

UNITED NATIONS DEVELOPMENT PROGRAMME
Project of the Palestinian Authority

Project Title:	Conservation and Sustainable Use of Dryland Agro-biodiversity of the Palestinian Authority
Project number:	PAL/97/G34/A/1G/99
Duration:	5 years
Project Site:	Palestinian Authority: Hebron; Jenin
ACC/UNDP Sector & subsector:	0430 – Biological Resources
Authority Implementing Agency:	Ministry of Agriculture (MOA)
Executing Agency:	UNDP/PAPP
Co-operating Agencies:	ICARDA, ACSAD, IPGRI (Regional Component)
Estimated Starting Date:	September 1998
Palestinian Authority Inputs (in kind):	US\$ 646,800
GEF/UNDP Inputs:	US\$ 2,000,000

Brief Description:

The project will promote the conservation and preservation of important wild relatives and landraces agricultural species in the Palestinian Authority by introducing and testing *in-situ* and on-farm mechanism and techniques to conserve and sustainably use agro-biodiversity, through five components; (1) to conduct eco-geographic surveys of crop target species; (2) to promote alternative landuse practices at project sites to conserve and sustainably use agro-biodiversity; (3) increase national capacity to provide training in *in-situ* and on-farm conservation techniques; (4) to modify existing legislation and land use rights where necessary and in the national interest to promote the conservation and sustainable use of agro-biodiversity; and (5) monitor the impacts of project activities for lessons learned and adaptive project management. This nationally-executed project component will be co-ordinated and integrated by ICARDA into the regional component covering Syria, Jordan, the Palestinian Authority and Lebanon. In addition ICARDA and the co-operating agencies, IPGRI and ACSAD, will provide training and technical assistance for the introduction and testing of *in-situ* and on-farm mechanisms and techniques to conserve and sustainably use agro-biodiversity.

On behalf of:	Signature	Date	Name/title (please type)
Executing Agency (UNDP/PAPP)	_____	_____	_____

United Nations official exchange rate at date of last signature of project document: US\$ 1.00 =

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A. CONTEXT

1. Description of subsector

Global Significance of Agro-biodiversity of the Near East

The Near East is an area of megadiversity of important food crop and pasture species. It is one of the few nuclear centres where numerous species (notably wheat, barley, lentil, pea and vetch) of temperate-zone agriculture originated 10,000 years ago, and where their wild relatives and landraces of enormous genetic diversity are still found. Many fruit trees such as almond, olive and pistachio have also originated from this region and have dominated its traditional agricultural systems (Harlan, 1975). They are present as a diverse range of wild relatives and local varieties. Cultivated olive, for example, exists as fifty different clones in the region; while almond, one of the most widely cultivated fruit trees in the Mediterranean, exist as more than fifteen local clones with distinct variations in fruit size, inflorescence, hairiness and flower colour.

The Levantine Uplands which comprise Lebanon, western Syria, small parts of Jordan and the northern Palestinian Authority, and the associated Mediterranean coasts and valleys, are considered one of the major centre of plant diversity and endemism in the world, and especially in southwest Asia and the Middle East. Seven genera of vascular plants are endemic to this region. Moreover, drylands are most outstanding for their within-species genetic diversity. Indigenous crops and food plants of the Near East region are known for their resistance to disease and abiotic stresses, making them a valuable source of genetic material for germplasm enhancement upon which global food security depends. **The present project is concerned with agricultural biodiversity, referring to biological resources of actual or potential agricultural value, and the diversity of these species within agroecosystems. Given that dry lands of the Near East represent the resource base for productive agriculture and given developing countries' food security priorities, the project is concerned with the conservation and sustainable use of biodiversity within agricultural systems.**

Wheat and barley, originated from the Near East, have become two major staple crops upon which a large proportion, about one third, of the world's population depends. Wheat currently occupies 16% of the world's arable land. World production of wheat averaged 550 million MT between 1992-1994, approximately 30% of the global production of all cereals, exceeding that of both rice and maize. The production of barley, averaged at 165 million metric tons from over 70 million hectares of land, contributes to 20% of the global production of coarse grains. In many of the least developed countries, barley is the primary human staple although in developed countries, it is used mainly as animal feed and for brewing.

The best example of economic value derived from genetic pasture species, whose source includes the countries/authority in and around the Near East, is the Australian ley farming system, developed since the 1930s, using medics and clovers introduced into rotation with cereals (Puckridge and French 1983). This agro-biodiversity brought to Australia is worth hundreds of millions of dollars, in terms of meat, milk, wool, added nitrogen fertility and cereal yield sustainability. Similar annual legume exploitation has contributed or could contribute to successful pastures in Argentina, California, Oregon, Chile, North Africa, the Near East, Portugal, South Africa, Turkey, Uruguay and the European countries/authority on the northern rim of the Mediterranean Basin.

2. Host Country Strategy

The proposed regional project encompasses Jordan, Lebanon, the Palestinian Authority and Syria. Although the Palestinian Authority has not signed or ratified the CBD, it is the intention to do so as soon as is practical.

The Palestinian Authority (PA) has established a National Biodiversity Steering Committee chaired by the Palestinian Environmental Authority (PEnA). The PA is currently conducting a Biodiversity Strategy and Action plan, supported by GEF/UNDP, which will document the status of flora and fauna in each country, identify endangered species and priorities for conservation, propose measures for the conservation and sustainable use of biodiversity, and assess the costs and benefits of conservation. The reports from this study will provide significant guidance to official policies as well as the planning and implementation of subsequent projects dealing with biodiversity and environment.

The Palestinian Authority has prepared a National Report on Plant Genetic Resources as bases for the Global Plan of Action for the Conservation and Sustainable Utilisation of Plant Genetic Resources for Food and Agriculture (1996). Environmental Profiles have also been prepared for the West Bank and Gaza Strip.

GEF/UNDP assistance for biodiversity conservation has been provided to the Palestinian Authority through two projects: Biodiversity Strategy and Action Plan (BSAP); and Conservation of Wetlands Coastal Ecosystems in the Mediterranean Region. The BSAP will provide a framework for biodiversity intervention, within which project will fit. However, these two projects do not implement activities to address the conservation and sustainable use of agro-biodiversity. The present project focuses on conserving the genetic diversity of ten target crops of global significance within two target areas in the Palestinian Authority (Species addressed by the project are marked in bold in Annex VI).

Environmental laws and legislation are presently being prepared for the Palestinian Authority areas. These laws will protect forestry resources, rangeland reserves and set up protected areas.

3. Prior and ongoing assistance

Major relevant and on-going natural resources projects in the Palestinian Territories are listed in Annex VII. In summary, eight projects in the Palestinian Authority have recently begun, of which the Rehabilitation of Degraded Rangelands in the Eastern Slopes is most complementary to this project.

4. Institutional framework for subsector

The National Biodiversity Steering Committee was established in the Palestinian Authority in October 1997, by a decree signed by the Chairman of the Palestinian Authority. The Committee is chaired by PEnA and members include representatives from:

- The Ministry of Planning and International Cooperation
- The President's Office
- The Palestinian Water Authority
- The Palestinian Geographic Center

- The Ministry of Agriculture
- Birzeit university
- Applied Research Institute of Jerusalem
- Al-Azhar University
- The Ministry of Economic Affairs
- The Ministry of Tourism

The Committee provides supervision of and coordination between all biodiversity-related initiatives in the Palestinian Territories. The Committee's responsibilities focus on;

- a. formulating national law for the conservation and protection of the Palestinian biodiversity;
- b. setting up a national action plan to conserve, improve and sustain plant genetic resources through *in-situ* and *ex-situ* activities;
- c. identifying sensitive and threatened species and habitats in the various ecosystems;
- d. Surveying, evaluating, collecting and conserving genetic material of cultivated species and their wild relatives, landraces and local varieties;
- e. ensuring participatory approaches to involve farmers and stakeholders in all activities of the future plans;
- f. to initiate awareness programs emphasizing the importance of conserving genetic resources; and
- g. cooperating and jointly work with all national and international institutions involved in biodiversity issues.

For this project, a National Project Steering Committee will be formed and will coordinate and consult with the National Biodiversity Steering Committee.

B. PROJECT JUSTIFICATION

1. Problem to be addressed; the present situation

Threats to Global Agro-biodiversity

The major causes of plant genetic erosion or loss of agro-biodiversity have been summarised in the Report on the State of the World's Plant Genetic Resources (1996) as follows:

- a. Replacement of local varieties
- b. Land clearing
- c. Over-exploitation of species
- d. Population pressure
- e. Environmental degradation
- f. Overgrazing
- h. Legislation/Policy
- i. Changing agricultural systems
- j. Pests/weeds/diseases
- k. Civil strife
- l. Reduced fallow

The Palestinian Territories support a population of some 2.8 million. With an average growth rate of over 3.6 %, the population is expected to more than double by 2025, reaching over 6 million.

For a majority of the population in this area, agricultural production is the principal economic activity. In an effort to achieve national food self-security, agricultural land use has been intensified and expanded, leading to degradation of vegetation, soils and water. **Genetic diversity is seriously eroding through the degradation of their natural habitats, intensification and expansion of cultivation and overgrazing in natural rangelands.**

Overgrazing is especially threatening to herbaceous crops such as wheat, barley and lentils, and their wild relatives, as it can wipe out entire populations. For tree crops and their wild relatives, regeneration can be seriously impaired as a result of overgrazing. Many of the major crops important in this region (e.g. wheat, barley, medics, almond) are threatened by overgrazing, habitat fragmentation and settlement expansion.

The result is that now, wild relatives of crop species grow only in marginal land areas such as field borders, shallow soil and remnants of natural vegetation. The type of habitat supporting these precious resources is either patchy or degraded. During the last four decades, forest cover has continued to decrease in the Palestinian Territories. Intensive agricultural practices, such as "de-stoning" fields using heavy machinery prior to planting to facilitate subsequent mechanised harvest and increase production, also lead to serious habitat destruction and fragmentation which are seriously threatening the populations of wild wheat, barley and lentils in the region. Furthermore, wild lands are often ploughed or disturbed as a means of securing property right by use, a tradition supported by law in the Palestinian Territories with traditions originating in the Ottoman era.

Traditionally, farming systems have maintained diversity in order to preserve stability of production under climatic, disease and pest risks. Wild relatives of fruit trees used to be left growing on field borders to supply seeds or root stocks for planting. **The replacement of the traditional farming system by modern agricultural practices are endangering these wild relatives. Food demands and market forces have encouraged the replacement of the locally adapted varieties (landraces and local varieties) of both fruit trees and field crops with higher-yielding cultivars, hence hampering the gene pools of these crops.** For example, the improved cultivar of bread wheat is now occupying 70-80% of the global wheat areas. Over time, genetic diversity has eroded. Agricultural production is now based on fewer and fewer crops and, within crops, on fewer and fewer genotypes. The genetic uniformity of modern cultivars and a tendency towards monoculture make them vulnerable to disease and pest epidemics and weather extremes.

Demands for higher-yielding food crops that must also be adapted to the ever changing weather and biotic stresses, and are disease- and pest-resistant, requires continuous and reliable access to genetic resources that can be used to impart such superior qualities. The loss of traditional agriculture to modern monoculture takes away with it the associated and potentially beneficial insects (pests and predators) and micro-organisms, as well as the invaluable traditional knowledge on the distinct qualities, uses and growth requirements of wild relatives and landraces. Addressing the current loss of agro-biodiversity in developing countries of the Near East is of global importance.

Urgent Need for In-situ and On-farm Conservation

Genetic materials of several agriculturally important species of the Near East, such as wheat, barley, and lentil, have been collected and characterised in terms of the diversity of their responses to environmental factors such as cold, heat and drought stresses, resistance to disease pathogens, insect pests, as well as potential to increasing yield. Though still far from completion, substantial germplasm banks have been created as a means of *ex-situ* conservation. This is

especially important for a number of species with only scattered and small wild populations which are unlikely to be viable, and which can be more effectively conserved through *ex-situ* conservation. ICARDA holds approximately 6500 *Medicago*, 3500 *Trifolium*, 1500 *Lathyrus*, 3000 *Vicia* and 5000 accessions from other annual legume genera, second only to the Australian holdings. However, the richness of many pasture and forage legume species in the Near East are now under threat due to unmanaged overgrazing, especially those species with larger seeds.

Moreover, germplasm banks are only part of the process of maintaining agro-biodiversity. For large and highly varied populations, it is impossible to obtain a representative sample. For example, in 1992, fifty plants of *Triticum dicoccoides* were sampled on a transect of 500 m from one of the wild populations in southern Syria. Gliadin fingerprinting revealed that none of the plants was identical; instead, 50 distinct banding patterns were distinguished. It is increasingly recognised that *ex-situ* conservation has the limitations that only a small proportion of existing genetic resources may be sampled, and, as genetic make-up is not static but evolves in response to environmental changes, collections may only the variation present at one point in time. Naturally occurring and evolving populations must be maintained *in-situ* within their environments; this aspect of conservation has received much less attention than collection and *ex-situ* storage.

Degradation of biodiversity is attributed to the destruction of natural habitats, largely through human activity. However, in developing countries/authority of the Near East, these same habitats represent the resource base for productive agriculture, the livelihood of farmers and pastoralists. Large exclusionary "reserves" to preserve biodiversity, which remove land from productive use and do not take account of local needs, will not be acceptable. In addition, indigenous knowledge about cultivated species and their wild relatives, and traditional agricultural practices and systems of land and water management, is an invaluable resource in the search for new and appropriate ways of conserving and using genetic resources. Landraces which have been developed over the centuries by farmers' selection for desirable traits, are usually genetically more heterogeneous and highly adapted to their specific agro-ecological environment. The conservation of the valuable and highly diverse genetic resources carried by these landraces can only be achieved through on-farm conservation and continuous use of these landraces in traditional farming systems. Conservation of the genetic diversity of many crops such as wheat, barley and lentil, as well as a number of forage and fruit species, therefore requires both *in-situ* and on-farm strategies, the success of which depends a great deal on community-based management.

Furthermore, exclusion by means of protected areas is not necessarily the best means of species or genetic resource conservation. For many species and environments, active management (often involving restoration or creation of niches and habitats within agricultural systems, promotion of traditional land management practices, or reform of social and economic policies) is required to conserve their population and the genetic diversity.

2. Expected end of project situation

The overall, long-term, global objective of the project is to ensure the continuous availability of agro-biodiversity in the Palestinian Territories that is essential to the sustainable development of agriculture in that area, as well as to regional and global food security and production. As a result of the project:

- (a) Information on the distribution and abundance of genetic diversity in the target areas, and the socioeconomic circumstances of communities and land users in the target areas, will be available in national and regional databases, integrated within GIS, for

use in long-term monitoring and impact analysis.

