



The International Treaty

ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Full Project Proposal Format

Third Call for Proposals under the Benefit-sharing Fund

*Deadline for submitting full project proposal: 5th of December 2014
at Treaty-Fund@fao.org and PGRFA-Treaty@fao.org*

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PROJECT PROPOSAL COVER SHEET

Project No. _____ (For Treaty use. Do not write anything here)

Project Title: **Strengthening On-Farm Conservation and Utilisation of Plant Genetic Resources to Support Farmer's Adaption to Climate Change and Improved Livelihoods in Albania**

Project duration: **36 Months**

Target crops: **Bean, Wheat, Maize, Medicago, Apple**

Targeted developing country/ies: **Albania**

Other Contracting Party/ies involved: **no**

Project geographic extension (km²): **10.000 km²**

Total requested funding: **260,000 US \$**

Total co-funding: **40,000 US \$**

Please select the type of project you are applying for:

- Single-country Immediate Action Project (Window 2)
- Multi-country Immediate Action Programme (Window 2)
- Single-country Co-development and Transfer of Technology project (Window 3)
- Multi-country Co-development and Transfer of Technology project (Window 3)

Applicant

Name of Organization: **Agricultural University of Tirana**

Type of organization **Governmental (public)**

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SECTION A: EXECUTIVE SUMMARY

1. Executive summary

As one of the poorest countries in Europe, agriculture in Albania is the backbone of the national and rural economy, contributing about 18 % of GDP and providing employment for more than half of active labour force in the country.

The constant abandonment of rural farming combined with the progressive introduction from abroad of commercial varieties, expansion of land use for social development, difficult situations created in the last twenty years by floods and drought, represent unprecedented threats to the local crop diversity of traditional farming systems and major causes of genetic erosion mainly in cereals beans and fruit trees.

Food security in Albania, especially in areas affected by climate changes, is an acute problem for the farmers. During last decades these changes have directly affected the productivity of the farms and the standard of living for farmer communities.

In this context, on-farm conservation and management of local varieties of maize, wheat, bean, alfalfa and some fruit trees, which are resistant to drought, diseases, pests, as well as to weather difficult situations (flood), will create opportunities for Albanian farmers to guarantee their production, food security and increased income for their families

The main objective of the project is : To contribute to food security and improved livelihood of farming communities through on farm conservation of locally adapted varieties, which help farmers, to face effects of climate change on crop production. Some more specific objectives are: Strengthening of on farm conservation and management of PGRFA, through appropriate actions at the farm and community levels.; Development of seed production and dissemination systems of locally adapted varieties in the country; Improving livelihoods of the resource –poor farmers and farming communities in Albania.

The targeted outputs of the project are: Locally adapted varieties of wheat, maize, bean, alfalfa and apple successfully conserved and used; Community conservation systems and sustainable use of PGRFA developed, mainly on-farm and in seedbanks; Establish and strengthen local seed system through on farm conservation of plant genetic resources for food and agriculture; Increased capacities, of resource-poor farmers in targeted areas, genebank of Albania and department of crop production, to conserve and manage PGRFA; Building capacities and skills of national institutions, farmer community and private sector in participatory breeding methodologies, and provide them with a pool of genetic material for further improvement.

Direct beneficiaries will be: Farmer communities, specifically those living in areas which are threatened by climate change and with underdeveloped agriculture. About 3000 farmers is expected to benefit; Specialists of agriculture who are engaged in crop production in targeted areas(about 150 of them will benefit); Genebank staff of Albania, (about 10 of them will benefit); Agricultural Technology Transfer Centres (ATTC) which are the only state institutions operating in agricultural sector in Albania.(about 20 of them will be engaged and will profit); Professors and students of Crop Production Department of Agricultural University of Tirana, Albania. About 10 lecturers and 100 students will be involved and will benefit from the project.

Indirect beneficiaries will be: About 100 households with an average of 5 person/ household, totalizing around 500 farmers; About 100 small and medium seed traders, which are interested to buy qualitative locally adapted crop seeds, and to sell them to the other groups of interest. The geographic extension of the project will be about 10,000 km², in 12 main districts and 120 villages of Albania.

SECTION B: PROJECT DESCRIPTION AND CONTENTS

2.1. Problem definition

Agriculture remains one of the most important sectors of the Albanian economy and about 50 % of the population is living in rural areas and deal mainly with agriculture. Small-scale farmers constitute about 60 % of farming community and are considered survival farms which produce only for themselves.

