more than 70% of them are degraded or in a very bad condition. A daily productivity of 1 ha of pasture can provide feed to 0.3 unit of large cattle (cow, horse) or 2 units of small cattle (like sheep, goats). The grazing capacity of pastures is much lower than the number of 625 thousand head of existing livestock in Moldova, which increases pressure on forests, steppes and other natural landscapes. In order to be prepared for future droughts/natural calamities and to promote more sustainable agricultural production and food security, the Ministry of Agriculture and Food Industry adopted an *Action Plan for Drought Mitigation Measures in the Agri-Food Sector (2012 -2015).* Along with other activities reflected in the Action Plan, special attention is paid to the improvement the management of pastures for reducing the impact of droughts on the livestock sector.

The carbon accumulation in vegetation is close to zero in pastures and degraded lands as demonstrated by the absence of vegetation or its scatted nature. Thus, according to information from the *Moldova Soil Conservation Project*, the average annual productivity of these lands is about 0.1 t C/ha. Lands used presently as pasture and perennial crops represent unbalanced ecosystems, which will continue to degrade. The unauthorized and often uncontrolled grazing and climate change factors have a destructive impact over the landscapes, even changing the shape of environment and land.

Another key problem in the recent years is the energy security of the country. Due to the high cost of imported fossil fuels (mostly natural gas) and electricity for the end consumers, demand of firewood in rural areas is very high. The main source of alternative fuel most often comes from wood collected from the environment (forest wood, downed wood in community land, vineyard residues etc.). However when these sources become depleted or are too expensive to procure, many villagers go into protected woodlands to cut their own supplies. This results in the loss of forest area and further fragmentation, which provides stressors to native animal and plant population living here. According to *FLEG Office Moldova (2011), IUCN and some local NGOs*, the wood consumption in Moldova is almost twice as high as the authorized harvest in the forests managed by Moldsilva Forest Agency. The rest of the wood comes mostly from forests and protection belts which belong to Local Public Authorities. Local authorities have taken some measures to reduce illegal collection of fuel wood but these efforts are not yet strong enough to be effective. The draft *National Adaptation Strategy to Climate Change (2013), the Strategy for Sustainable Development of Forestry (2001) and the National Energy Strategy 2030* envisage establishment of local forest plantations to meet the needs of the population in firewood for heating, wood for cooking, etc, as effective measure for climate adaptation. Ensuring the proper management of community forests in Orhei National Park area, through building stable diversified forests, ecological reconstruction of forests in time will positively influence and be a model for carbon sequestration in the framework of climate change and will have a positive social impact on local population and on biodiversity. Also restored and better managed pastures will increase the income of locals from cattle breeding related activities and ensure food security.

As one of the steps to halt environmental degradation and address the up-mentioned issues, Moldova has committed to create the first national park, which will serve as a good example for environment friendly activities and will provide benefits for local population. This initiative is implemented with support of a UNDP-implemented GEF-funded project “Improving coverage and management effectiveness of the Protected Area System in Moldova”.

II. STRATEGY

The project's objective is to demonstrate a natural resource management model in the pastures and forests of Moldova which increases ecosystems’ capacity to sequester carbon under pending climate risks, while at the same time retaining biodiversity and economic values. Proposed activities have been designed in a way to build on and create synergies with the ongoing GEF, UNDP and WB funded projects, as well as projects funded by other organizations. A specific attention will be offered to create synergies with FAO planned activities in the country for promotion good practices of pasture management, development of amendments to the legal framework for pastures and haymaking etc. The proposed investment has “no-regret” character, as it does not generate any negative impacts, either economic or environmental, while at the same time generating multiple benefits.

The project will develop innovative pasture and community forests management system on the whole territory of the park, including rehabilitation of 500 ha of pastures and afforesting 150 ha of eroded and non-productive lands. The project will help avert further deterioration of natural resources (biodiversity, land, forest), sequestrate the carbon and reduce the emission of greenhouse gases, improve local pasture and forestry resources, promote better understanding of problems related to climate change impact and contribute to local/regional sustainable development.

Target region –National Park Orhei

The project targets the pastures and forest degraded lands located in the Orhei National Park area and it buffer zone. Orhei National Park area is situated in the center-east part of the country on the Central Codrii Plateau on the area of 33,792.09 ha (or 1% of the country territory).. The Park is expected to be officially established at the beginning of 2013 (legislation was approved by Government and is currently awaiting parliament approval). Orhei National Park will cover 18 communities from 4 districts of the country. The area has rich natural, historical and cultural heritage recognized at the national and international level.

The climate is moderate continental with a relatively warm winter and long hot summer. Characteristic weather conditions of the area are abundant warm, long vegetation periods, and instability during seasons - sudden drops in temperature, rainfalls and droughts. The average annual temperature is 9.5°C and annual precipitation of 510-525 mm. The highest temperature is in July-August (+41°C) and absolute minimum (-32° C) in January-February. Unfavorable factors for the National Park Orhei region are summer droughts and hot and dry winds.

The area population is approx. 51,290 inhabitants of which almost 100% is rural. The population density in Orhei region, according to the national Bureau of Statistics is 110 pers/km2 (111,4 per country) which is one of the highest in the country after the largest cities Chisinau and Balti. The major part of population, which is rural, are involved in agricultural activities, particularly cattle-breeding and husbandry which serve as the main source of income and livelihoods. This results in the serious pressure on the natural resources of the area, pasture degradation as a result of over-grazing, significant reduction of carbon sequestration and storage potential of grassland ecosystems and creating pressure for natural forest habitats.

The territory is covered by 18,551.4 ha of forests managed by Moldsilva Forestry Agency and 1,392 ha of unmanaged community forests. The future National Park Orhei area covers the biggest consolidated forest plot in the center-east of the country consisting mainly from nature type of forests (mostly oak, durmast and other hardwood type of wood). The rest of the area consists of land used for agriculture purposes, from which 5,890.92 ha are pasture lands.

In the result of interaction of different ecosystems in the area, the floristic and faunistic diversity of the Orhei National Park is high: based on the "*Scientific argumentation for NP Orhei establishment" Academy of Science, Institute of Botany*, the territory is home for more than 700 species of flora from which 52 are rare and endangered and 29 species are included in the Red book of Republic of Moldova and 1 in the annex of Bern Convention and one endemic specie – *Thymul moldavicus Klok et Schost*; and 11 species of amphibians, 10 species of reptiles, 109 of birds and 41 species of mammals, most of them included in the *Red book of Moldova*.

More than 2/3 of the territory of the National Park Orhei is a hilly area with different altitudes from 50 to 250 meters and ravines up to 300-350 meters. These differences in altitudes, along with other human activities, created in the past conditions for increased soil erosion, worsening over time. The National Park Orhei territory is highly affected by deep soil erosion (ravines and frequent landslides) in the eastern and western part of the park territory (approx. 1,200 ha), and surface soil erosion in the central part[2]. Further, the territory has a high variety of soft rocks, which are friable and very vulnerable to erosion processes under the influence of climatic and external anthropogenic factors. In order to stabilize the lands on this territory and reducing the carbon emission 189 ha of community degraded lands from the park area are proposed to be afforested during the period 2013-2016 according to the *Government Programme for conservation and increase the soil fertility for 2011 – 2020.*

Other main driver of land degradation is over-grazing by domestic livestock. This resulted in a significant reduction of carbon sequestration and storage potential of grassland ecosystems. The grazing capacity of existing pastures is three to four times lower than the number of 14 thousand head of existing livestock in the region (*according to National Bureau of Statistics*). Not only are native species of grass over-grazed, often their habitual paths harden the earth and prevent natural regeneration. The over-grazing and other factors have resulted in changes in basic species composition (*Stipa, Festuca, Bothriochloa, Poa sp.*), with declines in populations of valuable fodder plants and increases in weeds and poisonous species (such as crowfoot, thistle, creeping thistle, as well as *Euphorbia sequieriana*, and *Astragalus spp*.). The threatened species of vertebrate fauna on degraded lands (and pastures) include: *Sicista subtilis, Cricetus cricetus, Mustela eversmanni, Aquila rapax, Circus cyaneus, Circus macrourus, Circus pygargus, Otis tarda, Tetrax tetrax, Vipera ursine, Elaphe quatuorlineata*. In this regard project will support the initiative of the Ministry of Agriculture and Food Industry