- (b) Wild relatives of agricultural species will be conserved in identified locations through the adoption of community based habitat management and modified or alternative land use practices, including, as and where appropriate, local water-harvesting, soil conservation measures, grazing management and protection of corridors, habitat strips and uncultivated patches.
- (c) Alternative income-earning opportunities based on the above conservation of wild species, and alternative land use practices, will have been identified and adopted by communities, thereby providing sources of income that are compatible with the objectives of conservation and sustainable use of agro-biodiversity;
- (d) Land races of target species will be conserved on-farm through the full participation of farmers in the selection of adapted land races and mixtures with preferred attributes and qualities for desired end uses;
- (e) The cultivated target species will have been integrated into existing or alternative crop rotations that promote the maintenance of soil fertility;
- (f) Field gene-banks of vulnerable fruit tree wild relatives and perennial rangeland species will have been established, providing seed and root stock to communities both within and beyond the target sites;
- (g) Community managed pasture nurseries will have been established on common land, providing seed and rootstock of important and threatened locally adapted project target pasture and forage wild species and/or land races to communities both within and beyond the target sites for use in rehabilitating degraded common lands;
- (h) Both the field gene-banks and the community managed pasture nurseries will provide another source of income to the communities in which they are established, through the sale of seed and root stock;
- (i) National agricultural, environmental and land use policies and legislation, and their implications for agro-biodiversity conservation, will have been analyzed; where necessary, alternative policy and legislative options will have been developed and, where feasible, tested at the project sites; and, where appropriate and in the national interest, these options will have been presented to the appropriate authorities for legislative reform.
- (j) Interventions developed within the project target sites will have been communicated to other communities and land users through organized field visits and demonstrations of the management techniques and uses of field gene-bank, pasture nurseries, water harvesting and soil conservation structures, and the sale and exchange of locally adapted root stocks and seed;
- (k) Public awareness of the importance of biodiversity conservation and environmental degradation will have been increased through public open days, media events, dissemination of information packets and school syllabus material;

- (l) National capacities in the conservation and use of agro-biodiversity will have been strengthened through the graduate and short-term training of national staff provided during the project;
- (m) Regional cooperation and the exchange of experiences in the conservation of agro-biodiversity will have been strengthened through the project;
- (n) Options for extending the project activities to other sites within the countries involved, and to other countries in the region, will have been identified;
- (o) Lessons learned during the project will have been disseminated internationally through publications, a project web-site, and other international media.

3. Target beneficiaries

The target beneficiaries include:

- (a) immediately, the communities within the target sites whose livelihoods depend on the sustainable use of the genetic resources of the target species in agricultural production;
- (b) in the longer term, through extension of the project's experiences, other rural communities whose livelihoods depend on the sustainable use of the genetic resources of the target species in agricultural production;
- (c) national programs of the participating countries/authority, through institution strengthening and training of the staff working in agro-biodiversity conservation
- (d) ultimately, the entire population (and future generations) of the countries/authority will benefit from the sustainable *in situ* conservation of the plant genetic resources of important agricultural species.

4. Project strategy and implementation arrangements

Project strategy

The project strategy is to develop community driven *in-situ* and on-farm agro-biodiversity conservation initiatives in representative, targeted areas of global agro-biodiversity significance. These community-driven initiatives will be supported by national, legislative, social and economic policies adapted to agro-biodiversity conservation during the project process, and benefit from the institutional capacity strengthened through personnel training, and regional networking and support. The twinning of a specialised international institution such as ICARDA with national institutions participating in the project will greatly enhance the absorptive capacity of the co-operating countries/authority. Awareness promotion is a priority at all levels of the project.

The involvement of land users as primary participants is fundamental to agro-biodiversity management. Innovative approaches to *in-situ* and on-farm conservation will be developed alongside appropriate resource management, which will at the same time, maintain the productive

capacity of the resources and secure the economic viability of the community. Focus will be given to ten target crops (or crop groups) of global significance, all of which are originated from the Near East or Central Asian region (Annex VI). Both wild relatives and landraces of the selected crops will be studied and managed, incorporating indigenous knowledge and traditional practices, such as farmers' selection for desirable traits, which have over the years, generated genetically heterogeneous crops and landraces which are highly adaptive to their specific agro-ecological environments.

The project activities will complement existing agricultural development and resource management projects, as well as *ex-situ* conservation activities (Annex VII), to enhance the process of conservation and sustainable use of agro-biodiversity. The co-financing leveraged through this project will also support training of researchers and extension services for farmers, institutional strengthening through the provision of equipment and facilities, and networking with institutions in the region and elsewhere, all of which will contribute to future sustainability.

A step-wise, long-term approach is needed to build the national capacity needed for the development and sustainability of the project. The project will strengthen institutional and community capacity, in order to phase in a progressively greater national contribution to agro-biodiversity conservation and management. The project implementation will focus on indigenous technical knowledge in communities concerning the target crops and their uses, build trust and bring people and Authority institutions into a collaborative mode of work. Issues concerning indigenous property rights will also be addressed in the process.

Two target areas where *in-situ* and on-farm conservation activities will be carried out through this project have been selected in the Palestinian Territories, based on the following criteria:

- a. Wild "progenitors" of globally important crops
- b. Wild relatives of globally important crops
- c. Populations of high genetic diversity
- d. Presence of more target species
- e. Endangered populations
- f. Species which are difficult to conserve *ex-situ*
- g. Traditional agricultural systems
- h. Traditional germplasm (landraces, breeds)
- i. Linkage with agricultural development projects

The selection of the target areas was undertaken with the aim to capture the maximum genetic diversity of the target crops in the minimal number of areas possible. The target areas were therefore selected to cover the widest possible range of topography, climate and species concerned. For example, Hebron area has a sub-humid Mediterranean climate and is especially diverse in fruit crops (e.g. grape, wild pear and apple).

The presence of wild relatives and landraces or local varieties of the target crops in each target area is listed in Annex VIII. Together, the target areas are able to capture significant fractions of the genetic diversity within the globally important target crops. Existing data indicate that 30-40% of the world's wild "progenitors" and wild relatives of wheat (*Triticum spp.*) and barley (*Hordeum spp.*) can be protected through this system of target areas. Amount of genetic diversity of wild pear and wild pistachio that can be protected is estimated at 30 % and that for wild medics is 25 %. Collaborative efforts through this network of representative target areas in four countries/authority of the Near East greatly increases the cost-effectiveness of this regional project.

Furthermore, the selection of the target areas has been a truly participatory process, through discussions in three workshops participated by all the concerned countries/authority. The National Plant Genetic Resources Programmes were actively involved in site proposals and final selection, based on the above listed criteria, and in consultation with ICARDA, IPGRI, ACSAD, UNEP and UNDP. All the sites were visited by at least one person from each of the other countries/authority to encourage exchange. Due to the presence of different target crops, differing range and intensity of threats, and varying socio-economic conditions at the different target areas, the activities require for each area are also different.

Agro-biodiversity and Socio-economic Inventory and Surveys

The information concerning wild relatives and landraces of field crops, fruit trees and forage plants is limited and scattered. This project component will be aimed at collecting eco-geographic survey data of agro-biodiversity in the selected target areas, as well as land use practices which are contributing to the maintenance or loss of agro-biodiversity, during the course of agricultural development. Assessment will be made on the threats to agro-biodiversity to wild relatives and "progenitors" of the target crops in their original habitat and farmers' landraces of the target crops. Local scientists will carry out survey activities in close consultation with local land users and representatives. ICARDA and other participating institutions will provide training in data collection and survey methodologies and will agree with local scientists a project-wide set of survey methodologies to enable the integration of data.

Results from the inventory activities will contribute to the databases and baseline mapping of the target areas. These will be integrated into a GIS system and database, containing information obtained from the above surveys, as well as existing data generated by other projects and institutions on the biological, soil and water resources, ecology, land tenure and land use practices etc. This integrated mapping and database will be stored and analysed by the national project component, as well as being passed to Regional Project Co-ordinator, to allow integration at the project-wide level. Survey data will provide the baseline for monitoring and improving the effectiveness of agro-biodiversity management, as agricultural, land use, social and economic patterns change in time.

Community-based Agro-biodiversity Management

Globally important agro-biodiversity has been evolving as a part of the Near East landscape over the centuries. The objective of this activity is to maintain sufficient heterogeneity in farming systems and provide the necessary habitats to sustain agro-biodiversity. Technology plays a role in improving sedentary farming and rangelands farming systems, but the role of management is also crucial. Top-down approaches have proved to be ineffective in regulating land use and allowing sustainable agro-biodiversity management and conservation within agro-ecosystems. On the contrary, land user-based management will generate widespread efforts in sustainable management of agro-biodiversity, given substantial efforts for public awareness, transfer of the needed know-how, and partnership building.

One main, overarching issue related to genetic erosion is the breakdown of traditional agricultural systems. Mechanisation, increased transportation means, land reclamation (stone removal) and irrigation have expanded agricultural production through area expansion and intensification. While these activities can be used to the advantage of agro-biodiversity, the current management is working against it, as it removes all rocky field border habitats and maximises repeated ploughing under orchards. In addition, as cultivation has generally expanded to its limit, grazing

pressures from small ruminants are intensifying, seriously threatening pasture biodiversity as a whole.

The issue of balancing agricultural production with agro-biodiversity conservation is a challenge, when economic and sustainable production systems have to be maintained. In low rainfall areas, farmers are slow to adopt modern varieties (especially of barley), preferring to use better adapted local landraces, and hence contribute to agro-biodiversity. However, the relatively low production has also led to increasing habitat destruction for agricultural expansion. Creation of alternative livelihoods, incentives or compensations, is needed to reduce the pressure on the land by needy people and to promote the cultivation of the less productive wild relatives and landraces.

Regional, in-country training, demonstrations, and extension assistance of practice and techniques to integrate *in-situ* on-farm conservation and sustainable uses of agro-biodiversity into agricultural practices, will be provided by ICARDA, IPGRI and ACSAD, and other participating national institutions including national universities, and educational institutions.

Increased national capacity to provide training in the conservation and sustainable use of agro-biodiversity.

Skilled human resources are lacking in the region. In addition to the provision of short term training being provided by the project, post graduate will also be given to promote the long term sustainability of national capacity, as a mechanism to "train the trainers", that in turn will provide land use managers and farmers with training in conservation and sustainable uses of agro-biodiversity. These include specialised training in plant identification of wild relatives and landraces, *in situ* and on-farm conservation, agro-ecosystem ecology, population genetics, and agricultural socio-economics. Project funded post graduate training will serve two functions; to conduct thesis activities to meet a range of project needs; and for qualified graduates to work directly with other project staff and the farming community. Activities will involve, national universities and educational institutions, more closely in project activities through; the supervision of post graduates in their thesis work; and contributions of expertise to the project through in-kind and contractual arrangements. The Rehabilitation of Degraded Rangelands in the Eastern Parts of the West Bank project (Annex VII) will also contribute to the building of local capacity in fields complementary to the fields addressed in this project, such as in forage production.

Social Economic Policy and Property Rights

Promising technologies exist for better management of agro-biodiversity, water, soil, land and cropping systems but their adoption has been inhibited by disincentives to rational and sustainable use of these natural resources, both in the settled areas and in the rangelands. Uncertainties over property rights among users of the natural grazing and water catchments, as well as economic distortions, are often the main obstacles against proper land and resource management. Some tribal institutions that once regulated grazing or water rights have been broken down or undermined. Some rangelands are being privately appropriated through new settlement and conversion to cropping while many are open access areas where users have neither the incentive to improve productivity or conserve agro-biodiversity.

The main priority of the Palestinian Authority has been to support and improve agricultural production, since this region has some of the highest population growth rates in the world and a widening trade gap in food and agricultural products. Of prime concern to the Palestinian Authority is agricultural production. Hence policies which are directed primarily at enhancing

agricultural productivity are those that may negatively impact agro-biodiversity conservation. Although there are limited policies in the Palestinian Authority targeted at agro-biodiversity conservation, no holistic plan (including land use planning) for its implementation yet in place.

Both Jenin and Hebron are agro-biodiversity rich, while Jenin is an upland site adjacent to rangelands. The rangeland users are increasingly dependent on the target areas for supplementary feed and forage supplies, or for dry-season grazing on crop residues. This is causing significant competition for resources, hence, any policy changes must take into account the spatial and temporal linkages among the production systems, both in and outside the target areas.

It is recognised by the Palestinian Authority that changes are needed but they will take time to implement. The strategy is therefore to place a strong emphasis on the communities as land managers, and to modify current Palestinian Authority incentives for the benefit of agro-biodiversity conservation. Examples existing elsewhere include buying strategic crops (wheat, barley, cotton, sugar beet) at attractive prices; taxes on agricultural vehicles are lower than for non-agricultural ones; feed concentrates are distributed at cost through farmers co-operatives; Government/Authority control the price of meat; and there is no tax on agricultural land. Some of these policies may be modified after the demonstration of feasible policy alternatives through the project.

Project progress and impact monitoring

To understand more clearly the impact of project intervention on agro-biodiversity and landusers at project sites the project will closely monitor the impact of project activities. As lessons and best practices emerge these will be compiled and fed back into the adaptive project planning process. Lessons and best practices will also be disseminated locally, regionally and internationally as part of a pro-active strategy to replicate the integration of practices to sustainably use and conserve agro-biodiversity into agriculture. Lessons learned and best practices will document the context under which activities have been successful and contribute to an understanding and provide guidance on the necessary conditions under which activities can be replicated successfully.

Implementation arrangements

This regional project is funded by the Global Environment Facility (GEF). It consists of four national components that will be implemented by the Governments of Jordan, Lebanon, Syria and the Palestinian Authority. To ensure efficient use of financial resources and expertise, it is important to maintain close integration of the project activities in the various national components. Therefore, a fifth regional component, implemented by ICARDA, will co-ordinate between the nationally executed component, provide integration, technical training, backstopping and reporting for the project. Within this context, the project will be managed as five components such that there will be a nationally executed component for each of the four participating countries/territory, and a regional component implemented by ICARDA. This arrangement will ensure that the bulk of the GEF resources will be programmed, managed and spent on activities in the participating countries/territory. The regional component will ensure tight linkages among the four national projects and enhance the positive impacts from networking and exchange in experience and expertise.

At the national level, the PA jointly with UNDP/PAPP will designate one representative as the National Co-ordinator of the institutions participating in the project at the designated sites. This National Co-ordinator will plan and manage day to day implementation, co-ordinate on-site

activities carried out by the various national institutions and Local implementing institutions and maintain linkages with the Regional Co-ordinator, and other relevant ongoing projects.

As the implementing agency of the regional component of the project, ICARDA will be responsible for planning and co-ordination of the regional activities, notably networking and training. In consultation with the participating countries/authority and UNDP, ICARDA will recruit a Regional Project Co-ordinator who will be responsible for these activities as well as the provision of technical backstopping and overall project co-ordination, monitoring and technical reporting. The Regional Project Co-ordinator will be located at ICARDA's Headquarters to take advantage of its regional and international linkages and facilities for administrative and logistical support.