As a result of low-income levels, the poverty persists in Albania, particularly in rural mountain areas. About 15 % of rural population live below national poverty line. After about fifty years of isolation from neighbouring countries, the agricultural land reform, implemented in the nineties, produced a fragmentation of the rural sector into thousands of small family farms, which still dominates the agricultural scene.

Agricultural productivity continues to be very low due among other factors, to climate change, (drought, floods) biodiversity loss etc. But on the other hand, the isolation period of Albania, and the small-scale farming systems have contributed to the conservation and development of a large diversity of highly adapted local varieties selected and maintained by farmers.

However, in recent times, the constant abandonment of rural farming combined with the progressive introduction from abroad of commercial varieties, expansion of land use for social development, difficult situations created in the last twenty years by floods and drought, especially in the northern areas of the country, represent unprecedented threats to the local crop diversity of traditional farming systems and major causes of genetic erosion.

According to estimates made by local experts, the major damages were caused in cereals (wheat, maize), in beans, fruit trees and fodder (alfalfa), threatening seriously food security and reducing considerably the income and standard of living of farm families.

Climate changes, especially drought and flooding have seriously damaged production and income of farmers, threatening seriously food security in targeted area.

According to a World Bank Study (*Looking Beyond the Horizon . How Climate Change and Adaption Responses will shape Agriculture in EE and CA.....<http://dx.doi.org/10>*), climate change in Albania during 3-4 coming decades will have a major negative effect on agriculture, due to increased temperature and changes in precipitation regime.

Genetic erosion and lack of plant varieties resistant to drought, pests and diseases, has resulted in reduction of productivity and have direct impact on reducing the standard of living for farm families.

In this context, on-farm conservation of local varieties is a good option for farmers to face these challenges and for that reason the role of plant genetic resources is considered very important.

Conservation and management of local varieties of maize, wheat, bean, alfalfa and some fruit trees, which are resistant to drought, diseases, pests, as well as to weather difficult situations (flood), will create opportunities for Albanian farmers to guarantee their production, food security and increased income for their families.

2.2. Project objectives: Overall and specific objectives

The overall objective of the Project is:

To contribute to food security and improved livelihood of farming communities through on farm conservation of locally adapted varieties, helping farmers to face effects of climate change on crop production.

Specific objectives

- Strengthening of on farm conservation and management of PGR for food and agriculture through appropriate actions at the farm and community levels.
- Enhance food security by assisting Albanian farmers to adapt to climate change through the sustainable management and conservation of five target crops: maize, wheat, bean, alfalfa and apple.
- Development of seed production and dissemination systems of locally adapted varieties in the country.
- Sharing of genetic material, information and technologies between local communities and public and private institutions in the country.
- Development of strategies and national programs for the diversification of agriculture and food security systems through the use of locally adapted crops.
- Strengthening of national and local institution capacities for a better conserve, manage, improve and disseminate plant genetic resources for food and agriculture, to respond to the effects of climate change.
- Improving livelihoods of the resource –poor farmers and farming communities in Albania.

2.3. Targeted outputs, activities and related methodology of implementation

Output 1: Enhance of food security of resource –poor farmers by development on farm conservation systems and sustainable use of PGRFA.

Activities

1.1.Planting of local crop varieties of wheat, maize, bean, alfalfa and apple on farm.

About 60 farms will be selected for demonstrations of *on farm* conservation of locally adapted crops of wheat, maize, bean, alfalfa and apple. One workshop with selected farmers and specialists will be organized to explain them the techniques of planting. The activity will be conducted by project consultants in collaboration with farmers and local specialists. The demonstration plots will have an average size about 150-200 m². This activity will be done during the second year of the Project (March-May 2016).

1.2.Characterization and evaluation of cultivated local crops.

The source of the planting material for on farm conservation will be the populations collected during collecting missions (about 500 accessions), the genetic material stored in national Genebank and active collections of 5 Agricultural Technology Transfere Centres of Albania. (about 100 samples). Characterization and evaluation will be done according to internationally approved descriptors for wheat, maize, bean, alfalfa and apple. One workshop and some field days will be organized, with involved farms and specialists to explain them the practical procedures of characterization and evaluation. This activities will be led by project experts and local agricultural specialists (farmers involved) and will be done during the second year of the Project (May- September 2016).

1.3.Identify drought-resistant, diseases and pest resistant local varieties of targeted species.

During the on farm cultivation process, 3 project experts, about 200 farmers and 150 local specialists will be involved in the process of evaluation and identification of crop

populations which demonstrated drought resistance, diseases and pest resistance. This will be realised through workshops and field demonstrations. The evaluation will be done on field and will be associated with many laboratory analysis. At the end of the evaluation process, 15 high productivity populations of wheat, maize, bean and alfa alfa will be developed. In addition, 2 high nutritional bean populations and 5 apple local cultivars, will be selected. The process of on farm identification will be carried out in the second year of project implementation (June-October 2016)

1.4.Promote on farm conservation of local crops at local community level.