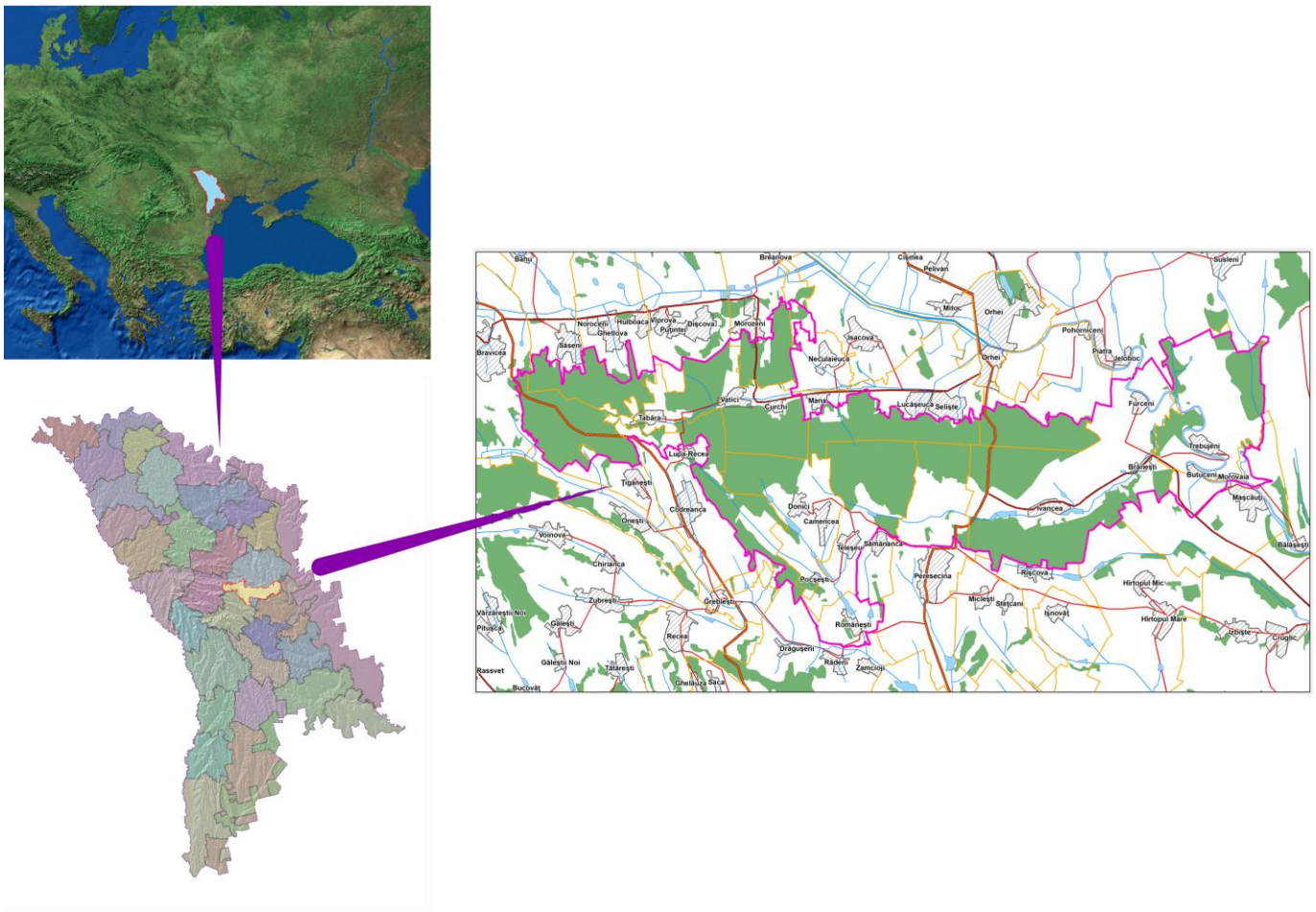
[2] Academy of Science, Institute of Botany "Scientific argumentation for NP Orhei establishment"; Acad. A. Ursu "Pedogeographic rayoning of the country and soil utilization"; Acad. A. Ursu, I. Crupenicov "Soil degradation and desertification").

to implement the activities related to management of pastures for reducing the impact of droughts on the livestock sector stipulated into the *Action Plan for Drought Mitigation Measures in the Agri-Food Sector (2012 -2015).*

Lack of sufficient forage from pasture lands increases pressure on forests and other natural landscapes. This results in biodiversity loss, loss of forest area and further fragmentation, which provides stressors to native animal and plant populations living there. With decreasing soil fertility, the majority of flora species still present will disappear and fauna diversity will continue to diminish, especially as a result of decreasing nutritional capacity of the lands, and lack of sites for reproduction and refuge.

The carbon accumulation in soil and vegetation will continue to decline in pastures and degraded lands in the result of climate change factors and unsustainable human activities if no active interventions and long term planning measures to be undertaken. There is a strong need for demonstration of improved pasture management under pending climate threats, for applying state-of-the art range ecology and rangeland management techniques that reduce emissions of carbon, incentives for farmers for controlling animal numbers for better soil conditions and biodiversity.

Pic. 1. Location of the project area: Orhei National Park



Project Components and Activities

Component 1: Designing pasture and community forest restoration plans

The project will implement field inventories and develop pasture management plans of the existing 5,890.92 ha of pastures from National Park Orhei, based on Government Regulation on grazing and mowing. Pasture inventory will be conducted to assess soil and vegetation conditions, evaluations of productivity and production quality, hay productivity (if any), cattle support, carbon storage, emission reduction and sequestration potential. The inventory will be based on the field scientific study using input data from the *Agency for Land Relations and Cadastre at both national and local levels, Institute of Pedology, Agrochemistry and Soil protection "N. Dimo", and National Park Orhei Scientific Argumentation.*

The pasture inventory and planning process will be supported by the technical experts working with groups of pasture owners and users. Based on the pasture inventory, existing scientific and technical data, in close consultation with pasture owners pasture management plans will be developed and approved by the Local Community Councils. The main objective of the management plans would be: a) improve forage yield, quality, diversity, and persistence; b) meet livestock nutritional needs; c) reduce pressure on overgrazed degraded areas; d) improve production cost efficiency; and e) improve wildlife habitat. The plan will include the essential and additional conservation practices, as well as monitoring indicators and plan for pasture restoration and management. Special attention should be paid to management planning of meadow pastures as they tend to restore themselves, if there are no other interventions in a certain period of time.

Development of the forest management plans for 1,392 ha of community forests will have a similar approach used for forest rehabilitation activities of the state forests and tested for communal forests during the implementation of the *FLEG Programme in Moldova*. Forest management plans are developed for a period of 10 years. Activities will include mapping and GIS analysis, data gathering and stocktaking of existing biodiversity and other needed information, field work, data processing, plan development based on a participatory consultation process. The project will closely collaborate with FAO and the Ministry of Agriculture and Food Industry to support the improvement of the policy, legal and regulatory framework related to the use of pastures and grazing revenues (not covered by this project). The best practices and lessons learned of the pilot projects implemented at community level shall inform and feed into the review and development process of an improved regulatory framework. FAO will be consulted on Terms of Reference and methodologies for sustainable pasture management and related planning processes.

Component 2: Implementation of the forest and pasture restoration projects

Based on the developed pasture management plans, the restoration of 500 ha of pasture land is envisaged, using grants for Local Public Authorities as implementation mechanism. The pilot plots will be selected based on criteria developed by the project team and approved by the Project Board.