For the Palestinian Authority component, the project will be executed by the UNDP/PAPP, however the MOA, will be the lead counterpart agency, and responsible for the implementation of project activities. Coherence across activities and regional partners will be achieved through the following:

- A Regional Project Steering Committee will be established, Chaired by the representative of the government/authority hosting the meeting. Members will include the Regional Project Co-ordinator, representatives from IPGRI and ACSAD, the four National Project Co-ordinators, the designated representatives of the four National Executing Institutions, and a representative from Syrian UNDP Country Office, as the Principle Participating Representative. The Steering Committee will meet at least once a year, at a time and place to be agreed by the members. Steering committee meetings will rotate between the four countries/authority. The Committee will finalise and approve the detailed National and Regional work and financial plans for the coming year presented at the annual Regional Technical Co-ordination meeting (see below).
- Annual Regional Technical Co-ordination and Planning Meetings will be held prior to meetings of the Regional Steering Committee. They will include the National Co-ordinators and relevant technical and scientific staff participating in the project. Results of the previous year's work, annual national Work Plans and budgets for the next year's work, will be presented and regional compatibility and integration of the national components will be discussed and recommendations will be submitted to the Regional Project Steering Committee.

A National Project Steering Committee for co-ordination at the PA level. The Committee will be chaired by the representative of the Ministry of Agriculture and members will include the GEF Operational Focal Point (PEnA), the National Project Co-ordinator, and the Regional Co-ordinator and a representative from UNDP. The Committee will meet annually and prior to the Annual Regional Technical Co-ordination and Planning meetings. The work plans, budgets, and technical recommendations will be considered and approved at these meetings in consultation with the National Biodiversity Steering Committee. Recommendations will be submitted to the Regional Technical Co-ordination and Planning meetings for further consideration, and final approval by the Regional Steering Committee.

District Committees at project sites (Hebron and Jenin) will be formed to assist the National Co-ordinator with project implementation and monitoring. Meetings will be

called (and chaired) by the National Project Co-ordinator at least annually and members will include; the Regional Co-ordinator, the Agricultural Co-ordinating Committee (representing participating local implementing institutions); the Agricultural Co-operative Union; Local Council members, participating universities; and local beneficiaries. Committee members will advise the Project Co-ordinator on project implementation issues and provide inputs for the coming year's annual work plan and budget and monitoring reports.

- As listed under project activities, and in addition to the above meetings and committees, the National Coordinator and project staff will conduct consultations with project stakeholders in the development and implementation of project activities, as a first stage in the participatory process of the implementation of the project.

The MOA will assign one of its senior staff to be the MOA counterpart for the project.

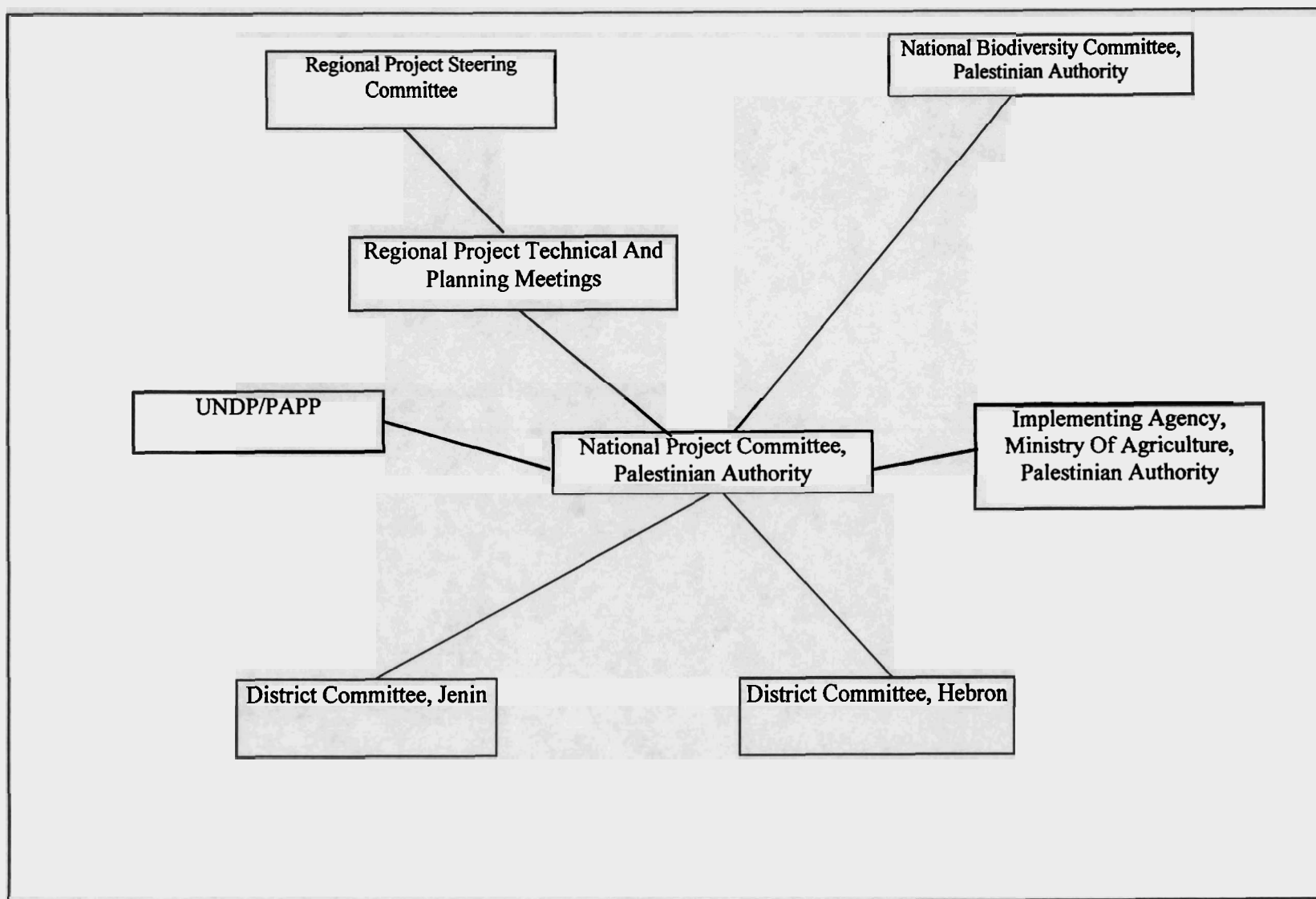
Responsibilities of Implementing Institutions (MOA)

- a. Provide a fully functional office for the project in MOA premises in the West Bank;
- b. Provide a full-time qualified technical assistance to the National Project Coordinator;
- c. Prepare quarterly financial and operational reports as requested;
- d. Establish and chair a National Project Steering Committee.
- e. Participate, with the National Project Coordinator, in the establishment of the District Committees;
- f. Monitor activities of sub-contracted institutions and consultants/experts; and
- g. Participate in the meetings of the Regional Project Steering Committee.

Responsibilities of the Executing Agency (UNDP/PAPP):

- a. To contract the National Project Co-ordinator
- b. To sub-contract the selected local implementing institutions, or appropriate short-term consultants for the relevant activities of the project;
- c. To transfer the funds available to the implementing institutions into separate bank accounts to be opened by them for the purpose of their subcontract with UNDP/PAPP, upon submission of a written request and certified documents and according to an agreed schedule of payment;
- d. To participate in the National Project Steering Committee;
- e. To monitor the project implementation and progress;
- f. To purchase equipment necessary for the execution of the project and to make the necessary arrangements for its temporary or permanent use by the implementing institutions or individuals;
- g. To provide appropriate support, as necessary, through UNDP/PAPP; and
- h. To report to GEF – New York, and provide agreed technical reports to ICRADA.

National Implementation Structure



Responsibilities that will be carried out jointly

The following will be undertaken with full consultation between the Implementing and Executing Agencies:

- a. Selection of a National Project Coordinator, responsible for the implementation of the project;
- b. Selection of local and international/ regional consultants to be contracted for the project;
- c. Advertising and negotiating terms for sub-contracts and consultants;
- d. Monitoring and evaluating the project at several levels including inputs, outputs, impact and progress;
- e. Reviewing the work plans prepared by the National Project Coordinator in cooperation with the District Committees, and to review progress and achievements;
- f. Ensuring overall coordination of the project activities and monitoring of project implementation.

5. Reasons for assistance from GEF/UNDP

The Palestinian Authority, within regional projects, has been made eligible to GEF funding through Article 9 (b) of the GEF Instrument.

The project is developed closely in line with the GEF Operational Programme for Arid and Semi-Arid Ecosystems of the Biodiversity focal area which emphasises the "prevention and control of land degradation through development of sustainable use methods for biodiversity conservation..." The Operational Programme also calls for special attention for the "demonstration and application of techniques, tools, and methods to conserve traditional crops and animal species in their original habitats", and "Promotion of sustainable production and use of natural products, such as non-timber forest products, wild relatives of domesticated species, and agro-biodiversity-related products, including the development and implementation of sustainable harvesting and marketing regimes."

The GEF Scope and Preliminary Operational Strategy for Land Degradation highlights "*In-situ* conservation of genetic varieties of plants (grasses, shrubs and trees), insects, birds, worms, and micro-organisms (e.g. root bacteria like rhizobium, mycorrhiza and other useful fungi) by improving management practices, institutional arrangements, policies and incentives, and community participation", as one of the GEF-funded activities in the interface between prevention and control of land degradation, and promotion of biodiversity conservation and sustainable use. The present project targeting the genetic diversity of ten major crops in the Near East, with an integrated approach to grazing and farming management, falls well within this interface. The above-mentioned Land Degradation paper was further elaborated at a STAP workshop on land degradation held in 1996. The Follow-up Action to the STAP Workshop which was endorsed at the May 1997 Council, proposed a set of principles relating to project development in the field of degradation. Among these are (i) participatory approaches which take into account the objectives and constraints of farmers, pastoralists, forest dwellers, and other stakeholders, to be used (ii) distortions introduced by inappropriate policies, including price policies, macro-economic policies, and the legal setting, to be addressed; (iii) data collection, analysis and dissemination, and monitoring of on-going efforts based on well defined indicators must be improved, *etc.* The present project follows all these principles. Furthermore, Component 1 of the project - Agro-biodiversity and Socio-economic Inventory and Monitoring - provides the "normal information needs" which are "an integral part of the project", and should not be confused with targeted research.

The project responds to the Convention on Biological Diversity and its concern that (i) biological diversity is being significantly reduced by certain human activities, (ii) the fundamental requirement for conservation of biological diversity is the *in-situ* conservation of ecosystems and natural habitats, and (iii) the traditional dependence of local communities on biological resources are recognised. The project also addresses the concern of Article 20.7 of the CBD providing for particular consideration of the countries/authority with arid and semi-arid areas and experiencing desertification and drought.

The project, in accordance with the policy and strategy regarding access to financial resources, will build co-operation at the sub-regional, regional and international levels and promote utilisation of local and regional expertise, and addresses the following programme priorities as expressed by COP94:

- (a) Strengthening conservation, management and sustainable use of ecosystems and habitats in accordance with Article 7 of the CBD, particularly with regard to species and communities of wild relatives of domesticated and cultivated species and species which are of agricultural value (Annex I of CBD);
- (b) Identifying and monitoring of wild and domestic biodiversity components and implementation of measures for their conservation and sustainable use;
- (c) Capacity building, including human resource development and institutional strengthening;
- (d) Strengthening the involvement of local people in the conservation of biological diversity and the sustainable use of its components; and
- (e) Promoting the conservation and sustainable use of biological diversity in environmentally vulnerable arid and semi-arid areas.

The proposed participatory approach actively involving local communities will contribute to the identification and development of economically and socially appropriate incentive or compensatory measures for local communities participating in biological conservation, according to Article 11 of the CBD.

6. Special considerations

There are few agro-biodiversity specialists in the Palestinian Territories and therefore the project will solve the problem by using regional and international experts, as well as Palestinian experts living outside the Palestinian Territories, in the short-term and training of staff to fulfil these responsibilities in the future.

7. Coordination arrangements

ICARDA's Regional Co-ordinator will provide integration of the nationally implemented project activities with the regional project. The Regional Co-ordinator will also be responsible for integrating all projects' collected data and disseminating the regional results to UNDP/GEF, the nationally implemented project components and other interested parties including the Annual Performance Report, the Project Implementation Review and project impact monitoring reports,

and policy, economic and legislative reports pertaining to agro-biodiversity. The Regional Co-ordinator will co-ordinate training and capacity building activities to ensure that the national project staff is able to implement all project activities. As part of this function the Regional Co-ordinator will organise exchange programmes and communications among project staff of nationally implemented components.

8. Counterpart support capacity

The Palestinian Authority is undertaking the development of a framework for plant genetic resource conservation and activities in *ex situ* and *in situ* conservation. However, new and additional skills are needed in a number of disciplines related to natural resource management in general, and allowance is made in the project for a strong institutional strengthening programme, particularly of the human resource base through appropriate training.

These are significant physical and human resources that the PA will contribute to the project. Areas of expertise that do exist in the Palestinian Authority include:

1. Geographical Information Systems (GIS) and is available from the Applied Research Institute of Jerusalem (ARIJ) located in Bethlehem and they specialise on databases on national natural resources and the Palestinian Geographic Center located in Ramalla which have been working on master plans for land use. The Arab Studies Center in East Jerusalem has a Land Research Committee also has a capacity in GIS.
2. Socio-economic surveys can be carried out using the expertise of local universities. The most relevant institutions of higher education that can serve the project include universities of Birzeit, An N'Jaah, Hebron, Bethlehem and Al-Quds.
3. Public awareness is created primarily through the work of local and international Implementing institutions. There are many Implementing institutions in the Palestinian Territories but the most relevant to the project are the Palestinian Agricultural Relief Committee (PARC), Technical Center for Agricultural Services (TCAS), Union of Agricultural Work Committee (UAWC), American Near East Refugees Agency (ANERA), Save the Children Federation (SCF), and the Applied Research Institute of Jerusalem (ARIJ). The Agricultural Co-operative Union (ACU) provides a way to reach farmers throughout the West Bank and Gaza.
4. Water research and water resource conservation and rehabilitation is carried out by several specialised institutions such as the Palestinian Hydrology Group (PHG), the Water and Environment Development Organisation (WEDO), the Applied Research Institute of Jerusalem (ARIJ).

C. DEVELOPMENT OBJECTIVES

The promotion and sustainable conservation and utilization of agro-biodiversity in the Near East through farmer based *in-situ* conservation of significant endemic wild relatives and land races.

D. IMMEDIATE OBJECTIVES, OUTPUTS AND ACTIVITIES

Note: Institutions, outside the MOA, responsible for the implementation of each activity will be assigned by transparent advertising and selection procedure based on the pre-qualification required for each activity. However, under each activity below, the institutions with relevant expertise have been identified.

1. Immediate objective: Survey and monitoring data to understand the causes of agro-biodiversity degradation at project sites.