During the on farm demonstration many activities will be done to promote this activity to farmers, agricultural specialists, researchers and students. This will be done through field days which will be organized on 60 selected farms distributed in 12 districts and 120 villages. About 60 field days will be organized in which 2000 farmers, 150 local specialists, 10 lectures and 100 students will participate. In order to promote and extend the information, the local media will be used, as well as many divulgative material for on farm conservation will be distributed (leaflets, booklets, etc.). This activity will be carried out in the second year of project implementation (June-October 2016).

Output 2: Locally adapted varieties of wheat, maize, bean, alfalfa and apple successfully conserved and used.

Activities:

2.1.Inventory and identification of local crop varieties of wheat, maize, bean, alfalfa and apple, in 12 districts, where the project will be implemented

The targeted districts are: Malesia e madhe, Puka, Tropoja, Hasi, Kukesi, Dibra, Burreli, Lezha, Korca, Devolli, Erseka, and Pogradeci. A full inventory of targeted crops will be done in the areas which are vulnerable to climate change. This inventory will be done by experts who are specialised in collecting plant genetic resources. Farmers of the targeted areas will be involved. The inventory and identification will be done during the first year of the project implementation.(June-October 2015)

2.2.Select the sites and plan the survey and collection missions.

The collecting missions will be carried out in 120 villages which are located in 12 districts of Albania(as mentioned above). This activity will be carried out by project experts during the first year of Project Implementation (June –July 2015)

2.3.Surveying and characterization of targeted crops in targeted area of the project.

For surveying and characterization, about 12 collecting missions will be undertaken. At least 2000 Farmers and 150 local specialists on the targeted villages, will take part in this process of on farm characterization and evaluation of targeted crops. This activity will be carried out by project experts during the first year of Project Implementation (June – October 2015).

2.4.Collection of germplasm in 12 districts of the country.

Collection will be done in 120 villages and about 500 accessions (samples) of targeted crops will be identified and collected. The target of collection will be those populations which are resistant to drought, diseases and pests. The collection methodology will be based in technical guidelines published by FAO for collection of PGRFA. This activity will be done through 12 collecting missions. Before starting the collection one workshop will be organized to explain the procedures and guidelines of the collection. Participants of the workshop will be farmers and specialists who will be involved in the collecting activities. The collecting of the germplasm for locally adapted crops will be led by project experts and project consultants and will be carried out during the first year of the Project Implementation (June – October 2015)

2.5.Secure collected germplasm in ex situ facilities.

The material identified, characterized and collected will be secured in ex situ facilities, about 50 % in national genebank of Albania and 50 % in active collections of Agricultural University and Technology Transfer Centres under the Ministry of Agriculture. This material together with existing material in genebank, will be used for further characterization, on farm conservation and seed multiplication which will be used by farmers in targeted areas. The new identified genetic material, will be used by at least 3000 farms. This activity will be led by experts of the project, genebank staff and will be carried out during the first year of Project Implementation (September- November 2015)

Output 3: Establish and strengthen local seed system through on farm conservation of plant genetic resources for food and agriculture.

Activities

3.1 Multiplication of selected locally adapted accessions of maize, wheat, bean, alfalfa and apple.

The genetic material identified, characterized, and evaluated for drought diseases and pest resistance will be planted for multiplication, at about 200 farms distributed in 12 districts of target project area. The land cultivated for multiplication will vary from 300-1000 m², depending from the crop. The multiplication of locally adopted crops will be done under supervision of project consultants and experts and about 1000 farmers, 150 local specialists, 10 lecturers and 100 students from Faculty of Agriculture, and 20 experts from the Agricultural Technology Transfer Centres will be involved. Before starting with planting, one workshop and two field days with people involved, will be organized, in order to explain the technologies of crop cultivation and seed production. This activities will be carried out during third year of project implementation (March- October 2017)

3.2 Distribution of locally adapted planting material to the farmers' community.

The planting material selected for its drought, flood, disease and pest, resistance, after multiplication in 200 farms as mentioned above, will be distributed to resource - poor farmers and farming communities who lives in these areas.