The justification for the selection of plots will be based on the following main criteria:

1. Relevance of the proposed pasture plots to be restored, in terms of influence to climate change (level of degradation; carbon sequestration potential; etc.)
2. Environmental relevance of the proposed pasture plots to be restored (species, habitats, environmental influence etc.)
3. Social-economic relevance of the proposed pasture plots to be restored (size; cattle support capacity; etc.)
4. The current level of management of community pastures
5. Relevance of works proposed for implementation
6. Climate change impact of the proposed implementation activities and climate change benefits of the intervention
7. Environmental and social-economic impact of the proposed project activities
8. Engagement of the community to respect the established conditions and responsibilities, including ensuring sustainability of proposed activities in the future
9. Budget justification

Consultations with Local Public Authorities will be held in order to select the most suitable plots for restoration in accordance with approved criteria. The final list of selected pilot plots will be based on collected data and field visits by an Evaluation Panel consisting of project team, experts in the field of climate change,

agriculture/pasture management. The preference will be given to that plots which will show highest impact on climate change and climate change benefits.

The evaluation results will be endorsed and approved by the Project Board prior to grants allocation. The communities eligible to receive grants are those located in the future Orhei National Park area (18 communities). The grant beneficiaries will be responsible for carrying out all the activities for pasture restoration, monitoring and reporting to Project Management Team in accordance with grant agreements. Local communities are expected to contribute to pasture's rehabilitation with financial means (if available) or in the form of services with at least 15% from the estimated costs. Grants will be disbursed in several instalments. The weight of each instalment will be determined and described in the methodology approved together with the selection criteria. The final instalment will be paid upon completion of works planned and acceptance of financial and narrative reports. The creation of users associations will be encouraged. Grants can allow for small complementary investments, e.g. to cover costs of electrical fences to allow for division and rotation of pasture lands.

There are different approaches for restoration of the pastures depending on the degradation status. There are two main types of interventions: improvement and maintenance of natural pastures without destruction of existing vegetal cover (in case of low level of degradation, through overseeding and other agro-technical interventions) and radical measures (with the complete replacement of grass, and creation of seeded pastures or agro landscapes). In case of radical measures, through establishment of traditional seeded pastures the following species will be used, based on the degradation status: lucerne (*Medicago sativa*), meadow fescue (*Festuca pratensis*), perennial Ryegrass (*Lolium perenne*), common sainfoin (*Onobrychis viciaefolia*), bromegrass (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*). This activity will be implemented using the methodology and guidelines developed with support of the *Government of Japan Grant TF 093088 "Community Support Program for Sustainable and Integrated Forest Management and Carbon Sequestration through Forestation"* or other methodology tested at national or regional level. The restored pastures through the up mentioned methodology are supposed to be used in the first two years as hayfield, and then as proper pastures. In case of creation of agro landscapes on suitable lands, methodologies of restoration using native species, honey herbs and medicinal plants, are available. Seeded agro landscapes give a good sod, and successfully resist to grazing and fix the upper layers of the soil. They are durable for pasture use, and can be used for grazing in almost any weather. Agro landscapes don't need to be re-seeded, as most of the cultivated pastures. The methodology was described in the book *"Steppe vegetation of Republic of Moldova", Shabanova G.A., 2012* and tested in the framework of *TACIS project "Sustainable Integrated Land Use of the Eurasian Steppe"* in Cahul region of the country. All the necessary interventions and the methodology of restoration applied will be selected based on the pasture inventory performed in the first year of project implementation. Special interventions should be applied for meadow pastures and pastures from rocky ecosystems, if selected.

Afforestation of degraded lands will envisage a territory of 150 ha from the park. The plots will be selected based on the areas included in the *Government Programme for Conservation and Increasing Soil Fertility for 2011 – 2020, and* information from *Annual report on land cadaster, prepared by Agency for Land Relations and Cadastre, Pedogeographic rayoning of the country and Soil degradation researches from the Institute of Pedology, Agrochemistry and Soil protection "N. Dimo", National Park Orhei Scientific Argumentation, Management plan and zoning.* Selection of each pilot plot will be done by a selection committee and approved at the Project Board and Local Community Council.

Afforestation will be undertaken according to the national guidelines on scientific forest management[3] and silvicultural practices implemented by Moldsilva Agency on the degraded lands or other regional practices. The activities will include: site preparation, planting, protection, and management of plantations during the project life. The species for planting will be selected based on suitability to soil and climate, adaptability to the sites and local demands for fuel wood. The preferences will be given to native species, with focus to those growing in the National park area. Oak (*Quercus sp.),* Poplar (*Populus alba*) will be chosen as lead species for afforestation. Other broadleaf species and shrubs (e.g *Cotinus coggygria, Crataegus monogyna, Rosa canina, Corylus avellana, Cornus mas, Prunus cerasifera, Ligustum vulgaris*) will be planted as secondary species and will have also the role of improvement of floral diversity (See Annex 1). Expansion the afforested area will create conditions for reducing the fragmentation of the forests and contribute to halting biodiversity degradation.

[3] National guidelines: Îndrumări tehnice pentru regenerarea pădurilor şi împădurirea terenurilor din fondul forestier de stat al Republicii Moldova, Kisinew, 1996.

The local councils are expected to delegate responsible staff to manage the planted sites as per approved forest and pasture management plans developed under the project. For project sustainability and proper pasture management, the project will provide guidance to local public authorities for establishing associations for cattle breeders.

Component 3: Carbon assessment and monitoring and results sharing

The project will facilitate the carbon stock measurements, forest and pasture monitoring on restored areas. A robust GHG monitoring system will be established.

Project will closely cooperate and utilize experience in GHG inventory and vulnerability assessment tools AR-AM0002 (version 03) (where appropriate) of *CDM project: Moldova Soil Conservation Project* for carbon monitoring and assessment of afforested degraded lands. Above-ground tree vegetation will be monitored over time by measuring the growth of individual trees in permanent sample plots at fixed intervals, keeping track of growth, ingrowth, and mortality and associated changes in carbon of individual trees. The changes in carbon stocks of dead wood will be measured taking into account the respective characteristics of standing and lying dead wood. Because collection of samples for estimating root biomass and litter biomass is generally expensive and time consuming, data on belowground biomass would be collected from the local forestry inventory data and Good Practice Guidance on Land Use, Land Use Change and Forestry (IPCC 2003) and published literature. Given the sparse nature of the lying dead wood pool (high variability and relatively low quantities per unit area) typical of the early stages of forest development, lying dead wood will not be monitored with the frequency of tree biomass. Herbaceous vegetation typically represents a small proportion (1 to 3%) of ecosystem biomass and will not be measured in the monitoring effort.

Soil carbon will be measured using temporary plots by taking soil samples to a depth of 30 cm. The soil sampling will cover both rich and poor strata and the sample size calculated ensures the quality assurance and cost effective measurement of changes in the soil carbon.

Soil carbon from pasture lands will be monitored using AR-AM0002 (version 03) methodology or methodology developed by Dr. Anatolie Banaru (2000) "*Metodica pentru determinarea emisiilor de CO2 cu efect de seră din solurile arabile*" and updated by Dr. Valerian Cerbari, Dr. Vasile Scorpan and Marius Taranu (2009). Biomass of herbaceous vegetation of pasture lands will be measured using AR-AM0002 (version 03) methodology or other relevant tools tested at the national or regional level.

The biodiversity monitoring on the restored pasture lands will be based on the biodiversity indicators, which will include the floral community richness and floral community dominance. The indicator species populations, will be determined in the baseline. The most frequently monitored indicator species are Festuca valesiaca, Bothriochloa ischaemum, Stipa capillata, Poa bulbosa, Poa angustifolia, Artemisia austriaca etc. A proposed monitoring methodology is described below and a monitoring table for biodiversity issues is provided (Table 1). Small sample plots will be selected at random (no more than 10 plots), however, ensuring a minimum distance between points of 250 meters for floral monitoring. For each plot, a control plot on an adjoining site will be monitored to establish baseline reference conditions.