1.1. Output: Eco-geographic, genetic diversity socio-economic, indigenous knowledge and land use practice data on project sites

1.1.1. Activity: Recruit project staff for data recording, collection, storage and analysis.

1.1.2. Activity: Provide short-term training to project staff on methodologies for data collection, recording, electronic storage and analysis to conduct eco-geographic, genetic diversity and socio-economic surveys

1.1.3. Activity: Review existing data on the wild relatives and land races of target crops in project sites, and socio-economic, indigenous knowledge and land use practice data relevant to agro-biodiversity degradation, sustainability and conservation.

1.1.4. Activity: Agree with Regional Coordinator concerning data recording, collection, storage and analysis methodologies. The methodologies should be: compatible with other host country national components; able to be stored in GIS and electronic database; be able to incorporate remote sensing data; track changes in agro-biodiversity abundance and distribution of wild relatives and land races of target crops; provide practical data for gene-bank accession activities, plant breeders and farmers on the growth and genetic characteristics of wild relatives and landraces of target crops; contribute to an understanding of the causes of agro-biodiversity degradation of the wild relative and land races of target crops in project areas; and record data for registering genetic property rights.

1.1.5. Activity: In collaboration with the Regional Coordinator, set up or adapt GIS and electronic database to store and analyze project survey data.

1.1.6. Activity: Collect and record eco-geographic data, genetic diversity, and socio-economic data according to agreed methodologies and consult with local communities to survey traditional land use practices and indigenous knowledge of project target crops, and the reasons for the demise of these practices.

1.1.7. Activity: Enter data in GIS and database and track changes in agro-biodiversity abundance and distribution of wild relatives and land races of target crops; assess the possible causes of these changes and provide data in agreed formats to ICARDA on an on-going basis.

1.1.8. Activity: Analyze emerging data and develop overall framework of potential target areas for alternative and modified land uses.

2. Immediate objective: Promote modified and alternative land-use practices, through community based on-farm habitat and species management, for the sustainable use and conservation of the agro-biodiversity of the wild relatives and land races of project target crops, through awareness and capacity building measures.

2.1. Output: Identify areas and communities with which to implement modified and alternative land uses.

2.1.1. Activity: Through field visits and community activities, raise community awareness about the project's objectives.

2.1.2. Activity: Based on survey data in immediate objective 1, work with local communities to identify and agree upon sites within target areas for modifying and implementing alternative livelihoods including; water harvesting and soil conservation structures; habitat strips, corridors and uncultivated patches; field gene-banks; pasture nurseries; community-based grazing management and other alternative livelihoods.

2.2. Output: Community level small scale water harvesting infrastructure for alternative sources of income, improved soil, water and agro-biodiversity conservation of project target crops and wild relatives.

2.2.1. Activity: Recruit project staff to provide technical and in-kind assistance in soil and water management.

2.2.2. Activity: Arrange workshops for project staff in water resource and soil management use techniques.

2.2.3. Activity: Arrange site visits, for participating farmers to demonstrate the uses and benefits of dam and terrace and contour construction, and provide technical assistance in the construction of terraces and dams, water resource and soil management techniques, and alternative sources of income that can derived from these infrastructures while promoting conservation and sustainable use of target species; such as the production of root stock.

2.3. Output: On-farm conservation and management of target crop landraces and improved soil fertility.

2.3.1. Activity: Through links with baseline project activities, work with communities to introduce soil improving rotation practices of target crop land races, with other crops, including weedy fallow where appropriate.

2.3.2. Activity: Conduct workshops and field visits with local extension staff, NGO, and agricultural cooperatives and farmers to explain and demonstrate the principles and benefits of improving on-farm crop land races through community based management and breeding programmes.

2.3.3. Activity: Work with local extension agency staff and farmers to introduce crop mixtures with land races of target crop species as part of rotation management practices

2.4. Output: Corridors, habitat strips and uncultivated patches to increase in-situ agro-biodiversity of wild relatives and land races of project target crop species.

2.4.1. Activity: Provide technical assistance including workshops and field visits to demonstrate the benefits and uses of corridors, patches of uncultivated land and work with communities in the implementation of management techniques.

2.4.2. Activity: Pursue with local planning authorities local community agreement for corridors and habitat strips.

2.4.3. Activity: Promote community based breeding and selection activities.

2.5. Output: Field gene-banks to conserve vulnerable fruit tree wild relatives and perennial rangeland species and provide seed and root stock for other project activities.

2.5.1. Activity: Arrange workshops and on-site training for local community groups, agricultural co-operatives, and NGO and farmers to raise awareness of the benefits, and management techniques of gene-banks to grow vulnerable crops or wild species for resale and use of native trees or adapted root stock in field margins and rehabilitated and improved habitats.

2.5.2. Activity: Provide ongoing extension assistance and advice to farmers in setting up and managing field gene-banks.

2.5.3. Activity: Promote community based breeding and selection activities of important and threatened seed and root stock of locally adapted project target crop wild relatives and land races, for use, and promote the exchange of seed and root stock between communities and with breeding programmes and gene-banks, where applicable.

2.6. Output: Community managed pasture nurseries on common land for seed and rootstock of important and threatened locally adapted project target pasture and forage wild species and or land races through selection practices and seed multiplication

2.6.1. Activity: Through community discussion and activities promote the benefits of rehabilitating degraded common lands and the uses of pasture nurseries.

2.6.2. Activity: Provide training and extension advice to community pasture nursery managers in the selection and multiplication of important and threatened pasture seed and root stock of locally adapted project target crop wild relatives and land races.

2.6.3. Activity: Promote the exchange of seed and root stock of locally adapted project target crops wild relatives and land races, between communities.

2.7. Output: Community based grazing management practices, in common land and modified habitats, promoting conservation and sustainable use of pasture and forage wild species of crop target species.

2.7.1. Activity: In participation with communities explore options for alternative grazing management systems in common lands and modified habitats and identify incentives for their implementation.

2.7.2. Activity: Work with the communities in implementing grazing practices

2.8. Output: Alternative livelihoods and sources of income that conserve and sustainably use agro-biodiversity of the wild relatives and land races of project target species.

2.8.1. Activity: Raise awareness of the benefits of apiculture through community discussion and activities and identify farmers, individuals and community groups interested in apiculture, as an alternative source of income.

2.8.2. Activity: Provide technical assistance for the introduction of apicultural techniques.

2.8.3. Activity: In participation with communities, and using survey data explore options for alternative livelihoods including traditional land use and indigenous knowledge.

2.9. Output: Open days and school visits for education and awareness raising

2.9.1. Activity: Arrange public open days and events to demonstrate the management techniques and uses of field gene-bank, pasture nurseries, water harvesting and soil conservation structures, and the sale and exchange of locally adapted root stocks and seed.

2.9.2. Activity: Develop in cooperation with the Regional Coordinator information packs, and distribute them.

2.10. Output: In-kind Incentives for alternative and modified land uses at project sites

2.10.1. Activity: Review in-kind assistance and consult with local communities on suitable mechanisms to manage the assistance.

2.10.2. Activity: Identify local community groups to manage the in-kind scheme, agree on general terms and conditions for in-kind agreements.

2.10.3. Activity: Monitor the use of in-kind incentives.

3. Immediate objective: Increase national capacity to deliver project training needs, for conservation and sustainable use of agro-biodiversity.

3.1. Output: Training in conservation and sustainable use of Agro-biodiversity

3.1.1. Activity: Create an agreement with leading national universities to provide cooperation to the project. The agreement should include; provisions for internationally funded project candidates to design and set up practical and applied agro-biodiversity courses at non-degree level, particularly for land use managers and farmers; and to provide short-term training services to project staff, local communities, agricultural extension officers, local implementing institutions, members of agricultural cooperatives and local communities in practical aspects of conservation and sustainable use of agro-biodiversity.

3.2. Output: National capacity in conservation and sustainable use of agro-biodiversity training.

3.2.1. Activity: Identify universities and draw up frameworks for MSc. studies to meet identified project.

3.2.2. Activity: Advertise project scholarships for university courses, interview and select

candidates for university placement, taking into account the host university requirements.

3.2.3. Activity: Assist in the placement of selected candidates at host universities.

3.2.4. Activity: Draw up binding agreement with selected candidates to adhere to framework drawn up under this output to conduct research on project related needs and work with the project or National institutions, depending on agreement, following course completion.

3.2.5. Activity: Develop and disseminate school syllabus training materials, developed by national experts to schools and provide training for the use of these materials.

4. Immediate objective: Policy reform of agricultural and related policies to promote agrobiodiversity in project target areas without social cost.

Output 4.1: Reform of national policy alternatives which take account of social, economic and cultural factors to promote the maintenance of plant genetic resources.

4.1.1. Activity: Recruit agricultural policy expert, property rights, and agricultural sector economist.

4.1.2. Activity: Analyse the interactions among communities, economic development and national agricultural policies as they affect continued use of landraces, rangelands and local forest resources.

4.1.3 Activity: Assess the impact on natural resources from national rural initiatives and policies that could be modified to better address maintenance of biodiversity in both natural vegetation and farming systems.

4.1.4. Activity: Work with PEnA and MOA to define options and assist in drafting policy, legislative and economic reforms, and pursue the introduction of legislation for reforms, by the legislative council.

4.1.5. Activity: Pursue legal recognition and implementation of policy options, in close consultation with PEnA and MOA.

Output 4.2.2: Reform of national policy options for the management, use and conservation of soil, water and natural vegetation in the selected ecosystems that balance the perspectives of land users, the communities and future generations.

4.2.1. Activity: Analyse national agricultural policies that lead to mismanagement of soil, water and natural vegetation by land users and assess policy options that would encourage conservation of these resources by land users.

4.2.2. Activity: In close cooperation with PEnA and MOA define costed policy options.

4.2.3. Activity: Test reforms at project sites, and based on results, assist in drafting policy, legislative and economic reforms, and pursue the introduction of legislation for reforms, by legislative council.

Output 4.3: Reform of land tenure arrangements for use of land for profitable and sustainable production and for the introduction of conservation measures.

4.3.1 Activity: In close co-operation with PEnA and MOA analyse with the land users the effect of land use and tenurial arrangements on agro-biodiversity.

4.3.2 Activity: Explore land users' attitudes to communal methods of land management that would contribute to conservation of natural resources pursue the consent of the relative authorities to test modified tenure options.

4.3.3 Activity: Working closely with MOA and PEnA and based on the tests of modified land tenure options, assist in drafting policy, legislative and economic reforms, and pursue the introduction of legislation for reforms, by the legislative council.

5. Immediate objective: Project impact monitoring for project planning and measuring the impact of project intervention on agro-biodiversity and local communities at project sites.

5.1. Output: Impact of project intervention on agro-biodiversity of the wild relatives and land races of target crops, the costs and benefits and redistribution of wealth to local communities, and for project planning.

5.1.1. Activity: Agree with the Regional Coordinator on the methodology for impact monitoring. The methodology should be compatible with those of other project host countries/authority to allow aggregation of data at the project level; agree on impact monitoring indicators; and where possible utilize data gathered by project survey activities. Impact monitoring will be able to: monitor the immediate impact of project activities on the agro-biodiversity of wild relatives and land races of target crops. Monitoring should also assess the short-term costs and benefits, and the effects of wealth redistribution of project activities on local communities. Impact monitoring methodologies and processes will make provisions for long-term impacts after the life of the project.

5.1.2. Activity: Complementing ICARDA training activities, train local extension staff and project staff in techniques for long-term monitoring of project impacts, including the identification of impact indicators and techniques for data collection, analysis and presentation of results.

5.1.3. Activity: Conduct annual monitoring exercise of project activities and present results to ICARDA for aggregation.

5.1.4. Activity: Participate in annual regional technical meetings to discuss emerging lessons and best practices from monitoring data.

E. INPUTS

Summary table for preliminary assignment of duties

The following table outlines the preliminary assignments of tasks to groups, institutions or individuals in the Palestinian Authority. Subcontracts are to be assigned for some groups according to the Terms of Reference and a bidding process takes place.

Please note the following acronyms for use in the table: National Coordinator (NC), Project

Steering Committee (NAC), Regional Coordinator (RC), Project Steering Committee (PSC), Consultant (C), University of Birzeit (UBZ), University of An'Naj (UAN), University of Hebron (UH), Applied Research Institute of Jerusalem (ARIJ), Palestinian Agricultural Relief Committee (PARC), Union of Agricultural Work Committee (UAWC), Technical Center for Agricultural Services (TCAS), Palestinian Hydrology Group (PHG), Agricultural Cooperative Union (ACU), Grass-Roots Associations (GRA), Geographical Center (GC), Palestinian Environmental Authority (PENA), Ministry of Agriculture (MOA), ICARDA, IPGRI, University of Birmingham (UBH), ICARDA, IPGRI, ACSAD.

Project Intervention	Responsible group	Potential institutions /individuals
1. IMMEDIATE OBJECTIVE: Survey and monitor project sites to understand causes of agro-biodiversity degradation.		
1.1. Output: Eco-geographic, genetic diversity, socio-economic, and indigenous surveys		
1.1.1. Activity: Recruit project staff for data recording collection, storage and analysis	NC, UNDP/PAPP, MOA	
1.1.2. Activity: Short term training	ICARDA, IPGRI,	UBZ, ARIJ, UBH
1.1.3. Activity: Review survey data	NC, C, MOA	
1.1.4. Activity: Agree on survey methodologies	NC, RC	
1.1.5. Activity: Set up and adapt GIS and database		Subcontract
1.1.6. Activity: Collect data	MOA, Project staff	GC, ARIJ, ACU, UH, UAN
1.1.7. Activity: Enter data into GIS and database		Subcontract
1.1.8. Activity: Analyze emerging data	MOA	Subcontract
2. IMMEDIATE OBJECTIVE: Alternative land uses through community based on-farm sustainable use and conservation of agro-biodiversity		
2.1. Output: Identify areas and communities for intervention		
2.1.1. Activity: Field visits and community activities raise project awareness		Subcontract
2.1.2. Activity: Community consultation to agree target areas	NC, NAC, MOA	
2.2. Output: Community level water harvesting and soil preservation infrastructure		
2.2.1. Activity: Recruit small-scale irrigation and soil management specialists	NC, NAC, MOA, UNDP/PAPP	
2.2.2. Activity: Workshops in water resource and soil management	,	Subcontract
2.2.3. Activity: Site visits and technical assistance for dam, terrace and contour construction	MOA	subcontract