The quantity of multiplied planting material will be : 10,000 kg of wheat, 3000 kg of maize, 2000 kg of bean, 250 kg of alfalfa, and 2000 apple seedlings. The new identified and multiplaid genetic material, will be distributed to at least 3000 farms. This activity will be led by experts of the project, local agricultural experts, private companies and will be carried out during third year of project implementation (July- November 2017)

Output 4: Increased capacities, of resource-poor farmers in targeted areas, national Genebank and Department of Crop Production, to face climate changes through conservation and management of PGRFA.

Activities

4.1 Awareness raising on-farm conservation and effect of climate change to productivity of crops.

In order to increase the awareness to on-farm conservation and effect of climate change, some trainings (two in total) with farmers and specialists will be organized. The trainings will be led by consultants of the project through 30 presentations, with participation of 100 selected farmers, 10 lecturers and 10 students of Agricultural University of Tirana, 10 Genebank staff, 20 specialists of the Ministry of Agriculture. During the training activities many leaflets and

booklets will be distributed. This activity will be done by lecturers of Agricultural University, project experts and will be carried out during second year of project implementation (January- June 2016).

4.2 Technology transfer techniques related to on farm conservation and use of PGR for food security.

Two workshops on technology transfer of techniques related to the on farm conservation and use of PGRFA, will be organized. These workshops aim at providing opportunities for exchange of experiences on technology transfer among all stakeholders. There will be around 10 presentations from consultants and experts of the project. All stakeholder will be actively involved in the workshops. Participants of the training will be about 200 selected farmers, 10 lecturers and 10 students of agricultural university of Tirana, 10 Genebank staff, 20 specialists of the Ministry of Agriculture and 20 interested people from private sector. This activity will be carried out during second year of project implementation (June-December 2016).

4.3 Strengthening technical knowledges on PGRFA collection and on farm conservation through the use.

Under the responsibility of project experts a 4-days course/training will be organized in two main districts Lezha and Korca, under the responsibility of project consultants and experts. These courses will have two components a theoretical one with 10 presentations and a practical one organized direct on the field. The course will be based on parameters how to identify, collect and conserve through the use of targeted local crop varieties.

Participants of the training will be about 50 selected farmers, 5 lecturers and 10 students of Agricultural University of Tirana, 5 Genebank staff, 15 specialists of the Ministry of Agriculture and 5 interested people from private sector. This activity will be carried out during the first year of Project Implementation (September- November 2015).

Output 5: Building capacities and skills of national institutions, farmer community and private sector in participatory breeding methodologies, and provide them with a pool of genetic material for further improvement.

Activities

5.1. Conventional and modern breeding strategies and methods including issues related to the collection and use of locally adapted varieties.

Two workshops on methods of plant breeding will be organized. 5 presentations from project experts and consultants (plant breeders) will be held. The presentations will be focused on breeding strategies and methods related to collection and use of locally adapted varieties. Participants will be about 30 farmers interested in plant breeding, 5 researchers, 10 students and 10 experts of the Ministry of Agriculture as well as 10 participants from private sector. This activity will be carried out during third year of project implementation (July- November 2017).

5.2. Treatment and handling of the locally adapted genetic material to be used for further improvement and breeding.

One workshop led by project consultants will be organized with interested people (farmers, researchers and agricultural experts) on methods of handling the genetic material for further improvement and breeding. Some study tours and visits of farmer communities and agricultural experts to genebanks and other national or international plant genetic resources centres will be organized. A three

days visit will be organized inside the country to national Genebank and Agricultural Technology Transfer Centres of Albania, and a three days study tour to a neighbouring country. In these activities will take part 10 farmers, 10 plant breeders, 10 specialists, and 5 experts from private sector. A two weeks training on plant breeding methods to be used in conservation and use of PGRFA, for two researchers, will be organized abroad. These activities will be carried out during third year of project implementation (July- November 2017).

2.4. Targeted PGRFA

The types of the genetic material to be used in the project includes:

- Populations of local varieties of targeted crops: wheat, maize, bean, alfalfa, and apple, which will be collected from collecting missions in 12 districts and 120 villages in Albania. (500 samples)
- The genetic material of targeted crops which is actually preserved in Albanian genebank. (about 100 samples will be used)
- The genetic material of targeted crops which is preserved in active collections of Agricultural Technology Transfer Centres of the Ministry of Agriculture.
- Prebreeding materials created by the Department of Crop Production in the Agricultural University of Tirana. (10 wheat lines)
- The genetic material will be selected on bases on drought resistant, diseases and pest resistant, adaptation to climate change.
- The genetic material resulting from the project about 500 accessions of wheat, maize, bean, medicago, and apple, collected, and conserved in national genebank and in research institutions and about 100 genebank samples, will be characterized and evaluated. About 15 new populations/varieties of wheat, maize, alfalfa, will be identified as drought and diseases resistant. In addition 2 high nutritional value bean populations and 2000 apple seedlings will be selected and used.
- These new genetic material will be available to the other users through multilateral system, including them in national Genebank of Albania.
- All the above mentioned genetic material resulting from the project will be associated with passport data and will be accessible through EURISCO catalogue.