The floral community will be assessed using the permanent small plots of 5 m x 10 m where all individuals are assigned to species and recorded. Observations and measurements of flora will be undertaken in the late spring and again in the fall to ensure that all species are noted. The Shannon index outlined below (H') is an appropriate diversity index for random sampling (Brower et al, 1990).

$$H' = (N \log N - \sum n_i \log n_i) / N$$

where, n_i is the number of individuals of species i and N is the total number of individuals. The index value increases as total number of species increases and evenness of relative abundance of species increases. The *Shannon* diversity index will be used to monitor changes in floral biodiversity on selected project sites relative to baseline conditions.

Simpson's dominance index (l) (Brower et al, 1990) is a measure of community diversity that can be used to monitor relative dominance of species within the community over time. The index represents the probability of drawing the same species from a random selection of a pair of individuals from the population;

$$l = \sum n_i(n_i - 1) / N(N-1)$$

where, n_i is the number of individuals of species i and N is the total number of individuals. Monitoring this index value over time will serve to reveal any trends in species dominance within the community (project), for example, if one species increases in abundance at the expense of other species.

Some bird species will be monitored on the afforested degraded lands and restored pastures. Avian species will be monitored using the *Indices ponctuels d'abondance* (IPA), or point count method (Blondell et al, 1970). Point counts will be centered within the plots designated for floral inventories. The minimum distance of 250 meters between points will ensure that individuals are not double-counted from one point to the next; thus, the sampling regime is random without replacement. For each monitoring event, all birds detected (seen and/or heard) over a 5 minute time period will be recorded, following the European standard (Koskimies and Vaisanen, 1991), and within a 50 meter (estimated) radius of the point center, which should control for differences in detectability among species (Ralph et al, 1995). Multiple individuals are recorded only if detected simultaneously. Observations should be restricted to early morning when birdsong will be most prevalent and in the late spring (late May to June) at which time the avifaunal community is predominantly represented by locally-nesting individuals, which have the most relevance for determining project impact. The same *Shannon* diversity index and *Simpson's* dominance index can be used for avian species monitoring.

To ensure comparability of monitoring results, the same observer should record all observations for a given project site and adjoining control site. If bird densities are discovered to be low (i.e. significant number of point counts yields few registrations each), the monitoring plan may instead use permanently marked line transects traversing selected project and control sites (Bibby et al, 1992). As with flora, the *Shannon* diversity index will be used as the quantitative measure of avian biodiversity.

Table 1: Indicators and procedures for biodiversity monitoring

Indicator	Methodology/ Data sources	Frequency/ Dates of evaluations	Documentation
Floral species diversity in project sites relative to control sites	Field surveys of established monitoring plots	As per carbon monitoring schedule (late spring and fall)	Report to PMT
Avian species diversity in project sites relative to control sites	Field surveys of established point counts	As per carbon monitoring schedule (late spring)	Report to PMT
Floral community dominance index and native: exotic species ratio in project site and adjacent control sites	Field surveys of established monitoring plots	As per carbon monitoring schedule (late spring and fall)	Report to PMT

Monitoring data will be reported before and in the last year of project implementation.

The systematic collection of relevant climate-related data based on developed monitoring system will further help to identify how communities of grassland and forest species will be affected by climate change i.e., what physical and biological changes could take place as a result of changes in temperature, precipitation and aggravation of situation with extreme climate events. This observation and forecasting system will provide the foundation for planning appropriate response measures and integrating them into ongoing pasture and forest management efforts.

The project will conclude with a series of trainings, workshops and publications aimed at dissemination of its results among other pasture and forest owners in Moldova.

At the initial stage of project implementation a country wide launching workshop will be organized. Representatives from communities in the area, raional structures, NGOs, mass-media will be invited. Objectives of the workshop will include issues concerning mechanisms of project implementation as well the options concerning the management of the forest vegetation and pastures. Another 2 workshops will be facilitated to present and disseminate the experience of the project at the national, regional and local level. A training programme in sustainable grassland and forest management will be developed and implemented for local communities, as well as national park staff members to ensure sustainability. In this regard two training sessions will be organized under the project dedicated to integrated management of community forests and pastures for local authorities, farmers, leaders of farmer association and other key groups. Some trainees from outside the national park area will be involved in the training sessions. After the finishing of theoretical and practical (on

demonstrative plots) courses, attendees would ensure the replication of project activities at local, regional and national level through organization or participation in similar training and awareness programs in their zones of residence and activity. The project will support the development and dissemination of a set of educational materials as well as special publications intended for the project beneficiaries and specialists, which would be involved directly in the project implementation. Among the suggested publications are the following: Operational Manual “Management practices of community forests”, Guidebook for “sustainable pasture restoration and management”.

III. RESULTS AND RESOURCES FRAMEWORK

Intended Outcome as stated in the Country Programme Results and Resource Framework:

Outcome 3.2 - Low Emission and Resilient Development: Strengthened national policies and capacities, enable climate and disaster resilient, low emission economic development and sustainable consumption

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:

Outcome 3.2 **Indicator**: Number of communities which implement climate and disaster risk reduction measures in line with National DRM Strategy and climate change policies and international treaties; **Baseline**: 0% of 1,681 communities; **Target**: 40% of communities implement disaster risk management measures in line with the national strategies

Applicable Key Result Area: Environment and Sustainable Development

Partnership Strategy: The project will be implemented in close collaboration with the Ministry of Environment, Forestry Agency Moldsilva, Local Public Authorities from Orhei region, Ministry of Agriculture and Food Industry, Farmers Associations, Academia and NGOs. Specific emphasis will be placed on ensuring sustainability by ensuring ownership of pilot activities by the partner Local Public Authorities, incl. via a grant mechanism with local co-financing.

Project title and ID (ATLAS Award ID): Clima-East: Sustainable management of pastures and community forests in Moldova's first National Park Orhei to demonstrate climate change mitigation and adaptation benefits and dividends for local communities. Project ID – 00086149, Atlas Award ID – 00073227

INTENDED OUTPUTS	OUTPUT TARGETS FOR (YEARS)	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
Output 1: Pasture and community forest restoration plans for Orhei National Park area designed. Baseline: 1. No communities (0 ha) with pasture management plans in place. 2. 0 ha of community forests with management plans Target: 1. 18 communities (5,890.92 ha) with pasture management plans developed. 2. 1,392 ha of community forests with management plans developed. Indicators: 1. Number of communities with pasture	Year 1 - report on pasture inventory developed which will assess soil and vegetation condition, evaluations of productivity and production quality, hay productivity (if any), cattle support, carbon storage, emission reduction and sequestration; - 9 communities with pasture management plans developed in a participatory way; - 696 ha of community forests with management plans developed. Year 2	Activity Result 1.1: Pasture inventory for Orhei National Park area performed ▪ assess soil and vegetation condition; ▪ evaluation of productivity and production quality of existing pastures; ▪ assessment the hay productivity and cattle support of pastures; ▪ inventory of carbon storage, emission reduction and sequestration potential; Activity Result 1.2: Community pasture management plans developed for Orhei National Park area ▪ develop pasture management plans; ▪ present, consult and endorse the developed pasture management plans by pasture owners and users from the local	Ministry of Environment	National expertise, technical assistance EUR 100,000

management plans developed 2. Number of hectares of community forests with management plans developed	- 18 communities with pasture management plans developed in a participatory way; - 1,392 ha of community forests with management plans developed.	communities; <u>Activity Result 1.3: Community forests management plans developed for Orhei National Park area</u> ▪ preparatory phase (analysing forest conditions in the selected areas, existing materials and other data; coordination the activities with LPA's and foresters etc.); ▪ field phase (boundaries delimitation of the community's forestlands; parcel description for every forest unit incl. vegetation, type of habitat, other forest and mapping parameters; reception of volume of work done according to the legislation); ▪ office phase (field information processed and data based; forest/stands maps developed and verified; management plans developed, consulted with main stakeholders and the final version endorsed to them).		
Output 2: Forest and pasture restoration projects implemented <u>Baseline:</u> 1. Degraded pasture on the most of the park territory 2. No degraded lands afforested on the park territory. <u>Target:</u> 1. 500 ha of pasture land restored 2. 150 ha of degraded lands afforested. <u>Indicators:</u> Number of hectares of pasture land restored and degraded	<u>Year 1</u> - sites of degraded pastures to be restored selected; - 150 ha of degraded lands afforested. - land preparation for pastures restored in the second year <u>Year 2</u> - 250 ha of degraded pastures restored; - land preparation for pastures restored in the third year	<u>Activity Result 2.1: 500 ha of pastures restored based on developed pasture management plans</u> ▪ select the sites of degraded pastures to be restored in a participatory manner; ▪ perform the land preparation and planting activities according to the management plans and selected methodology; ▪ coordinate the activities with pasture owners and users in order to respect the proper pasture management during the project life and after that;	Ministry of Environment, Local Public Authorities	National expertise, technical assistance, grants for Local Public Authorities EUR 300,000