Project Intervention	Responsible group	Potential institutions /individuals
2.3. Output: On-farm conservation and management		
2.3.1. Activity: Links with baseline activities to rotation practices to improve soil management	MOA, ICARDA	PARC, UAWC, TCAS
2.3.2. Activity: Workshops and field visits to demonstrate on-farm landraces through management and breeding programmes	MOA, ICARDA	ACU, PARC, UAWC, TCAS, subcontract
2.3.3. Activity: Introduce landraces with rotation management	MOA	PARC, UAWC, TCAS, (training, Subcontract)
2.4. Output: Buffer zones, corridors, habitat strips and un-cultivated habitat strips.		
2.4.1. Activity: Training in buffer zone management and agree buffer zone	MOA	PARC, GRA
2.4.2. Activity: Pursue legal designation of buffer zones, corridors and habitat strips.	C, PEnA, MOA	
2.4.3. Activity: Promote community based breeding and selection activities	MOA, ICARDA, IPGRI	
2.5. Output: Field gene-banks		
2.5.1. Activity: Training in benefits and management of field gene-banks	MOA, ICARDA, IPGRI	ARIJ, UBH
2.5.2. Activity: Extension assistance (MOA) and in setting up and managing field gene-banks (PEnA)	MOA, ICARDA, IPGRI, PEnA	ARIJ, UBH
2.5.3. Activity: Community based breeding and selection	MOA, ICARDA, IPGRI	ARIJ, UBH
2.6. Output: Pasture nurseries		
2.6.1. Activity Promote benefits of pasture nurseries	PEnA, MOA, C,	Private Sector (subcontract)
2.6.2. Activity: Training and extension in pasture nursery management and community based breeding and selection	MOA, ICARDA,	GRA
2.6.3. Activity: exchange of seed and root stock		PARC, UAWC, TCAS
2.7. Output: Community based grazing management practices		
2.7.1. Activity: Explore options for grazing management	MOA	ACU
2.7.2. Activity: Work with communities to implement grazing management techniques		PARC, UAWC, TCAS, GRA
2.8. Output: Alternative source of income		
2.8.1. Activity: Raise community awareness of	C, MOA	PARC, Union of Bee

Project Intervention	Responsible group	Potential institutions /individuals
benefits of apiculture		Breeders
<u>2.8.2. Activity:</u> technical assistance in apiculture	C, MOA	PARC, Union of Bee Breeders
<u>2.8.3. Activity:</u> Explore alternative livelihood options	C, MOA	PARC, UAWC, TCAS, ACU
2.9. Output: Local community awareness raised		
<u>2.9.1. Activity:</u> Public open days		Subcontract
<u>2.9.2. Activity:</u> Develop and disseminate information packs		Subcontract
2.10. Output: In-kind Incentives		
<u>2.10.1. Activity:</u> Recruit in-kind assistance expert	NC, MOA, UNDP/PAPP, PSC	GRA
<u>2.10.2. Activity:</u> Review in-kind schemes and design and agree suitable program.	NC, PSC	GRA
<u>2.10.3. Activity:</u> monitor disbursement of in-kind help	NC, MOA	
3. IMMEDIATE OBJECTIVE: Increase national capacity to deliver training needs		
3.1. Output: Training in agro-biodiversity conservation and sustainable use		
<u>3.1.1. Activity:</u> Make co-operative agreement with training centers	NC, NAC, MOA, UNDP/PAPP	
<u>3.1.2. Activity:</u> Provide identified training needs	NC, NAC	UBH
<u>3.1.3. Activity:</u> Coordinate with other training in the Palestinian Authority	NC, NAC, MOA	
3.2. Output: National capacity in agro-biodiversity conservation and sustainable use training		
<u>3.2.1. Activity:</u> Identify universities and draw up study frameworks	NC, NAC, MOA	
<u>3.2.2. Activity:</u> Advertise and select candidates for project funded scholarships	NC, NAC, MOA	
<u>3.2.3. Activity:</u> Assist in placing study candidates	NC, NAC, MOA	
<u>3.2.4. Activity:</u> Draw up binding agreement between study candidate, UNDP, training centers	NC, NAC, MOA, UNDP?PAPP	
<u>3.2.5. Activity:</u> Develop and disseminate syllabus materials to schools		Subcontract
4. IMMEDIATE OBJECTIVE: Policy reform at project sites to conserve and sustainably use agro-biodiversity		

Project Intervention	Responsible group	Potential institutions /individuals
4.1. Output: Review national legislation, policy and economic instruments related to agro-biodiversity and propose reforms.		
4.1.1. Activity: Recruit project policy legislation and economics staff.	NC, NAC, MOA, UNDP/PAPP	
4.1.2. Activity: Analyze interactions among communities, economic development as they affect landraces, rangeland and forest resources.	C	Sub-Contract, UBZ, ARIJ
4.1.3. Activity: Assess impact on natural resources from rural development	C, PEnA, MOA	
4.1.4. Activity: Present costed reform options to the Authority for consideration and implementation	International/Regional expert, MOA, PEnA	
4.1.5. Activity: Pursue legal recognition and implementation of policy options	International/Regional expert, PEnA, MOA	
4.2. Output: Reform of national policy options relating to soil water, and natural vegetation.		
4.2.1. Activity: Analyse national agricultural policies relating to soil, water and natural vegetation mismanagement	Int./Regional Expert, PEnA, MOA	
4.2.2. Activity: Costed options for national agricultural, economic and rural development options and reach agreement for testing policy option at project sites	International/Regional expert, MOA, PEnA	
4.2.3. Activity: Test reforms at project sites and pursue legislation	International/Regional expert, PEnA, MOA	
4.3. Output: Reform of land tenure for profitable sustainable production and the introduction of training measures		
4.3.1. Activity: Analyze the effects of ownership and tenure arrangements	MOA, C	GRA
4.3.2. Activity: Explore land users attitudes to communal methods of land management and agree options for testing.	MOA, C	GRA
4.3.3. Activity: Based on tests draft policy and pursue the introduction of legislative reform.	Int./Regional Consultant, PEnA, MOA	
5. IMMEDIATE OBJECTIVE: Project impacts and progress monitoring		
5.1. Output: Project impact monitoring		
5.1.1. Activity: Agree methodology for impact	NC, RC, MOA	

Project Intervention	Responsible group	Potential institutions /individuals
monitoring		
5.1.2. Activity: Training in impact monitoring	NC, NAC, C	
5.1.3. Activity: Participate in regional meetings to discuss emerging results and best practices.	Relevant project staff	

Note: Under Activities 2.4.2, 2.6.1, 4.1.3, 4.1.5, 4.2.1, 4.2.3, 4.3.3 both MOA and PEnA will participate in the review and approval of management schemes, policies, legal drafts, and promotion material to be prepared by the project staff and/or international/regional experts.

GEF/UNDP Contribution

GEF/UNDP will provide a total of \$2,000,000 to this project. This input will be used to pay for non-in-kind support required for this project. The details of the use of these funds are shown in the Budget (Section J).

Palestinian Authority Contribution

The Palestinian Authority, through MOA, will provide in-kind administrative costs, lab equipment and maintenance and qualified and experienced staff members to help in carrying out the project activities. The MOA will also be responsible for providing the office space, including utilities, for project staff and consultants. The MOA shall also be responsible for providing maintenance expenses of the vehicle to be acquired by the project, as well as miscellaneous transportation expenses for the non-project PA assisting personnel. The total in-kind contributions of the MOA are valued at US\$ 646,800 (Section J).

Sub-contracts

GIS and Database Buildup

The sub-contracted local implementing institutions will work in close collaboration with MOA and the Project National Coordinator, and will undertake the following:

- Prepare a detailed digital base map (1:10,000) for the project's target sites, including topographic features and major landuses, with grid squares and image background;
- Build a relational database to store and organize data surveyed by project activities;
- Using aerial or satellite images, available land use maps, and/or field survey, plot existing and land uses changes on the digital base map for the project's target sites;
- Plot agro-biodiversity data (collected by project staff) into GIS and the relational database and track changes in agro-biodiversity abundance and distribution of wild relatives, habitats, and landraces of target crops;
- Provide feedback to the project surveying team in cases of apparent data collection errors;
- Analyze emerging data and develop overall framework of potential target areas for alternative and modified landuses; and
- Produce colored detailed and large-scale maps outlining existing and changes in the sites' landuse, distribution and abundance of the ten targeted agro-biodiversity crops;

- Transfer generated digital maps and relational data files to the MOA (ArcInfo format) upon completion of the task and ensure the compatibility and readability of the data.

Sub-contractors should have experience in GIS, database and land use analysis, with specific qualifications as follows:

- Functional GIS system supported by well-trained staff;
- Technical capabilities and equipment to analyze satellite images, aerial photos, maps and field data;
- Possess time-series aerial photos/satellite images and/or detailed land use maps of the target sites; and
- Ability to produce A0 size colored land use maps.

The report will be published in English.

On-Farm Conservation

The sub-contracted local implementing institutions will work in close collaboration with MOA and the Project National Coordinator, and will undertake the following:

- Work with communities to introduce soil improving rotation practices of target crop land races, with other crops;
- Conduct workshops and field visits to explain and demonstrate principles and benefits of improving on-farm crop landraces;
- Work with local extension agency staff and farmers to introduce crop mixtures with land races of target crop species as part of rotation management practices;
- Provide technical assistance and demonstrate the benefits and uses of corridors in the implementation of management techniques; and
- Pursue with local planning authorities local community agreement for corridors and habitat strips.

The sub-contractors shall be subject to the following pre-qualification criteria to become eligible for participation in this project.

- Have strong, grassroots connections with local communities in the project target sites;
- Have experience in the agricultural extension;
- Have elements of an organizational mission and/or vision that is participative and which addresses agricultural development and biodiversity protection;
- Have extensive experience in organizing workshop and in-field demonstrations;
- Have a track record of transparent, substantive and financial accounting and reporting.

Public Awareness

The sub-contracted local implementing institutions will work in close collaboration with MOA and the Project National Coordinator, as well as coordinating with PEnA. The following duties are requested:

- Prepare publicity material to promote and raise local interest in the project and its objectives

- Publish and distribute explanatory pamphlets, newsletters, articles, and other publications in the field of agro-biodiversity and alternative agricultural methods;
- Hold community seminars and workshops in the target sites that would raise community awareness of the project's objectives and convey the economic and environmental short, long-term and global benefits of the project;
- Arrange public open days and events to demonstrate agro-biodiversity management techniques;
- Distribute easily-read and illustrated information packs to farmers in the target sites on agro-biodiversity and its management techniques;
- Develop school syllabus materials in agro-biodiversity and provide instruction to teachers in their use; and

The sub-contractors shall be subject to the following pre-qualification criteria to become eligible for participation in this project.

- Have strong, grassroots connections with local communities around the project target sites;
- Have experience in the preparation of awareness materials and good understanding of the issues targeted by the project;
- Have elements of an organizational mission and/or vision that is participative and which addresses agricultural development and biodiversity protection;
- Have extensive experience in organizing local campaigns for public awareness and agricultural extension activities;
- Have an immaculate record with respect to transparency, substantive and financial and accountability when working under subcontract; and

Institutions may form partnerships in order to satisfy these criteria.

Water Harvesting

The sub-contracted local implementing institutions will work in close collaboration with MOA and the Project National Coordinator, and will undertake the following:

- Identify areas within the target sites for the implementing of water harvesting structures
- Arrange visits for participating farmers to demonstrate the benefits of water harvesting structures
- prepare a costed water harvesting action plan for the target sites
- Arrange workshops for project staff on issues related to water harvesting
- Carry out the building of water harvesting structure with community involvement
- Assist in the preparation of impact assessment of water harvesting structures on agro-biodiversity in the target sites.

The subcontractors shall be subject to the following pre-qualifications criteria to become eligible for the participation in this project.

- Have a strong, grassroots connections with local communities in the project target sites;
- Have experience in water harvesting projects;
- Have elements of an organizational mission and/or vision that is participative and which addresses water resource conservation and development;

- Have experience in preparing costed action plans and feasibility studies in the field of water resource development; and
- Have a track record of transparent, substantive and financial accounting and reporting.

Socio-economic Inventory and Surveys

The sub-contracted local implementing institutions will work in close collaboration and consultation with MOA and the Project National Coordinator, and will undertake the following:

- Participate, with the MOA, the National Project Coordinator and Regional Project Coordinator, in the selection of proper data collection and recording methodologies;
- Prepare questionnaires for socioeconomic data on traditional landuse practices and indigenous knowledge of project target crops, and causes of agro-biodiversity degradation;
- Carry out socio-economic survey in the target sites and build socio-economic data inventory in accordance with the selected data collection and recording methodologies;
- Analyze emerging socio-economic data;
- Present socio-economic survey analysis results to the project team and jointly develop overall framework for alternative practices for community-based conservation of agro-biodiversity that conform with the socio-economic status in the target areas; and
- Prepare methodology and socio-economic survey analysis report.

The subcontractors shall be subject to the following pre-qualification criteria to become eligible for the participation in this project.

- Have qualified and trained team on socio-economic survey techniques;
- Have previous experience in socio-economic surveys and analysis;
- Ability to build computerized socio-economic data inventory;
- Good command of socio-economic data analysis software such as SPSS;
- Have experience in the analysis of socio-economic data and proposing strategies based on the results of surveys.
- Strong writing and reporting skills

F. RISKS

The success of the project depends upon the project staff developing a close working relationship with local landusers, through a participatory approach. Where national capacity regarding these methodologies are not developed, the project will need to provide this capacity to project staff through training and technical backstopping. Project staff will work directly with the participating stakeholders, with strong extension and outreach components, in order to ensure that these potential obstacles can be overcome and that on-going dialogue is maintained.

It is necessary that the project leverages the PA's reform with respect to securing *in-situ* agro-biodiversity conservation. Through the preparation of the present project, the authorities in question have already signified their willingness to institute reforms in this area, based on the lessons learnt in the selected target areas.

Remaining risks that could cause disruption to the project and require adjustment of its

operations:

1. Un-institutionalized method of coordination or cooperation between participating institutions and between MOA, which could disrupt implementation arrangements;
2. Lack of knowledge of biodiversity at the beginning of the project may create confusing messages that lead to farmer disinterest;
3. The large number of participating institutions, both Palestinian Authority and non-Palestinian Authority may have different ideas on incentives for farmers which should be harmonized to effectively sell project ideas.
4. Restriction on movement between the various parts of the West Bank and to the target sites due to political instability.
5. Closure or confiscation of land in the target areas.

G. PRIOR OBLIGATIONS AND PREREQUISITES

1. Prior obligations

- Ensure that project activities comply with all national and international agreements on genetic and intellectual property right
- Provide written confirmation of the PA's willingness and intent to conduct long term impact monitoring of project activities beyond the life of the project
- Commitment of the PA's to consider and implement where appropriate, and in the national interest, legislation, economic reform, property rights and tenure reform under immediate objective 4 of the project.

H. PROJECT REVIEW, REPORTING AND EVALUATION

The project will be subject to tripartite review (joint review by representatives of the PA, UND/PAPP and ICARDA) at least once every 12 months, the first such meeting to be held within the first 12 months of the start of full implementation. The national executing/implementing agency shall prepare and submit to each tripartite review meeting an Annual Performance Report (APR). Additional APR's may be requested, if needed, during the project..

The national executing/implementing agency will prepare a project terminal report for consideration at the terminal tripartite review meeting. It shall be prepared in draft sufficiently in advance to allow review and technical clearance by the concerned parties at least 4 months prior to the terminal tripartite review.

The project shall be subject to in-depth evaluation 36 months after the start of full implementation and 6 months prior to the scheduled termination.