2.5. Target groups and beneficiaries

There are two categories of beneficiaries that will benefit from project activities:

Direct beneficiaries

- Farmers' communities, specifically those living in areas which are threatened by climate change and with underdeveloped agriculture (about 3000 farmers in total)
- Specialists of agriculture who are engaged in crop production in targeted areas (150 specialists in total).
- Genebank staff of Albania. (about 10 people)
- Agricultural Technology Transfer Centres (ATTC) which are the only state institutions operating in agricultural sector in Albania (about 20 people in total).
- Professors and students of Crop Production Department of Agricultural University of Tirana, Albania (about 10 lecturers and 100 students).

Indirect beneficiaries

- About 100 households with an average of 5 person/ household, totalizing around 500 farmers.
- About 100 small and medium seed traders, which are interested to buy qualitative locally adapted crop seeds, and to sell them to the other groups of interest.

2.6. Impact and impact pathways

The project implementation will have a great impact in many aspects such as food security, adaption to climate change, scientific impact and capacity development. The changes that will occur by the end of the project will be as following:

2.6.1. Food security and poverty alleviation

The selection of new locally adapted populations of wheat, maize, bean, alfalfa and apple will contribute considerably to increase the food security capacities as well as the level of production for targeted crops. Introduction of about 15 new crop populations/varieties with high nutritional value will have direct impact to increased income for farmers and improved livelihood in targeted area.

The project staff will work in close collaboration with all stakeholders to disseminate the results of the project to target communities. This will be done by active participation of farmers, specialists, Genbank staff, researchers and private companies, through direct participation in evaluation and on farm conservation practices, seminars, workshops, trainings and field days, which will be organized in the context of the project. At the end of the project it is expected that food security dimension will change as following:

- The availability of food in targeted area will be increased at about 30 %. This will be arrived through development of new forms/ populations/ varieties of crops which are much more productive than the existing crops.
- The availability of high yield/ resistant crops will be increased about 50 %. Collection, characterization and evaluation of genetic material of targeted crops will give farmers possibility to have high resistant crops for on farm cultivation in their farms.
- The availability of improved–high quality seed will be increased about 50 %. Development of seed selection and production systems, will create a good base for farmers to use high quality seeds in their farms.
- The availability of varieties with high nutritional value will be increased 70 %. The main product of evaluation, selection and breeding process, will be the creation of new forms/ population/ varieties of targeted crops which have high nutritional values.
- Crop diversification practices will be improved at about 60 %. Through field demonstrations, seminars, trainings and workshops, the farmers and specialists will know better the practices of crop diversification, which have direct positive impact to crop productivity and food security.
- The market value of marketed crops will be increased 80 %. Targeted locally adopted crops which will be selected will have a better market value, and the consumers demand will be increased.
- The income level of farm families involved in the project, will be increased 50%. Farmers will be the most important beneficiaries of the project. Using drought resistant, diseases and pest resistant locally adopted crops, they will be able to increase the productivity of crops and the level of income for their families.

2.6.2. Adaptation to climate change and environmental sustainability

The selected crops and practices of on farm cultivation will have a great positive impact, to give farmers possibility to face climate changes in agriculture. At the end of the project it is expected that adaptation to climate change and environmental sustainability will change as following:

- The availability of resilience and adaption through better management of high-resistant genetic material of wheat, maize, bean, alfalfa and apple will be increased at least 50 %. Farmers will be the direct beneficiaries as they will have at their disposal a high-resistant genetic material.
- The protection and sustainable management of natural resources for targeted farm families, will create much more security for farmers to use local crops which are resistant to climate change. Sustainable management of these resources will be improved at least 70 %.
- The forecasting, monitoring and information systems related to climate change and PGRFA will be considerably improved. This will be done through a better collaboration and coordination between state and private institutions which are interested in management of natural resources.
- In the context of the project, it is expected that availability of vulnerability assessments will be increased at least 50 %. Collaboration with all partners of the project, exchange of information, collection of the new information on climate change and effects expected in agriculture, will enable for all partners, to increase considerably the availability of vulnerability assessments.