lands afforested.	- 150 ha of newly planted forests on degraded lands completed (if necessary) and maintained. Year 3 - 250 ha of degraded pastures restored; - 150 ha of newly planted forests on degraded lands completed (if necessary) and maintained; Year 4 - 500 ha of pastures maintained; - 150 ha of newly planted forests on degraded lands completed (if necessary) and maintained;	Activity Result 2.2: 150 ha of degraded lands afforested based on the national guidelines on scientific forest management and silvicultural practices for degraded lands ▪ analyse and select the sites of degraded lands to be afforested; ▪ based on each site condition, together with land owners and experts in domain, select the necessary activities to be performed and species to be used for planting; ▪ perform planting activities of afforestation (site preparation, planting, etc.); ▪ ensure the proper protection, completion with seedlings and management of plantations during the project life.		
Output 3: Carbon assessment and monitoring system in place Baseline: 1. No monitoring in place 2. Insufficient trainings and awareness in sustainable grassland and forest management Target: 1. a robust pasture and forest monitoring system in place. 2. Increased level of understanding at local, regional and national level about sustainable grassland and forest management. Indicators: 1. Monitoring system in place	Year 1 - a monitoring programme, including indicators, designed; -the baseline established based on the results of a survey of the pastures before restoration and degraded lands before afforestation. Year 3 - a training programme developed and facilitated for sustainable grassland and forest management;	Activity Result 3.1: System for monitoring of the carbon dividends and ecological integrity of the ecosystem in place ▪ design a monitoring programme; ▪ conduct monitoring survey of the pasture and afforested lands before and after restoration is completed; ▪ develop recommendations for project experience replication based on the monitoring results. Activity Result 3.2: Awareness and replication of project successful experience fostered ▪ development and implementation of a	Ministry of Environment	National and international expertise, technical assistance EUR 50,000

consisting of a) ecological integrity of the grassland ecosystem (richness and density of indicator species populations, such as indicator species (Festuca valesiaca, Bothriochloa ischaemum, Stipa capillata, Poa bulbosa, Poa angustifolia, Artemisia austriaca)). b) volume of biomass growth for forest ecosystems c) carbon dividends 2. Number of people involved in the capacity building and awareness activities at the national, regional and local levels.	<u>Year 4</u> - monitoring survey of the pasture and afforested lands based on field research after restoration completed; - recommendations for project experience replication based on the monitoring results formulated; - at least 2 workshops organized and publications developed and disseminated at the national, regional and local levels.	training programme for sustainable grassland and forest management; ▪ 2 workshops to present and disseminate the experience of the project at the national, regional and local levels; ▪ publications and other awareness materials developed and disseminated at the national, regional and local levels.		
Project management			Ministry of Environment/ UNDP	National expertise, office equipment and space, expendables EUR 50,000

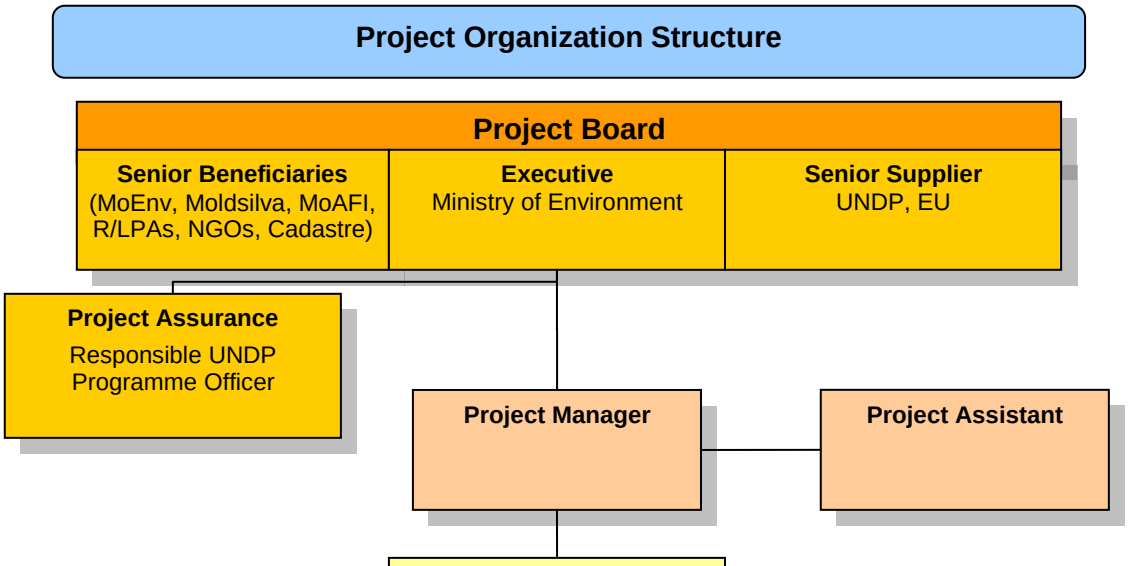
IV. TOTAL BUDGET AND WORK PLAN

Component (Outcome) /Atlas Activity	Implementing Agent/Responsible Party	Fund ID	Donor Name	ERP / ATLAS Budget Code	Atlas Budget Description	TOTAL Amount (EUR)	Amount Year 1 (EUR)	Amount Year 2 (EUR)	Amount Year 3 (EUR)	Amount Year 4 (EUR)	Budget Notes
Activity 1 - Design pasture and community forest restoration plans	MoEnv/ UNDP	30079	EC	71300	Local Consultants	9,900	4,950	4,950	0	0	1
		30079	EC	71600	Travel	6,700	3,500	3,200	0	0	2
		30079	EC	72100	Contractual Services-Companies	72,000	40,000	32,000	0	0	3
		30079	EC	75700	Trainings and Workshops	11,400	6,500	4,900	0	0	4
TOTAL ACTIVITY 1 (Comp 1)						**100,000**	**54,950**	**45,050**	**0**	**0**	
Activity 2 - Implementation of forest and pasture restoration projects	MoEnv/ UNDP	30079	EC	72100	Contractual Services-Companies	90,000	60,000	15,000	7,500	7,500	5
		30079	EC	72600	Grants	210,000	15,000	90,000	90,000	15,000	6
TOTAL ACTIVITY 2 (Comp 2)						**300,000**	**75,000**	**105,000**	**97,500**	**22,500**	
Activity 3 - Carbon assessment and monitoring and results sharing	MoEnv/ UNDP	30079	EC	71300	Local Consultants	20,000	5,000	1,000	1,000	13,000	7
		30079	EC	71400	Contractual Services - Individ	4,200	1,800	800	800	800	8
		30079	EC	71600	Travel	6,500	1,000	2,000	1,500	2,000	9
		30079	EC	74100	Professional Services	3,500	0	0	1,000	2,500	10
		30079	EC	74200	Audio Visual&Print Prod Costs	5,800	0	1,200	1,600	3,000	11
		30079	EC	75700	Trainings and Workshops	10,000	0	0	5,000	5,000	12
TOTAL ACTIVITY 3 (Comp 3)						**50,000**	**7,800**	**5,000**	**10,900**	**26,300**	
Project Management	MoEnv/ UNDP	30079	EC	71400	Contractual Services - Individ	43,000	10,000	11,000	11,000	11,000	13
		30079	EC	72400	Communic & Audio Visual Equip	3,200	800	800	800	800	14
		30079	EC	72500	Supplies	800	200	200	200	200	15
		30079	EC	72800	Information Technology Equipmt	3,000	3,000	0	0	0	16
		30079	EC	75100	GMS	35000	10,622.5	11,693.5	8,428	4,256	
TOTAL ACTIVITY 4 (Project Management)						**85,000**	**24,623**	**23,694**	**20,428**	**16,256**	
	GRAND TOTAL PROJECT					**535,000***	**162,372.5**	**178,743.5**	**128,828.0**	**65,056.0**	

*The total budget that is a subject of approval for this project amounts 500,000 EUR. The budget maintained through UNDP financial system Atlas will be expressed in US dollars in ATLAS, as this is usual way of operation for UNDP projects. Thus, the final amount for the project in US dollars will depend on actual exchange rates at the time of allocation of further installments from EU to UN.