The National Executing Agencies will submit monthly a short two page description of implementation progress to the appropriate UNDP Country Office in addition to the Inception report, in-depth evaluations reports, Annual Progress Reports and Project Implementation Review and terminal report (copies of which ICARDA will be a regular recipient)

The National Implementing agencies will keep project performance records, as requested by the UNDP/PAPP and ICARDA, to assist in the preparation of the project-wide reports.

The National Executing Agencies will also prepare every quarter financial reports according to UNDP guidelines and submit these to the UNDP Country Office.

I. LEGAL CONTEXT

A Memorandum of Understanding (MOU) will be signed between UNDP/PAPP and the Palestinian Ministry of Agriculture (MOA). The MOU will outline the expectations and responsibilities of each party in carrying out the implementation of the project.

J. BUDGETS

GEF/UNDP Contribution

BL	Description	Total (USD)	Total p/m	Yr 1 p/m	USD	r 2 p/m	USD	Yr 3 p/m	USD	Yr 4 p/m	USD	Yr 5 p/m	USD
10.00	PROJECT PERSONNEL												
11.00	International/Regional Experts												
11.01	Agricultural economist and policy expert	37,500	5	1	7,500	1	7 00	1	7,500	1	7,500	1	7,500
11.02	Legal expert	37,500	5	1	7,500	1	7,500	1	7,500	1	7,500	1	7,500
11.03	Plant Taxonomist	15,000	2	2	15,000	0	0	0	0	0	0	0	0
11.04	Gene bank and in-situ conservation expert	37,500	5	1	7,500	1	7,500	1	7,500	1	7,500	1	7,500
11.49	Subtotal Intern. Experts	127,500	17	5	37,500	3	22,500	3	22,500	3	22,500	3	22,500
13.00	Admin. support personnel												
13.01	Secretary	40,838	60	12	7,692	12	7,923	12	8,160	12	8,405	12	8,657
13.02	Accounts Officer	47,782	60	12	9,000	12	9,270	12	9,548	12	9,835	12	10,130
13.03	Driver	40,838	60	12	7,692	12	7,923	12	8,160	12	8,405	12	8,657
13.99	Subtotal admin. Support	129,458	180	36	24,384	36	25,116	36	25,868	36	26,645	36	27,444
15.00	Duty Travel												
15.01	Travel	50,000			10,000		10,000		10,000		10,000		10,000
15.99	Subtotal duty travel	50,000			10,000		10,000		10,000		10,000		10,000
17.00	National experts												
17.01	National Coordinator	212,345	60	12	39,996	12	41,196	12	42,432	12	43,705	12	45,016
17.02	Agronomist	82,823	60	12	15,600	12	16,068	12	16,550	12	17,047	12	17,558
17.03	Rangeland ecologist	41,411	30	6	7,800	6	8034	6	8,275	6	8,523	6	8,779
17.04	Plant taxonomist	39,468	30	12	15,600	0	0	0	0	0	7,800	12	16,068
17.05	Seed technologist	40,418	30	0	0	0	0	6	7,800	12	16,068	12	16,550
17.06	Crop breeder	40,418	30	0	0	0	0	6	7,800	12	16,068	12	16,550
17.07	Forage specialist	40,418	30	0	0	0	0	6	7,800	12	16,068	12	16,550

BL	Description	Total (USD)	Total p/m	Yr 1 p/m	Yr 1 USD	Yr 2 p/m	Yr 2 USD	Yr 3 p/m	Yr 3 USD	Yr 4 p/m	Yr 4 USD	Yr 5 p/m	Yr 5 USD
17.08	Field assistants (2)	50,400	72	24	16,800	0	0	24	16,800	0	0	24	16,800
17.99	Subtotal National Experts	547,701	342	66	95,796	30	65,298	72	107,457	72	125,279	102	153,871
19.00	Component: personnel	854,659	539	107	167,680	69	122,914	111	165,825	111	184,424	141	213,815
21.00	SUB-CONTRACTS												
21.01	GIS and Database buildup	45,000			20,000		6,250		6,250		6,250		6,250
21.02	Public Awareness	72,000			11,000		17,500		14,500		14,500		14,500
21.03	On-farm Conservation (Outputs 2.3/2.4)	36,000			1,500		9,625		9,625		7,625		7,625
21.04	Water harvesting	63,710			11,000		20,710		16,000		16,000		0
21.05	Socio-economic Inventory and surveys	27,800			16,800		11,000		0		0		0
21.29	Component total: sub-contracts	244,510		0	60,300	0	65,085	0	46,375	0	44,375	0	28,375
30.00	TRAINING												
31.00	<u>Fellowships</u>												
31.01	MSc Plant taxonomy	42,000					21,000		21,000		0		0
31.02	MSc Seed technology	42,000			21,000		21,000				0		0
31.03	MSc Crop breeder	42,000			21,000		21,000				0		0
31.99	Sub total: Fellowships	126,000		0	42,000	0	63,000	0	21,000		0		0
32.00	<u>Group Training</u>												
32.01	GIS training	10,000			5,000		5,000		0		0		0
32.02	Eco-geographic botanic survey techniques	10,000			5,000		5,000		0		0		0
33.03	Socio-economic/indigenous knowledge surveys	10,000			5,000		5,000		0		0		0
33.04	On-farm conservation management training	6,000			2,500		2,500		1,000		0		0
32.06	Field gene-bank techniques training	17,500			5,000		5,000		2,500		2,500		2,500
32.08	Apicultural techniques training	7,500			2,500		2,500		2,500				0
32.09	habitat management and species utilization	8,500			1,000		5,000		2,500		0		0
32.10	Agro-biodiversity training for teachers	9,000			3,000		3,000		3,000		0		0
32.11	Soil and water management techniques	20,000			5,000		10,000		5,000		0		0
32.12	Impact monitoring indicators and techniques	7,000			1,000		1,000		2,500		2,500		0
32.99	Sub total Group training	105,500		0	35,000	0	44,000	0	19,000	0	5,000	0	2,500

BL	Description	Total (USD)	Total p/m	Yr 1 p/m USD	Yr 2 p/m USD	Yr 3 p/m USD	Yr 4 p/m USD	Yr 5 p/m USD
	<u>Conferences and meetings</u>							
32.13	Regional meeting	20,000		4,000	4,000	4,000	4,000	4,000
32.14	Regional technical meetings	25,000		5,000	5,000	5,000	5,000	5,000
32.15	National Agro-biodiversity Committee Meetings	15,000		3,000	3,000	3,000	3,000	3,000
32.16	District Committees	15,000		3,000	3,000	3,000	3,000	3,000
32.17	Workshops	25,000		5,000	5,000	5,000	5,000	5,000
32.99	Sub total: conferences and meetings	100,000	0	20,000	20,000	20,000	20,000	20,000
33.00	In-service Training (Experts come to train)	75,000		15,000	15,000	15,000	15,000	15,000
33.99	Sub total: In-service training	75,000		15,000	15,000	15,000	15,000	15,000
39.00	Component total: training	406,500	0	112,000	142,000	75,000	40,000	37,500
40.00	EQUIPMENT							
41.00	Expendables	10,000		2,000	2,000	2,000	2,000	2,000
41.01	Office Supplies	90,000		10,000	20,000	20,000	20,000	20,000
41.02	Project in-kind incentives and support to farmers	100,000		12,000	22,000	22,000	22,000	22,000
41.99	Sub component total: Expendables							
42.00	<u>Non-Expendables</u>							
42.01	Office furniture	7,000		7,000	0	0	0	0
42.02	Vehicles	65,000		65,000	0	0	0	0
42.03	Computers and printers	10,000		10,000	0	0	0	0
42.04	Software (ArcView + Project Management)	5,000		5,000	0	0	0	0
42.05	Portable computers	15,000		15,000	0	0	0	0
42.06	Fax machine	2,000		2,000	0	0	0	0
42.08	Photocopier	6,000		6,000	0	0	0	0
42.09	Television	2,500		2,500	0	0	0	0
42.10	Video	1,500		1,500	0	0	0	0
42.11	Video Camera	2,000		2,000	0	0	0	0
42.13	Photo camera	1,000		1,000	0	0	0	0

BL	Description	Total (USD)	Total p/m	Yr 1 p/m	Yr 1 USD	Yr 2 p/m	Yr 2 USD	Yr 3 p/m	Yr 3 USD	Yr 4 p/m	Yr 4 USD	Yr 5 p/m	Yr 5 USD
42.14	Sensitive digital electric balance	2,000			2,000		0		0		0		0
42.16	Field balance	2,000			2,000		0		0		0		0
42.18	Seed counter	700			700		0		0		0		0
42.19	Incubator	1,000			1,000		0		0		0		0
42.20	Growth chamber	1,000			1,000		0		0		0		0
42.21	Oven	1,000			1,000		0		0		0		0
42.22	Samples divider	1,000			1,000		0		0		0		0
42.23	Bulk thresher	1,000			1,000		0		0		0		0
42.24	Single Spike thresher	2,000			2,000		0		0		0		0
42.25	Seed cleaner (airblast)	2,000			2,000		0		0		0		0
42.26	Microscopes	10,000			5,000		0		5,000		0		0
42.27	Field Equipment	7,070			7,070		0		0		0		0
42.28	Rain gauges	4,200			4,200		0		0		0		0
42.29	Thermometers	2,000			2,000		0		0		0		0
42.99	Sub component total: expendable	153,970		0	148,970	0	0	0	5,000	0	0	0	0
49.00	Component total: equipment	253,970		0	160,970	0	22,000	0	27,000	0	22,000	0	22,000
50.00	MISCELLANEOUS												
51.00	Operation and maintenance of equipment	25,000			5,000		5,000		5,000		5,000		5,000
52.00	Review of project legislative proposals by PEnA	15,000			0		5,000		5,000		5,000		
53.00	Reporting costs	35,000			7,000		7,000		7,000		7,000		7,000
53.00	Sundries	17,213			3,441		3,443		3,443		3,443		3,443
59.00	Component total: Miscellaneous	92,213			15,441		20,443		20,443		20,443		15,443
93.00	Support costs (UNDP at 8%)	148,148			41,311	0	29,795	0	26,771	0	24,899	0	25,371
99.00	TOTAL	2,000,000			557,703		402,237		361,415		336,141		342,504

UNDP funded sub-contracts

<i>Subcontract – Activities</i>	<i>Total</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>
GIS and Database Build-up						
1. Prepare digital base map	8,000	8,000	0	0	0	0
2. Build relational database	2,000	2,000	0	0	0	
3. Plot existing and land uses changes on the digital base map	10,000	10,000	0	0	0	0
4. Plot agro-biodiversity data and track changes in agro-biodiversity	3,500	0	875	875	875	875
5. Analyze emerging data and develop framework	15,000	0	3,750	3,750	3,750	3,750
6. Produce maps	3,500	0	875	875	875	875
7. Transfer data to MOA	3,000	0	750	750	750	750
Sub-Total	45,000	20,000	6,250	6,250	6,250	6,250
On-Farm Conservation						
1. Introduce soil improving rotation practices	4,000	0	2,000	2,000	0	0
2. Conduct workshops	4,000	0	1,000	1,000	1,000	1,000
3. introduce crop mixtures with land races	6,000	0	1,500	1,500	1,500	1,500
4. demonstrate benefits and uses of corridors in the implementation of management techniques; and	20,500	0	5,125	5,125	5,125	5,125
5. Pursue with local planning authorities local community agreement for corridors and habitat strips.	1,500	1,500	0	0	0	0
Sub-Total	36,000	1,500	9,625	9,625	7,625	7,625
Public Awareness						
1. Prepare publicity material	8,000	8,000	0	0	0	0
2. Explanatory pamphlets, newsletters, articles, and other publications	15,000	0	3,750	3,750	3,750	3,750
3. Community seminars and workshops	6,000	3,000	3,000	0	0	0
4. Public open days and events	8,000	0	2,000	2,000	2,000	2,000
5. Easily-read and illustrated information packs to farmers	20,000	0	5,000	5,000	5,000	5,000
6. Develop school syllabus	15,000	0	3,750	3,750	3,750	3,750
Sub-Total	72,000	11,000	17,500	14,500	14,500	14,500
Water Harvesting						
1. Identify areas for implementing water harvesting structures	3,000	3,000	0	0	0	0
2. Demonstrate benefits of water harvesting structures	3,000	0	3,000	0	0	0
3. Prepare costed water harvesting action plan for target sites	5,000	5,000	0	0	0	0
4. Arrange workshops for project staff	3,000	3,000	0	0	0	0
5. Build water harvesting structure with community involvement	46,710	0	16,710	15,000	15,000	0
6. Impact assessment of water harvesting	3,000	0	1,000	1,000	1,000	0

structures on agro-biodiversity						
<i>Sub-Total</i>	63,710	11,000	20,710	16,000	16,000	0
Socio-Economic Inventory and Surveys						
1. selection of proper data collection and recording methodologies;	8,00	800	0	0	0	0
2. Prepare questionnaires	1,000	1,000	0	0	0	0
3. Carry out socio-economic survey and build socio-economic data inventory	15,000	15,000	0	0	0	0
4. Analyze emerging socio-economic data	5,000	0	5,000	0	0	0
5. Present socio-economic survey analysis results and jointly develop overall framework for alternative practices	3,000	0	3,000	0	0	0
6. Prepare methodology and socio-economic survey analysis report	3,000	0	3,000	0	0	0
<i>Sub-Total</i>	27,800	16,800	11,000	0	0	0
Total	254,510	64,300	66,585	47,875	45,875	29,875

PA In-kind Contribution to the Project

Description	Units	Total	Years				
			1	2	3	4	5
Personnel							
Administration – Hebron Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Administration- Arroub Station	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Administration- Bethlehem Agr.office	0.25	15,000	3,000	3,000	3,000	3,000	3,000
Administration-Jenin Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Administration Beit Qad Station	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Sub –Total	2.25	135,000	27,000	27,000	27,000	27,000	27,000
Agronomists: Hebron Agr. Office	1.5	60,000	12,000	12,000	12,000	12,000	12,000
Agronomist Arroub Station	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Agronomists Yatta Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Agronomists Dahria Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Agronomists Bethlehem Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Agronomists Jenin Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Agronomists Beit Qad Station	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Agronomists Tubas Agr. Office	0.5	30,000	6,000	6,000	6,000	6,000	6,000
Sub –Total	5.0	270,000	54,000	54,000	54,000	54,000	54,000
Lab technicians Arroob Station	0.3	18,000	3,600	3,600	3,600	3,600	3,600
Lab technicians Beit Qad station	0.3	18,000	3,600	3,600	3,600	3,600	3,600
Sub –Total	0.6	36,000	7,200	7,200	7,200	7,200	7,200
Personnel Total	10.35	441000	88,200	88,200	88,200	88,200	88,200
Operational Costs							
Hebron Agr. Office		12,000	2,400	2,400	2,400	2,400	2,400
Arroub Station		12,000	2,400	2,400	2,400	2,400	2,400
Yatta Office		6,000	1,200	1,200	1,200	1,200	1,200
Dahria Office		6,000	1,200	1,200	1,200	1,200	1,200
Bethlehem Agr. Office		12,000	2,400	2,400	2,400	2,400	2,400
Jenin Agr. Office		12,000	2,400	2,400	2,400	2,400	2,400
Beit Qad Office		12,000	2,400	2,400	2,400	2,400	2,400
Tubas Office		6,000	1,200	1,200	1,200	1,200	1,200
Sub Total		78,000	15,600	15,600	15,600	15,600	15,600
Transportation Cost for Non-Project PA Assisting Personnel							
Hebron Agr. Office		15,000	3,000	3,000	3,000	3,000	3,000
Bethlehem Agr. Office		9,000	1,800	1,800	1,800	1,800	1,800
Jenin Agr. Office		12,000	2,400	2,400	2,400	2,400	2,400
Sub Total		36,000	7,200	7,200	7,200	7,200	7,200
Office Rents							
Hebron Agr. Office		12,000	2,400	2,400	2,400	2,400	2,400
Arroub Station		12,000	2,400	2,400	2,400	2,400	2,400
Yatta Office		3,000	600	600	600	600	600
Dahria Office		3,000	600	600	600	600	600