2.6.3. Scientific impact

In the implementation of the project will participate about 10 lecturers and 100 students from Agricultural University of Tirana, 10 researchers from national Gene bank, 20 researchers from Agricultural Technology Transfer Centres and 10 experts from private companies. At the end of the project it is expected that scientific impact will change as following:

- Information exchange and technology transfer knowledges will be increased at least at 80 %, compared to the existing situation. This will be realised through trainings, workshops and direct communication during field days, demonstrations and other activities.
- Novel and relevant scientific findings related to PGRFA will be available and disseminated widely. This indicator will be improved at about 70 %. About 15 new population/varieties of the targeted crops will be indentified and used.
- The range of available technological options for adaption to climate change will be considerably improved. Farmers and agricultural experts will be the direct beneficiaries of these new technological options, which will be spreaded through plot demonstrations direct on field, and through on farm conservation.
- The coo-development and transfer of technologies for conservation and sustainable use of PGRFA will be increased at 100 % compared to the existing situation. This will be realised through plot demonstrations, field days, lectures, publications etc.
- Scientific capacities for management of PGRFA in Department of Crop Production, national Genebank and Agricultural Research Institutions, through direct participation in the project will be improved 50 %. This will be done through direct participation in selection and evaluation process of new locally adapted varieties.
- Scientific capacities of all above mention institutions to enable adaption to climate change will be increased. This will be realised through capacity building training and wokshops, publications, public lectures etc.
- Availability of new scientific data related to PGRFA as well as improvement of access to information and data systems related to PGRFA will be increased at 70 % compared to the existing situation. This will be spreaded through webside, on line data base and new publications.

2.6.4. Capacity development and empowerment

- Number of people empowered and equipped with skills, knowledges and capacity related to PGRFA will be increased. Direct beneficiaries of increased skills and knowledges related to PGRFA will be farmers, agricultural experts, researchers, students of Agricultural University, genebank staff, and experts working in Agricultural Technology Transfer Centres. They will take part actively in field activities (collecting, evaluation, selection, on farm conservation, field demonstrations) as well as in trainings, workshops, lectures, publications, media etc.
- Institutional capacity and development for collection, management and sustainable use of PGRFA in Department of Crop production, national Gene bank and Agricultural Research Institutions will be increased through direct participation in related project activities such as trainings, workshops, publications, websites, lectures, local and central media, on-line databases etc.
- Capacities of resource –poor farmers to develop new varieties/ populations resistant to climate change effects, and relevant technologies for climate change adaption and food security will be increased. Farmers will be directly involved in the characterization and evaluation of the new genetic material which will be planted on farm. The farmers will be actively involved in the process of selection of new forms, populations and varieties of crops, which will be used to produce high-quality seeds. They will take part in field days which will be organized to demonstrate the results and outputs of project activities.
- The capacities of local and national institutions to conserve, manage improve and disseminate plant genetic resources will be increased. The beneficiaries will be the scientific staff working in Department of Crop Production, National Gene bank staff, and experts working in Agricultural Research Institutions. These capacities will be increased through direct participation in activities : collecting missions, germplasm characterization and evaluation, ex situ conservation in genebank, on farm conservation practices and technologies, high-quality seed production and distribution.

2.7. Relevance to national or regional priorities in its plans and programmes for PGRFA

The project will be in full compliance with national strategies and programs that deal with biodiversity conservation, management of natural resources, sustainable rural development and improvement of living in rural areas of the country.

Albanian government recently approved the Strategy for Agriculture Development for the period 2014-2020, and an important chapter of this document is biodiversity conservation. In this context, this project will directly serve this purpose in conservation and management of plant genetic resources as an important part of agricultural biodiversity. Project will also be in full compliance with the strategies and programs designed to strengthen food security in the country, during seven coming years. The project will take into consideration the results and impact of other projects financed by UNDP, FAO, World Bank and other foreign Agencies working in Albania.

Referring to reports and analysis carried out by foreign institutions and agencies, climate changes in Albania during forty coming years will have a major negative effect on agriculture, due to increased temperature and changes in precipitation regime. (*Looking Beyond the Horizon . How Climate Change and Adaption Responses will shape Agriculture in EE and CA.....<http://dx.doi.org/10>*), In this context the project activities will respond to these negative effects which are foreseen in these documents.

SECTION C: OPERATIONS

3.1. Methodology of project implementation

Four key factors defines the proposed approach of this project:

- It targets the global, national and local levels through interlinked activities.
- It is based on participatory approach through.
- It builds directly on previous/ongoing interventions and established partnerships.
- It has a strong capacity building component.