Budget Notes	
1	Group of experts for developing forest management plans. Forest management plans (7 EUR/ha * 1392 ha)
2	Local travel project team
3	Pasture management plans (18 localities in 2 years), first year will be developed management plans for localities where restauration areas will be done (e.g Trebujeni, Vatici, Seliste, Donici, Neculaeuca, Teleseu, Codreanca, Romanesti, Tiganesti, Saseni). Approx costs: 4000 EUR/community
4	Costs of inception workshop, consultations, round tables and disscussions with mayorities, and other stakeholders.
5	Costs of afforestation (600 EUR/ha * 150ha). First year afforestation of degraded lands, second year completion and 3rd and 4th years completion and maintainance.
6	Costs of pasture restoration (420 EUR/ha * 500 ha) implemented through small grants scheme. Pastures will be restaured in the 2nd and 3rd year and maintained by the project end.
7	Expert(s) for GHG monitoring (EUR 250*24 weeks); translation costs; terminal evaluation costs
8	10% of Project manager salary
9	Local travel project team
10	Audit, editorial costs etc.
11	Printing of information materials, monitoring reports etc.
12	Training programme development and training and workshop facilitatation for pasture owners and park staff; Terminal workshop
13	Salary for PM: EUR 670/month (10% paid from Activity 3); PA - 280 EUR/month .
14	Phone, mobile, internet
15	Office supplies
16	Computer, copier, scaner, tel/fax

V. MANAGEMENT ARRANGEMENTS



The Ministry of Environ[illegible]itution responsible for the implementation of the project and will act as the Execu[illegible]he Implementing Agency (IA) for the project. The project is nationally executed (N[illegible]), in line with the Standard Basic Assistance Agreement (SBAA, 1992) and the United Nations – Republic of Moldova Partnership Framework and Action Plan 2013 – 2017 signed between UNDP and the Government of Moldova.

The Ministry of Environment will take overall responsibility for the project implementation, and the timely and verifiable attainment of project objectives and outcomes. It will provide support to, and inputs for, the implementation of all project activities. The Ministry of Environment will nominate a high level official who will serve as the national coordinator of the project implementation, who will not be paid from the project funds. Also the Ministry of Environment will provide spaces for project implementation and will cover all utility expenses.

UNDP Moldova will support the Ministry of Environment with implementation support services according to the Agreement between the Government of Moldova and UNDP for the provision of support services of 27 May 2003, including identification and recruitment of project personnel, identification of training activities and assistance in carrying them out, procurement of goods and services, (d) Financial monitoring and reporting, processing of direct payments, supervision of project implementation, monitoring and assistance in project assessment. The Project will be implemented in line with UNDP rules and procedures (http://content.undp.org/go/userguide/results).

A Project Board (PB) will be established at the inception phase of the project to monitor the project progress, to guide its implementation and to support the project in achieving its listed outputs and outcomes. The project Board will have 9 members, made up of one representative of each of the following institutions: Ministry of Environment (Senior Executive and chairing the PB), Ministry of Agriculture and Food Industry; Agency "Moldsilva"; Agency for Land Relations and Cadastre; UNDP Moldova; EU Delegation in Moldova; one representative from Academy of Science or NGO; one representative from local public authorities first level, one representative from local public authorities at raional level. The Project Board will meet regularly, on a quarterly basis or as required.

The Project Board is the group responsible for making management decisions for a project when guidance is required by the Project Manager, including recommendation for UNDP/Implementing Partner approval of project plans and revisions. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance to standards that shall ensure best value to money, fairness, integrity transparency and effective international competition. Project reviews by this group are made at designated decision points during the running of a project or as necessary when raised by the Project Manager. This group is consulted by the Project Manager for decisions when PM tolerances (normally in terms of time and budget) have been exceeded.

Based on the approved annual work plan (AWP), the Project Board may review and approve project quarterly plans when required and authorizes any major deviation from these agreed quarterly plans. It is the authority that signs off the completion of each quarterly plan as well as authorizes the start of the next quarterly plan. It ensures that required resources are committed and arbitrates on any conflicts within the project or

negotiates a solution to any problems between the project and external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Formal minutes shall be prepared and adopted for each meeting of the Board, detailing any proposals made and decisions taken.

A Project Management Team (PMT), staffed with a Project Manager and Financial/ Administrative Assistant, will be established to assist the Ministry of Environment as well as other responsible institutions in the implementation of the project at the national level. The PMT will ensure results-based project management and successful implementation of the project within 46 months, close monitoring and evaluation of project progress, observance of procedures, transparency and efficient use of funds, quality of works, and involvement of local and national stakeholders and beneficiary communities in the decision-making processes. The project will be managed as part of a larger programme focussing on biodiversity conservation, and climate change adaptation and mitigation. The PMT office will preferably be physically located within the Ministry of Environment premises.

Project Assurance is the responsibility of each Project Board member, however the role can be delegated. The Project Assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. On behalf of UNDP, the function is delegated to a UNDP Portfolio Manager. Specific 'Assurance' tasks are to:

- Ensure that funds are made available to the project;
- Ensure that risks and issues are properly managed and monitored, and that the logs are regularly updated;
- Ensure that Project Progress/Financial Reports are prepared and submitted on time, and according to standards in terms of format and content quality and submitted to the Project Board;

VI. MONITORING FRAMEWORK AND EVALUATION, AND VISIBILITY

The project team and the UNDP Country Office supported by the UNDP Regional Technical Advisor for Biodiversity Conservation in Bratislava will be responsible for project monitoring and evaluation conducted in accordance with established UNDP and EC procedures. The Project Results Framework provides performance and impact indicators for project implementation, along with their corresponding means of verification.

Carbon monitoring: Given the important focus of the project on emission reductions from pasture and forest restoration, particular emphasis will be placed on monitoring these reductions.

The following sections outline the principle components of the M&E plan and indicative cost estimates related to M&E activities.

Project start:

A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.

a. The Inception Workshop should address a number of key issues including: Assisting all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff with respect to the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms.
b. Based on the project results framework, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
c. Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
d. Discuss financial reporting procedures and obligations.

e. Plan and schedule Project Board meetings (separate or joint Project Board meetings with the GEF project on protected areas): Roles and responsibilities of all project organization structures should be clarified and meetings planned.

Quarterly:

Progress made will be reported on a quarterly basis to the Project Board and will be recorded in the UNDP Enhanced Results Based Management Platform. Based on the initial risk analysis submitted, the risk log will be regularly updated in ATLAS. An Issue Log will be activated in Atlas and updated by the Project Manager to facilitate tracking and resolution of potential problems or requests for change.