Bethlehem Office		12,000	2,400	2,400	2,400	2,400	2,400
Jenin Agr. Office		12,000	2,400	2,400	2,400	2,400	2,400
Beit Qad Station		6,000	1,200	1,200	1,200	1,200	1,200
Tubas Office		3,000	600	600	600	600	600
Sub Total		63,000	12,600	12,600	12,600	12,600	12,600
Non-Project Laboratory equipment and Materials							
Arroub Station		18,000	3,600	3,600	3,600	3,600	3,600
Beit Qad Station		18,000	3,600	3,600	3,600	3,600	3,600
Sub Total		36,000	7,200	7,200	7,200	7,200	7,200
Total-In Kind Contribution		646,800	130,800	130,800	130,800	130,800	123,600

K. ANNEXES

I. Workplan

Project Intervention	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. IMMEDIATE OBJECTIVE: Survey and monitor project sites to understand causes of agro-biodiversity degradation.																				
1.1. Output: Eco-geographic, genetic diversity, socio-economic, and indigenous surveys																				
1.1.1. Activity: Recruit project staff for data recording collection, storage and analysis																				
1.1.2. Activity: Short term training																				
1.1.3. Activity: Review survey data																				
1.1.4. Activity: Agree on survey methodologies																				
1.1.5. Activity: Set up and adapt GIS and database																				
1.1.6. Activity: Collect data																				
1.1.7. Activity: Enter data into GIS and database																				
1.1.8. Activity: Analyze emerging data																				
2. IMMEDIATE OBJECTIVE: Alternative land uses through community based on-farm sustainable use and conservation of agro-biodiversity																				
2.1. Output: Identify areas and communities for intervention																				
2.1.1. Activity: Field visits and community activities raise project awareness																				
2.1.2. Activity: Community consultation to agree target areas																				
2.2. Output: Community level water harvesting and soil preservation infrastructure																				
2.2.1. Activity: Recruit small-scale irrigation and soil management specialists																				
2.2.2. Activity: Workshops water resource and soil																				

[illegible]

Project Intervention				and selection			
Year 1	1						
	2						
	3						
	4						
Year 2	1						
	2						
	3						
	4						
Year 3	1						
	2						
	3						
	4						
Year 4	1						
	2						
	3						
	4						
Year 5	1						
	2						
	3						
	4						
2.6.3. Activity: exchange of seed and root stock							
2.7. Output: Community based grazing management practices							
2.7.1. Activity: Explore options for grazing management							
2.7.2. Activity: Work with communities to implement grazing management techniques							
2.8. Output: Alternative source of income							
2.8.1. Activity: Raise community awareness of benefits of apiculture							
2.8.2. Activity: technical assistance in apiculture							
2.8.3. Activity: Explore alternative livelihood options							
2.9. Output: Local community awareness raised							
2.9.1. Activity: Public open days							
2.9.2. Activity: Develop and disseminate information packs							
2.10. Output: In-kind incentives							
2.10.1. Activity: Recruit in-kind assistance expert							
2.10.2. Activity: Review in-kind schemes and design and agree suitable program.							
2.10.3. Activity: monitor disbursement of in-kind help							
3. IMMEDIATE OBJECTIVE: Increase national capacity to deliver training needs							
3.1. Output: Training in agro-biodiversity conservation and sustainable use							
3.1.1. Activity: Make co-operative agreement with training centers							
3.2. Output: National capacity in agro-biodiversity conservation and sustainable use training							

Project Intervention	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<u>3.2.1. Activity:</u> Identify universities and draw up study frameworks																				
<u>3.2.2. Activity:</u> Advertise and select candidates for project funded scholarships																				
<u>3.2.3. Activity:</u> Assist in placing study candidates																				
<u>3.2.4. Activity:</u> Draw up binding agreement between study candidate, UNDP, training centers																				
<u>3.2.5. Activity:</u> Develop and disseminate training materials to schools																				
4. IMMEDIATE OBJECTIVE: Policy reform at project sites to conserve and sustainably use agro-biodiversity																				
4.1. Output: Review national legislation, policy and economic instruments related to agro-biodiversity and propose reforms.																				
<u>4.1.1. Activity:</u> Recruit project policy legislation and economics staff.																				
<u>4.1.2. Activity:</u> Analyse interactions among communities, economic development as they affect landraces, rangeland and forest resources.																				
<u>4.1.3. Activity:</u> Assess impact on natural resources from rural development																				
<u>4.1.4. Activity:</u> Present costed reform options to the Authority for consideration and implementation																				
<u>4.1.5. Activity:</u> Pursue legal recognition and implementation of policy options																				
4.2. Output: Reform of national policy options relating to soil water, and natural vegetation.																				
<u>4.2.1. Activity:</u> Analyse national agricultural policies relating to soil, water and natural vegetation																				

Project Intervention	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
mismanagement																				
4.2.2. Activity: Costed options for national agricultural, economic and rural development options and reach agreement for testing policy option at project sites																				
4.2.3. Activity: Test reforms at project sites and pursue legislation																				
4.3. Output: Reform of land tenure for profitable sustainable production and the introduction of training measures																				
4.3.1. Activity: Analyze the effects of ownership and tenure arrangements																				
4.3.2. Activity: Explore land users attitudes to communal methods of land management and agree options for testing.																				
4.3.3. Activity: Based on tests draft policy and pursue the introduction of legislative reform.																				
5. IMMEDIATE OBJECTIVE: Project impacts and progress monitoring																				
5.1. Output: Project impact measures																				
5.1.1. Activity: Agree methodology for impact monitoring																				
5.1.2. Activity: Training in impact monitoring																				
5.1.3. Activity: Conduct monitoring activities																				
5.1.4. Activity: Participate in regional meetings to discuss emerging results and best practices.																				

II. Schedule for project reviews, reporting and evaluation

Activity/ Report	Year 1				Year 2				Year 3				Year 4				Year 5			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Inception report	♦																			
Monthly Progress Reports ¹	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Quarterly Financial Reports	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦	♦
Annual Progress Report (APR)					♦				♦				♦				♦			
Project Implementation Review (PIR)			♦			♦				♦			♦				♦			
In-Depth Evaluation Reports										♦									♦	
Terminal Reports																			♦	

¹ A short two page description of implementation progress every month to the UNDP Country Office. The UNDP Country Office will copy this to UNDP/GEF in New York.

III. Equipment requirements

Moisture meters (characteristics of land races seed, including drought tolerance)

Incubator (to test the viability of seed)

- temperature, air movement and light regulation

Plant growth chamber (for growth characteristics under regulated conditions)

- temperature, air movement and light regulation

Field vehicle

- 4x4 wheel drive
- Diesel engine
- Capacity 8 people

Double cabin pickup

- 4X4 wheel drive
- Diesel engine
- Capacity 5 people
- 750 kg load

Personnel Computer with printer

- Pentium II (160 Mhz processor)
- 1 GB minimum hard disk capacity
- 15'' screen,
- Windows 97 software
- Laser jet 6 printers

Portable computers

- Pentium (160 Mhz) processor
- 2GB hard disk,
- color screen.

Software

- ArcView
- Spatial Analyst
- MS Programme Manager

Photocopier

- 30 copies per minute
- Automatic paper feed

Sensitive balance (morphological seed characterisation)

- capacity 9/10 kilograms
- accuracy 0.01 gram
- electronically powered

Seed Counter

- Counting range (0.3-15 mm)
- Automatic feed

Sample divider (representative samples of genetic material for analysis)

- for all types of seed

Bulk thresher

- 15 heads of small grain
- self cleaning and mobile

Single spike thresher

- threshing wheat and barley and other crops
- air operated

Seed cleaner (cleaning for seed sample)

- Air blast
- table top model

Oven

- Seed drier (drying seed genetic materials)
- Temperature and humidity regulation

Television monitor and video player (training and awareness)

- colour 24 inch screen

Video camera (training and awareness)

IV Job description

1. National Coordinator

The National Project Coordinator is the key manager of the project. He/she should work in close consultation and collaboration with the MOA, the focal point for the project at local level, and under the supervision of both MOA and UNDP/PAPP. His/her tasks are as follows:

- Participate in the recruitment of project staff and establishing their terms of reference;
- Ensure timely implementation of the different project activities;
- Supervise and coordinate the issuing of subcontracts for each of the project activities in close consultation with UNDP/PAPP and MOA;
- Provide the secretariat for the Project National Steering Committee, draft the agenda in collaboration with the Chairperson and write minutes of the discussions;
- Circulate information concerning the project and its activities needed to establish and sustain interest in the project;
- Participate in the preparation of contracts for the sub-contracted activities;
- Assist and advise the local implementing institutions with the workplans and accomplishing their activities under the project;
- Review, recommend, and prepare for training opportunities and M.Sc. programmes for participants in the project;
- Prepare all the necessary financial and progress reports required within the UNDP/PAPP project cycle and any others, as requested;
- Prepare the annual National Work Plan in cooperation with the District Committees;
- Be accountable for capital equipment and operational supplies as per standard procedures;
- Maintain coordination channels between MOA, and the local implementing institutions in regard to project activities;
- Maintain regular contact with the project Regional Coordinator and draw on the regional network for advice and information that would improve project implementation; and
- Participate and assist in the preparation of planned Regional Technical Coordination Meetings.

Qualifications

- A University higher degree (Masters or Ph.D.) in agriculture, forestry, biodiversity, or other fields relevant to agro-biodiversity;
- Experience of project management, preferably in the field of agriculture;
- Experience of working with NGOs;
- Familiarity with the Palestinian Territories and the environmental, social, and agricultural situation;
- Ability to communicate and work effectively with a wide range of project partners;
- Experience with participatory approaches for effective project implementation;
- Capacity to write reports and manage budgets; and
- Fluent in English and Arabic.

The project Coordinator will be contracted for the duration of the project but will be subject to annual reviews based upon performance.

2. Agricultural economist and policy expert

The Agricultural Economist and Policy expert(s) will work in close collaboration with MOA and PEnA and undertake the following activities:

- Analyse interactions among communities, economic development and national agricultural policies in the target sites and outline their impact on continued use of agro-biodiversity crops;
 - Assess the impact on natural resources from national rural initiatives and policies and suggest modifications to better address maintenance of biodiversity in both natural vegetation and farming systems;
 - Analyse with the land users the effect of land use and tenure arrangements on agro-biodiversity;
 - Analyse national agricultural policies that lead to mismanagement of soil, water and natural vegetation by land users and assess policy options that would encourage conservation of these resources by land users;
 - Present options to assist in drafting agricultural policy and economic reforms that would address the maintenance of agro-biodiversity; and
 - Present costed policy options to the Ministries of Agriculture, and Environment.
- It is essential that the process draws on experience elsewhere in the region. The regional participating agencies, ICARDA, IPGRI, and ACSAD), via the regional facilitator, may contribute to this task by providing existing examples policies applied in the region.

3. Legal experts

The Legal expert(s) will work in close collaboration with MOA and PEnA and undertake the following activities:

- Review and analyze existing legislation (property rights, nature protection, rangelands, urban planning, waste disposal...) and identify the components of this legislation that may be immediately applied for the protection of sensitive agro-biodiversity in the Palestinian Territories.
- Draft legal text providing the basis for the legal protection of the agro-biodiversity at sensitive areas, including the delimitation and zoning determined as a result of the agro-biodiversity and socio-economic field studies;
- Propose measures for addressing the gaps in the existing legal framework linking long term agro-biodiversity protection to sustainable development in the sensitive sites; and
- Pursue legal recognition of alternative agro-economic reform policies generated by the project.

It is essential that the process draws on experience elsewhere in the region. The regional participating agencies, ICARDA, IPGRI, and ACSAD), via the regional facilitator, may contribute to this task by providing existing laws applied in the region.

4. Gene Bank and In-situ Conservation Expert

The Gene Bank and *In-Situ* Conservation expert(s) will work in close collaboration with MOA and undertake the following activities:

- Devise community based breeding and selection activities of important threatened species;

- Design a programme for seed and root stock exchange between farmers and communities;
- Design management techniques and uses of field gene banks;
- Explore options for alternative grazing management systems on common lands that are appropriate to social and economic status in the target sites; and
- Design grazing practices appropriate to the target sites area.