Referring to the main activities to be carried out, the methodology of project implementation for each of them will be as following:

a) *Collecting missions for targeted crops in unexplored project area of Albania.*

The collection methodology will be based in technical guidelines published by FAO for collection of PGRFA. Collection will be done in all villages of the project area and many accessions (samples) of targeted crops will be identified and collected. The target of collection will be those populations which are resistant to drought, diseases and pests.

The collection will be done by experts of the project together with some selected local farmers, Genebank staff and agricultural experts of the region. The collecting of the germplasm for locally adapted crops will be carried out during the first year of the Project Implementation (June – October 2015)

b) *Exploitation of the material (accessions) actually collected in Genebank of Albania.*

In Albanian gene bank there are about 2800 accessions of different crops. From these existing material, about 100 accessions of wheat, maize, bean and alfalfa will be selected, characterized and evaluated for drought resistance, diseases and pest resistance, as well as productivity and nutritional values.

The description and evaluation of the genetic material will be done according to crop descriptor list of *Bioversity International*. The samples which represent the best of above mentioned features, will be selected to continue with improvement, multiplication and distribution as high-quality seed for farmers of the region. This activity will be done by consultants of the project, specialists of the Agricultural University, local agricultural experts in close collaboration of targeted farmers. This activity will be carried out during the first year of the Project Implementation (June – October 2015)

c) *On-Farm cultivation of collected material and field demonstration with all stakeholders.*

The selected genetic material of locally adapted crops of wheat, maize, bean, alfalfa and apple will be planted on farm to demonstrate the technology of cultivation and the advantages of these locally adopted populations/varieties. During the on farm demonstration many activities will be done to promote this activity to farmers, agricultural specialists, researchers, students and private companies.

This will be done through field days which will be organized on selected farms distributed in many villages. Some field days will be organized and farmers, local specialists, lectures, experts and students will participate. In order to promote and extend the information, the local media will be used as well as many divulgative material for on farm conservation will be distributed (leaflets, booklets, etc.). The

activity will be led by field project experts. This activity will be carried out in the second year of project implementation (June-October 2016).

- d) *Multiplication of selected locally adapted accessions of maize, wheat, bean, alfalfa and apple, in different ecological zones and distribution of planting material to the farmers' community.*

The genetic material identified, characterized, and evaluated for drought, diseases and pest resistance will be planted for multiplication, at some selected farms, distributed in the project area. The multiplication of the material will be done according to the manuals and technologies suggested by professors of Agricultural University of Tirana, who will be part of this activity.

The multiplication of locally adapted crops will be done under supervision of project consultants with active participation of farmers, local specialists, students from Faculty of Agriculture, and experts from the Agricultural Technology Transfer centres.

The new planting material selected for its drought, flood, disease and pest, resistance, after multiplication in targeted farms as mentioned above, will be distributed to resource - poor farmers and farming communities who live in the project area. This activity will be carried out during third year of project implementation (July-November 2017)

- e) *Strengthening technical knowledges on genetic material and technology transfer techniques related to on farm conservation and use of PGRFA for food security.*

Technology transfer of techniques related to the on farm conservation and use of PGRFA, will be organized through trainings and workshops. Many presentations will be held by consultants and experts of the project. The base material for presentation will be guidelines of *Bioversity International* and experiences of Albanian institutions in ex-situ and on-farm conservation of PGRFA.

All stakeholders will be actively involved in the workshops and trainings . Participants of the training will be: selected farmers, lecturers and students of Agricultural University of Tirana, Genbank staff , specialists of the Ministry of Agriculture and interested people from private sector. This activity will be carried out during second year of project implementation (June-December 2016).

- f) *Conventional and modern breeding methods, including issues related to the collection and use of locally adapted varieties, and handling of the genetic material to be used for further improvement and breeding.*

These methods will be explained through workshops and field activities on experimental fields of Agricultural University of Tirana and Agricultural Technology Transfer Centres. During the workshops some presentations from plant breeders will be held. The presentations will be focused on breeding strategies and methods related to collection and use of locally adapted varieties.

These lectures will be combined with field visits to experimental areas of above mentioned institutions which work with plant breeding. Some study tours and visits of farmer communities and agricultural experts to genbanks and other national or international plant genetic resources centres will be organized.

Participants will be some selected farmers interested in plant breeding, researchers and students of Agricultural University, experts of the Ministry of Agriculture as well as participants from private sector. This activity will be carried out during third year of project implementation (July- November 2017).