Annually:

Annual Project Review (APR): This key annual report will be prepared to monitor progress made since project start and in particular for the previous reporting period (reports will cover calendar years). The APR will combine both UNDP and EC reporting requirements and will be submitted to UNDP RCU not later than 1 month after the end of previous calendar year. The APR includes, but is not limited to, reporting on the following:

Section 1.	Brief summary and context of the EC project in the country;
Section 2a.	Progress and achievements made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
Section 2b.	Project outputs delivered per project outcome (annual)
Section 2c.	Activities carried out during the reporting period under each output
Section 3a.	Lesson learned/good practice
Section 3b.	Difficulties encountered and measures taken to overcome problems
Section 4.	AWP and other expenditure reports (Note: Financial reports shall be submitted in US dollars)
Section 5a.	Risk and adaptive management
Section 5b.	Changes introduced to activities, outputs or indicators.
Section 6.	Project work-plan for the following 12 months period, including forecasted progress in the achievement of objective(s) and indicators, as well as financial plan (budget for next 12 months)

To cover and reclaim direct costs for the project staff who, while working for this project, at the same time are working for other project(s), managed by the Country Office, only part of their time devoted to this project would be reclaimed. This will be confirmed by timesheets for use of EC in case of verification.

Periodic Monitoring through site visits:

UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the Country Office and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Project Evaluation

An independent project evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and EC guidance. The project evaluation will focus on the delivery of the project's results as initially planned. The project evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP Country Office based on guidance from the Regional Coordinating Unit in Bratislava. The Project Evaluation should also provide recommendations for follow-up activities and will require a management response.

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems encountered and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results,

and information on the measures taken to make the European Union visible as the source of financing, as well as details on the transfers of assets and full summary of the project's income and expenditure and payments received, in line with article 2.5 of the Annex II (General Conditions). Final report will be submitted no later 3 months after closure of the project.

Learning and knowledge sharing:

Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and fora. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

Finally, there will be a two-way flow of information between this project and other projects of a similar focus. Communications and visibility requirements

Communications and visibility requirements:

With the aim to ensure coherence and coordination between related projects and activities under the UNDP-EC Agreement – Clima East part II, the project will keep stakeholders informed on developments and progress relevant to the Agreement, inform about upcoming relevant meetings and exchange related documents, press releases, publications when these are issued, provide meeting and mission reports and share necessary links to project websites. Information will be channeled through UNDP Regional Centre to European Commission. EC will provide to UNDP information on EU policy developments, partnerships and cooperation agreements in such a way that the project outcomes are policy relevant and able to contribute to these demands.

UNDP will take all appropriate measures to publicize the fact that the activities have been receiving funding from the European Union. Information given to the press, the beneficiaries of the project, all related publicity material, official notices, reports and publications, will acknowledge that the project was carried out "with funding by the European Union" and will display in an appropriate way the European logo (twelve yellow stars on a blue background). In cases where equipment or vehicles and major supplies have been purchased using funds provided by the European Union, UNDP will include appropriate acknowledgement on such vehicles, equipment and major supplies (including display of the European logo) provided that such actions do not jeopardize UNDP privileges and immunities and the safety and security of the UNDP staff. The size and prominence of the acknowledgement and European Union logo will be clearly visible in a manner that will not create any confusion regarding the identification of the project as an activity of UNDP, the ownership of the equipment and supplies by UNDP, and the application to the project of UNDP privileges and immunities.

All publications of UNDP pertaining to the EC-funded activities, in whatever form and whatever medium, including the internet, shall carry the following or a similar disclaimer: "This document has been produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union." Publicity pertaining to European Union contributions may quote these contributions in Euro (€ or EUR), in parenthesis if necessary.

M&E Work Plan and Budget

Type of M&E activity	**Responsible Parties**	**Budget EUR** *Excluding project team staff time*	**Time frame**
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP RCU	3,000	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP RTA/Project Manager will oversee the hiring of specific studies and institutions, and	To be finalized in Inception Phase and Workshop.	Start and end of project (during evaluation cycle) and annually when

Type of M&E activity	Responsible Parties	Budget EUR *Excluding project team staff time*	Time frame
	delegate responsibilities to relevant team members.		required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual Work Plan's preparation.	Annually prior to APR and to the definition of annual work plans
APR	▪ Project Manager and team ▪ UNDP CO ▪ UNDP RTA	None	Annually
Periodic status/ progress reports	▪ Project Manager and team	None	Quarterly
Final Evaluation	▪ Project Manager and team, ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e., evaluation team)	Indicative cost : 10,000	At least three months before the end of project implementation
Terminal Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP RCU	3,000	No more than two months before operational closure
Project Terminal Report	▪ Project Manager and team ▪ UNDP CO ▪ Local consultant	0	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project Manager and team	3,500	At least once during project lifetime
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	Paid from IA fees and operational budget	Yearly
TOTAL Indicative COST Excluding project team staff time and UNDP staff and travel expenses		EUR 19,500	

VII. LEGAL CONTEXT

This project document shall be the instrument referred to as such in Article 1 of the SBAA between the Government of the Republic of Moldova and UNDP, signed on by the parties on 2 October 1992. The host country executing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government cooperating agency described in that Agreement.

Consistent with the Article III of the SBAA, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner. The implementing partner shall:

a) Put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

b) Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

VIII. AUDIT CLAUSE:

The Audit will be conducted in accordance with UNDP Financial Regulations and Rules and applicable audit policies on UNDP projects. A copy of the audited financial statements will be submitted to the European Commission.

Annex 1: Group of species used for afforestation of degraded lands

Main forest species	Additional species, share	Land use category	Soil condition	Forest activities
1	***2***	***3***	***4***	***5***
Oak (or Sessile oak) (50-75%) Ash	Secondary (25-12%) *Acer platanoides* *Acer campestre* *Pyrus communis* *Prunus avium* *Malus sylvestris* *Fraxinus excelsior* *Tilia cordata* *Carpinus betulus* Bushes (25-13%) *Corylus avellana* *Cornus mas* *Viburnum opulus* *Vibirnum lantana* *Sambuscus nigra*	• glades and waste grounds • degraded pastures • degraded agricultural lands	Slopes (6-12^0) with uneroded soils, slight eroded or moderate eroded	• Soil preparation, partially or completely, mechanized • Manual or mechanized plantation of about 6000 seedlings/ha • Plantation method with Kolesov spade or plantation machine with seedlings of 2-4 years • Tending through manual or mechanized weeding, by years I-7, II- 6, III- 5, IV-4, V-3, VI - 2 • Completion of plantation in 2, 3 years through the substitution of dry seedlings • Protection measures by using of chemicals
Robinia pseudoacacia 50%	Secondary (25%) *Acer platanoides* *Acer campestre* *Pyrus communis* *Prunus avium* *Malus sylvestris* *Fraxinus excelsior* Bushes (25%) *Cotinus coggygria* *Crataegus monogyna* *Ligustrum vulgare* *Rosa canina*	Landslides ravines glades and waste lands	Active landslides • Landslides - semistabilized and active embankments • Landslides -steps semistabilized, eroded from moderate to excessive and strong excessive, carbonates appear on the depth of 50-100 cm • Alkalization deeper than 50 cm • slopes with 6-35 degree and more than 35 degrees	• Soil preparation through creation of beds or lines (3,0 x1,5-2,0 m) or lines at a distance of 3,0-4,5 m), manually or mechanized • Manual plantation of about 6000 seedlings per 1 ha • Plantation method - with the help of Kolesov spade with 1-2 years seedlings 3,0x0,7 -0,5 • Tending through manual wedding by following scheme I-5, II-3, III- 1 • Completion of plantation in 2, 3 years through the substitution of dry seedlings
1	***2***	***3***	***4***	***5***