3.2. Partnerships and collaboration arrangements

The project will be implemented in partnership and strong collaboration with:

- **Ministry of Agriculture, Rural Development and Water Administration.** The Ministry has about 150 experts employed in Agricultural Technology Transfer Centres which are directly responsible for agricultural research and management of active collection and field collection of Plant Genetic Resources in Albania. About 30 % of this staff is very qualified and has a long experience dealing with management of collections as well as with plant breeding. A part of this staff will be involved in project activities such as collection missions, lectures in trainings and workshops, field days etc.
- **National Genebank of Albania.** This is a public institution and has about 2800 accessions under *ex situ* conservation. A part of these genetic material will be selected to be regenerated, characterized, and identified, and then to be used by farmers as planting material, on farm conservation. In addition, the genebank staff is very qualified, especially for collecting, characterization and evaluation of the locally adopted genetic materials.
- **Agricultural University of Tirana.** This is the only public agricultural university, which is responsible for fundamental agricultural research in Albania. Department of Crop Production belongs to this university and is responsible for plant breeding teaching. The department has two laboratories, one for biotechnology and the other for plant breeding and seed production. The lecturers of the department have a very high qualification on Plant breeding and management of Plant Genetic Resources for Food and Agriculture. The professors and students of the Department, will be involved in collecting missions, on farm conservation techniques, technology transfer to the farmers, lectures in workshops and trainings etc.
- **Private companies** which deal with seed production and distribution. In Albania there are about 25 seed production and distribution private companies which deal with production and import of seeds. Some of them are interested in locally adopted crop varieties and could be engaged in the project mainly for seed distribution.
- **NGO which are operating in rural development.** There are many NGO in Albania operating in rural development area. Some of them have very good experiences with projects implemented in remote areas, poor community farmers, climate change issues etc. These NGO could be involved in the project contributing with their experiences on practices, methodologies, actions and interventions needed to face with negative effect of climate changes in agricultural sector.

3.3. Project management team

The project management team will be responsible for the coordination, management, implementation and monitoring of activities under the authority of the project coordinator.

The project management team comprises:

- *Project coordinator.* This duty will be carried out by Prof. Dr. Ndoc Faslia. He has a long experience as lecturer at Department of Crop Production and has followed a qualification for collection, characterization and use of Plant Genetic Resources at Institut of Plant Genetics and Plant Breeding in Gatersleben Germany. He has a long experience with management of projects implemented in agricultural sector and supported by UNDP, FAO, World Bank, European Union. etc. He will be responsible for coordination of all project activities.

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- *Project consultant on PRGFA.* This duty will be carried out by MSc. Agim Pepkolaj. He will coordinate all the activities related to collecting missions, characterization and evaluation of genetic material for targeted crops. He has a master degree for collecting, conservation and use of PGRFA.
- *Project consultant on Plant breeding.* This duty will be carried out by Prof Dr. Sokrat Jani. He will be responsible for guidance and monitoring of the activities related with selection, evaluation and multiplication of the planting material to be distributed to the farmers. He will be actively involved in trainings and workshops and will present lectures on plant breeding methodologies. He has a long experience as plant breeder in Albanian agricultural research institutes.
- *Project crop expert.* This will be done by Prof. Ass. Dr. Alban Ibraliu. He will lead all the activities related with collecting missions, characterization and evaluation of wheat, maize, bean and alfalfa. He will be responsible for organization of field days and demonstration activities. He has Ph.D. degree in plant breeding and plant genetics.
- *Project crop expert.* This will be done by Prof. Dr. Lush Susaj. He will lead the activities related with collecting, characterization and evaluation of apple. He will take part actively in trainings and workshops. He has a Ph.D. degree in fruit tree breeding.
- *Project expert for on farm and ex - situ conservation techniques.* This will be done by Prof. Dr. Belul Gixhari. He will be responsible for technologies applied on farm conservation and the genetic material which will be conserved in ex situ form in Genebank. He will take part actively in all workshops and trainings and will prepare lectures on *on farm* conservation for farmers, specialists and other participants. He has a long experience dealing with conservation and management of plant genetic resources

3.4. Sustainability

The project will ensure sustainability of its outputs, by strengthening the capacities of national partners such as Ministry of Agriculture, Agricultural Technology Transfer Centres, Agricultural University of Tirana, national Genebank of Albania, farmer Community Organizations, private companies operating in agricultural sector etc.

Development of resistant new varieties and selected seeds to be used by farmers, will create a good base for farmers to use effectively these resources after the project termination.

The Government of Albania is developing medium term Program for Development of Mountainous Area, planning to use effectively all natural resources of those regions and to alleviate the poverty for family farms.

This project by providing new locally adapted crops, new technologies and practices for on farm conservation, trainings and workshops, publishing local information etc, is expected to stimulate the Government to carry out the elements of the Development Programme mentioned above.