Robinia pseudoacacia 50%	Secondary (25%) *Acer platanoides* *Acer campestre* *Pyrus communis* *Prunus avium* *Malus sylvestris* *Fraxinus excelsior* Bushes (25%) *Cotinus coggygria* *Crataegus monogyna* *Ligustrum vulgare* *Rosa canina*	Landslides ravines glades and waste lands	Active landslides • Landslides - semistabilized and active embankments • Landslides -steps semistabilized, eroded from moderate to excessive and strong excessive, carbonates appear on the depth of 50-100 cm • Alkalization deeper than 50 cm • Slopes with 6-35 degree and more than 35 degrees	• Soil preparation through creation of beds or lines (3,0 x1,5-2,0 m) or lines at a distance of 3,0-4,5 m), manually or mechanized • Manual plantation of about 6000 seedlings per 1 ha • Plantation method - with the help of Kolesov spade with 1-2 years seedlings 3,0x0,7 -0,5 • Tending through manual wedding by following scheme I-5, II-3, III- 1 • Completion of plantation in 2, 3 years through the substitution of dry seedlings
Gleditsia triacantos, Sophora japonica (50%)	Secondary (25%) *Acer campestres* *Malus sylvestris* *Pyrus communis* *Ulmus glabra* Bushes (25%) *Cotinus coggygria* *Crataegus monogyna* **Rosa canina**	• Landslides • ravine • Glades and waste places • Other degraded lands • Degraded pastures	• Appearance of carbonates on the surface and up to the depth of 30-50 cm • Weak and moderate-strong salinization on the depth (>100 cm)	• Soil preparation through creation of beds, lines - complete, manual or mechanized • Plantation manual or mechanized of 6000 seedlings/ha • Plantation method - with the help of Kolesov spade with 1-2 years seedlings 3,0x0,7 -0,5 • Tending through manual wedding by following scheme I-5, II-3, III- 1 • Completion of plantation in 2, 3 years through the substitution of dry seedlings
Quercus robur (50%)	Secondary (25%) *Acer campestres* *Acer platanoides* *Malus sylvestris* *Pyrus communis* *Ulmus spp.* Bushes (25%) *Hippophae rhamnoides* **Prunus mahaleb**	• Landslides • Degraded pastures • Former agricultural degraded lands • Glades and waste grounds	• Semistabilised and stabilised landslides • Moderate eroded and weak eroded • Texture clay	• Soil preparation - partial or complete, mechanized • Plantation manual or mechanized of 6000 seedlings/ha • Plantation method - with the help of Kolesov spade with 1-2 years seedlings 3,0x0,7 -0,5 • Tending through manual wedding by following scheme I-5, II-3, III- 1 • Completion of plantation in 2, 3 years through the substitution of dry seedlings

Annex 2: Donor Funded Projects with a direct or indirect link to the proposed project

Project	Donor (Implementer)	Duration	Budget	Project Description / Issues addressed
Improving coverage and management effectiveness of the protected area system in Moldova	GEF/UNDP (UNDP)	2009-2013	995,000 USD	The project aims to build the capacity of protected area institutions in Moldova to more effectively establish and administer a representative system of protected areas in Moldova. It will also pilot the establishment of a national park, the first in Moldova, in the Orhei district as a mechanism to rationalize and expand existing, but spatially and institutionally fragmented, protected areas.
Moldova Community Forestry Development Project	Borrower, Carbon Fund, PHRD Grant (WB/State forestry agency Moldsilva)	2006-2035	10,000,000 USD	The objective is to restore degraded land through forestation to increase economic and environmental benefit to rural communities. In addition to community benefits, the project's forestation activities would support, through restored productivity and conservation of soil, the global objectives of carbon sequestration and reduction of atmospheric greenhouse gas concentrations.
Japanese Grant TF093088	Japan Policy for Human Resources Development (PHRD) Fund (State forestry agency Moldsilva)	2005-2007	975.900 USD	The project will have positive influence on community forests and pastures, contributing substantially to the improvement of their condition (management), achieving considerable ecological and economic benefits for local population. An area of 1453 ha, including 1162 ha will be covered with forest management planning and on 291 ha reconstruction (or assisted natural regeneration) will be carried out in community forests destroyed previously by illegal logging.
Moldova: Soil Conservation	WB- Prototype Carbon Fund (Moldsilva)	2002-2022	2,478,000 USD	Moldova Soil Conservation project is reforesting 19,768 ha of bad lands in the process of heavy erosion and degraded unproductive pasturelands, by means of afforestation with tree and shrub species adapted to these adverse site conditions, providing urgently needed fuel wood and timber to rural people.
Sustainable tourism development in the Orhei National Park area	National Fund for Regional Development (Agency for Regional Development)	2013-2014	12,349,572 MDL (1,010,603 USD)	The main objective of the project is to increase the investment attractiveness and visibility of tourism values in National Park Orhei. Specific objectives: creation, improvement and diversification of tourism infrastructure and services in National Park Orhei, building, administrative capacity of the park, training and human resources for intercommunity cooperation activities by promoting diversification of the regional economy and tourism. Developing touristic infrastructure (visitor centers, camping's, craft markets) at a distance of up to one hour from the capital Chisinau.
The ENPI FLEG Program "Improving Forest Law Enforcement and Governance in the European Neighbourhood	European Union (World Bank IUCN, WWF,)	2009-2012	600,000 EUR	The ENPI FLEG Program supports governments, civil society, and the private sector in participating countries in the development of sound and sustainable forest management practices, including reducing the incidence of illegal forestry activities. Participating countries include Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine. This program is funded by the

Policy East Countries and Russia"				European Union with a contribution from the Austrian Development Cooperation.
National Biodiversity Planning to Support the Implementation of the CBD 2011-2020 Strategic Plan in Moldova	GEF/ National Environment fund (UNDP through Biodiversity Office)	2012-2013	220,000 USD	This project is part of the second generation of Biodiversity Enabling Activities (BD EA) under the GEF. Republic of Moldova has been Party to the Convention on Biological Diversity (CBD) since October 1995. The project addresses the country's need to continue to fulfill its obligations under the CBD, with particular focus on the Convention's Article 6 and the CBD COP Decision X/2. Above all, the project is a significant contribution to Moldova's efforts towards implementing the CBD Strategic Plan 2011-2020 at the national level.
Agriculture Competitiveness Project	GEF (WB)	2012-2017	4,435,500 USD	The Project Development Objective is to enhance the competitiveness of the country's agro-food sector by supporting the modernization of the food safety management system; facilitating market access for farmers; and mainstreaming agro-environmental and sustainable land management practices.
Moldova Energy and Biomass Project	European Commission and UNDP (UNDP Moldova)	2011 – 2014	14,560,000 EUR	The Project aims to contribute to a more secure, competitive and sustainable energy production in the Republic of Moldova through targeted support to renewable energy in form of biomass from agricultural wastes. The project will increase the use of renewable energy sources, specifically for heating public buildings and individual households in rural areas. It lays the basis for the establishment of functional markets for biomass technologies which will ensure sustainability of the project intervention beyond its lifetime.
Development of ecological agriculture in Moldova	International Development Cooperation of the Czech Republic (People in Need)	2011 - 2013	7,500,000 CZK	The project is focused on the support of organic agriculture in Moldova through building the capacity of farmers, their associations and service providers. In addition access of farmers to investments will be increased and demand for organic products in Moldova stimulated. Within the project awareness of the public and state officials will be raised about the benefits of organic agriculture.
Increasing Competitive Strength and Efficiency of Moldovan Small and Medium-Scale Farmers through their Orientation to High Value Crops Growing at Selected Target Groups in Districts of Cahul, Anenii noi, Ungheni	International Development Cooperation of the Czech Republic (Czech University of Life Sciences Prague)	2011 - 2013	1,800,000 CZK	The project envisages establishment of six production-marketing cooperative groups with the minimum total number of 60 farmers based on the above-mentioned groups of vegetable and fruit small- and medium-scale growers. Vegetable and fruit growers will be trained in growing technologies, strategic plans of commercial growing will be set up for them, they will be supported with deliveries of horticulture mini-machinery, green houses, irrigation equipment and other agricultural inputs; further the project will work out market analyses, organize training in marketing and farm management provide marketing strategies and business plans for each of groups.
Transition to High Value Agriculture project (Millennium Challenge	Millennium Challenge Corporation	2010–2015	262,000,000 USD	It aims at increasing incomes in the rural areas by encouraging high value agriculture and catalyzing investments into high value production. It is also estimated to make benefits to about 29 000 farmers or over 112 thousand

Compact programme in Moldova)	(Millennium Challenge Account Moldova)			individuals (farmers, owners of farmlands, agricultural enterprises and their shareholders, employees of agricultural enterprises operating in the areas covered by the rehabilitated centralized irrigation systems, the producers who grow or intend to grow high value products).