5. Plant Taxonomist (will be hired from PEnA)

He/She will work under and be accountable to the National Project Coordinator, and will perform the following:

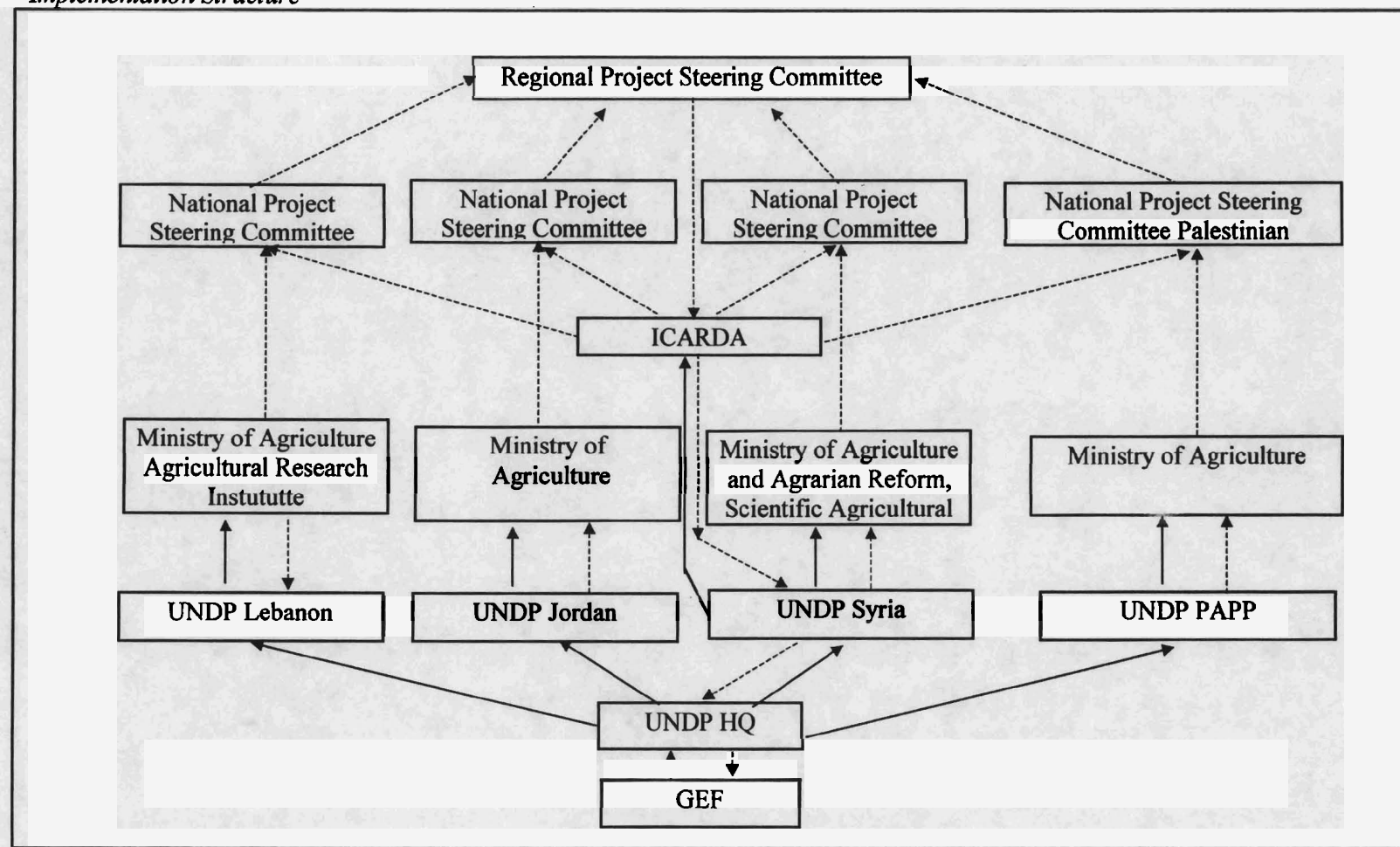
- Train local biodiversity experts on species identification in the field of agro-biodiversity;
- Describe the principle agro-biodiversity species in the target sites;
- Identify globally threatened species in the target sites;
- Establish the distribution of threatened agro-biodiversity
Make a map (in cooperation with GIS Subcontracted institution) of the principal vegetation communities
- Define and implement a monitoring system for threatened agro-biodiversity
- Identify the factors (positive and negative)influencing the distributions of the threatened agro-biodiversity species

Qualifications for National Experts (agronomist, rangeland ecologist, socio-economist, plant taxonomist, seed technologist, crop breeder, forage specialist)

He/She will work under and be accountable to the National Project Coordinator, and should have the following qualifications:

- A minimum of Bachelor degree in the relevant field;
- A minimum of three years of experience in the relative field;
- Familiarity with the social, economic and political situation in the target sites;
- Familiarity with local NGOs and local community;
- Excellent computer skills; and
- Fluency in English and Arabic.

V. Framework for effective participation of national and international staff
Implementation Structure



Key : -----> = Reporting flow : -----> = Financial flow

Regional Project Steering Committee:

Terms of Reference

The Regional Steering Committee will supervise the execution of the project. Steering Committee meetings, to be chaired by the representative of the government/authority hosting the meeting, will rotate between the participating Countries/Authority. The Regional Steering Committee will meet annually, or more often if deemed necessary. Where feasible, the Committee will convene immediately following the Annual Regional Technical Coordination and Planning Meeting.

The committee will be comprised of:

A representative from the Executing Agency (ICARDA): The Director of International Cooperation or his nominated representative

The Regional Coordinator, who will be an ex officio member and will act as Secretary to the committee.

The Director General, or his designated representative, of the Executing Agency in each country /authority (Syria, Jordan, Lebanon, Palestine Authority)

The appointed National Coordinators from each Nationally Executed Component (Jordan, Syria, Lebanon and Palestinian Authority)

Representatives from both Co-operating Agencies (ACSAD, IPGRI)

A representative from the Syrian UNDP Country Office.

The Regional Steering Committee will meet annually, or more often if deemed necessary. Where feasible, the Committee will convene immediately following the Annual Regional Technical Coordination and Planning Meeting.

The Regional Steering Committee will be responsible for:

- 1) Oversight of the project activities including monitoring and evaluation of progress and achievements made;
- 2) Review and approval of annual reports for submission to the donor;
- 3) Review and approval of national annual work plans and training programme and, where necessary, recommend changes to better meet the project objectives;
- 4) Review and approval of regional annual work plan and training programme, where necessary, recommend changes to better meet the project objectives;
- 5) Review budget utilization and approve annual budgets for the coming planning period.

Regional Technical Co-ordination and Planning Meetings:

Terms of Reference

Regional Technical Co-ordination and Planning Meetings will be held prior to Regional Project Steering Committee meetings to discuss operational, planning, and co-ordination issues relating to the coming year's Project Work Plans, budgets, technical and monitoring reports. In particular these meetings will discuss and modify the operational and technical aspects of the Regional and National Work plans to facilitate:

Complementarity and co-ordination between project components;
Ensure that sufficient technical backstopping and assistance will be given to the nationally executed project components;
Provide advice on the appropriateness of project activities in the regional context, in the light of project technical and monitoring reports.

Meeting members:

Regional coordinator
National coordinators
Concerned Scientist from participating organizations.

National Project Steering Committee

It is advised that the Project Steering Committee includes representatives of the following:

- The designated representative of the Ministry of Agriculture
- PEnA (& GEF Operational Focal Point)
- UNDP/PAPP
- The National Coordinator
- The Regional Coordinator

The Committee will be chaired by the designate of the Ministry of Agriculture.

The terms of reference of the Committee are as follows:

- a. Assist in the selection of the National Project Coordinator, project personnel and short and long term consultants and subcontracts;
- b. Review type and suitable mechanisms for in-kind assistance to local communities;
- c. Assist the Project Coordinator in the identification of universities and programmes for the Msc. studies and select candidates for these programmes;
- d. Review and endorse the technical financial and progress reports produced by the project;
- e. Coordinate activities with the National Biodiversity Steering Committee;
- f. Consider and endorse the annual national Work Plan and budget and examine linkages with other projects in the Palestinian Authority; and
- g. Ensure that the views of local people are fully taken into account in the management process.

The committee may request qualified experts, or relevant institutions, to participate in its work. Minutes of each meeting are kept and circulated to members and to central level.

District Working Committees

Committee Members

Two District Committees at Hebron/Bethlehem and Jenin, to assist the National Project Coordinator with the implementation and monitoring of project activities. Committee meetings will be called and chaired by the National Project Coordinator at least once each year, and members will include

- Regional Project Co-ordinator
- Local project beneficiaries
- participating institutions, including subcontractors, universities, the Agricultural Cooperative Union and the Agricultural Coordinating Committee and others
- a representative from the Local Council
- Representative from relevant ongoing projects.

Terms of Reference

Members will provide the Project National Coordinator, with feedback on the implementation of activities at project sites and the inputs for the development of the annual national Work Plan and budget for the coming year, for submission to the National Project Steering Committee.

VI. Cultivated Plants Originating in the Near East

A short list of cultivated plants identified as originating in the Near East. The list is intended to be indicative, not exhaustive. Based on J.R. Harlan (1975) *Crops and Man*. 2nd Edition. pp. 69-70. (GEF Project will address species marked in bold and with an asterisk).

Cereals

<i>Avena</i> spp.	Oats
*<i>Hordeum vulgare</i>	Barley
<i>Secale cereale</i>	Rye
*<i>Triticum</i> spp.	Wheat
*<i>Aegilops</i> spp.	

Root and Tuber Crops

<i>Beta vulgaris</i>	Beet
<i>Brassica rapa</i>	Turnip
<i>Daucus carota</i>	Carrot
<i>Raphanus sativus</i>	Radish

Fruits and Nuts

<i>Corylus</i> spp.	Hazelnut
<i>Cucumis melo</i>	Melon
<i>Cydonia oblonga</i>	Quince
*<i>Ficus carica</i>	Fig
<i>Juglans regia</i>	Walnut
<i>Phoenix dactylifera</i>	Date palm
*<i>Pistacea vera</i>	Pistachio
*<i>Prunus</i> spp.	Plum; Apricot; Cherry;
	Almond
<i>Punica granatum</i>	Pomegranate
*<i>Pyrus communis</i>	Pear
<i>Vitis vinifera</i>	Grape vine

Fiber Plants

<i>Cannabis sativa</i>	Hemp
<i>Linum usitatissimum</i>	Flax

Forage Crops

<i>Agropyron</i> spp.	Wheatgrasses
<i>Agrostis</i> spp.	Bentgrasses
<i>Bromus inermis</i>	Brome grass
<i>Dactylis glomerata</i>	Cocksfoot
<i>Festuca arundinacea</i>	Fescue
<i>Lolium</i> spp.	Ryegrasses
*<i>Medicago</i> spp.	Alfalfa/Lucerne; Medics
<i>Melilotus</i> spp.	Clovers
<i>Onobrychis viciifolia</i>	Sainfoin
<i>Phalaris</i> spp.	
<i>Phleum pratense</i>	Timothy
<i>Sorghum halepense</i>	Johnson grass
*<i>Trifolium</i>	Clovers

**Vicia* spp.

Vetches

Pulses

<i>Cicer arietinum</i>	Chickpea
<i>Lathyrus sativus</i>	Chickling
*<i>Lens esculenta</i>	Lentil
<i>Lupinus albus</i>	Lupin
<i>Pisum sativum</i>	Pea
<i>Vicia ervilia</i>	Bitter vetch
<i>Vicia faba</i>	Broadbean/Faba bean

Oil Crops

<i>Brassica napus</i>	Rapeseed
<i>B. nigra</i>	Mustard
<i>Carthamus tinctorius</i>	Safflower
<i>Linum usitatissimum</i>	Flax, Linseed
*<i>Olea europea</i>	Olive
<i>Papaver somniferum</i>	Poppy

Vegetables, Herbs and Spices

<i>Asparagus</i> spp.	Asparagus
*<i>Allium</i> spp.	Onion; Garlic; Leek
<i>Arethum graveolens</i>	Dill
<i>Brassica oleracea</i>	Cabbage, etc.
<i>Capparis</i> spp.	Caper
<i>Carum carvi</i>	Caraway
<i>Ceratonis siliqua</i>	Carob
<i>Coriandrum sativum</i>	Coriander
<i>Cuminum cyminum</i>	Cumin
<i>Foeniculum vulgare</i>	Fennel
<i>Lactuca sativa</i>	Lettuce
<i>Lepidium sativum</i>	Garden Cress
<i>Petroselinum sativum</i>	Parsley
<i>Pimpinella anisum</i>	Anise
<i>Portulaca oleracea</i>	Purslane
<i>Trigonella foenumgraecum</i>	Fenugreek

Drugs, Medicinal Plants

<i>Atropa belladonna</i>	Belladonna
<i>Digitalis purpurea</i>	Digitalis
<i>Glycyrrhiza glabra</i>	Licorice
<i>Hyoscyamus muticus</i>	Henbane
<i>Papaver somniferum</i>	Codeine, morphine, opium
<i>Platago psyllium</i>	Psyllium

VII. Relevant On-going Research and Development Projects in the Palestinian Territories

- *Rehabilitation of Degraded Rangelands in the Eastern Slopes of the West Bank:* This Japan-funded project address the issues of rangeland degradation, degeneration of Bedouin livelihoods, and building partnerships and institutional trust. The project is to be implemented jointly by the Ministry of Agriculture (MOA) and the Palestinian Environmental Authority (PEnA). Within the first year of the project, arrangements will have been made with public and private sector nurseries to identify adapted shrub species and to produce sufficient numbers of seedlings to supply the project sites where the shrubs will be transplanted -- each of which will have prepared wadi terraces capable of capturing run-off rainfall. The project will build Palestinian capacity in forage production and rangeland management through scholarships and in-country training. The Ministry of Agriculture will contribute a package of small ruminant health and management as an incentive for Bedouin participation in the project, particularly during the first two years when the shrubs must be protected from use. This project will complement several activities to be carried out by the Agro-biodiversity project and assist in the training and building capacity components.
- *The Local Rural Development Program (LRDP):* A partnership program between the Ministry of Local Authority of the Palestinian Authority, Local Authorities UNDP/PAPP, the United Nations Capital Development Program (UNCDF) and the donor community. Its main objective is to support an initiative of the Palestinian Authority in decentralized planning and financing for participatory rural development, aimed at alleviating poverty, improving local governance, strengthening civil society and promoting dialogue between the constituents of the Palestinian society. LRDP is scheduled to be operational in much the same target areas as proposed in the current project. The second phase of this programme started in March 1997 and will last four years. It has a total planned budget of US\$ 25 million, of which US\$7 million has already been raised. So far funds have been donated by the Governments of Japan, the Netherlands, UNDP and UNCDF.
- *Employment Generation in Agriculture, Hebron District:* Better known as the "Land Reclamation Project", this US\$ 2 million project, funded by the Government of Japan through UNDP/PAPP, is designed to generate employment and expand agricultural production by terracing, excavation of cisterns and planting of fruit trees in Hebron District between 1997-1999. The project is relevant because of its mechanism of collaboration between the MOA and local implementing institutions. Similar initiatives are currently under preparation by the MOA, with support from Spain and IFAD in particular. The World Bank is also considering supporting land reclamation activities.
- *Biodiversity Strategy and Action Plan (BSAP):* The project aims to assist the Palestinian Environmental Authority (PEnA) in developing a BSAP within the context of the Convention on Biological Diversity (CBD). The project is executed by UNDP/PAPP and implemented by PEnA in cooperation with the International Union for the Conservation of Nature (IUCN) and seeks to identify and assess the current state of knowledge about biodiversity in the West Bank and Gaza Strip. This is an enabling activity that will set the stage for the *Agrobiodiversity Project* (below).
- *Initiative for Collaboration to Control Natural Resource Degradation (Desertification) of Arid Lands in the Middle East:* This project is executed by the International Center for Agricultural Research in the Dry Areas (ICARDA), contracted by the World Bank, under the auspices of the

Research in the Dry Areas (ICARDA), contracted by the World Bank, under the auspices of the Working Group of the Environment in the Multilateral Peace Talks of the Middle East. The "Initiative" includes Egypt, Israel, Jordan, the Palestinian Authority and Tunisia. A Facilitation Unit is in charge of coordinating the project, which is hosted in ICARDA's Regional Office in Cairo. The project has four themes: (1) Rangeland and Livestock led by Jordan; (2) Germplasm for Arid Lands led by Egypt; (3) Marginal Water and Saline Soils led by Tunisia; (4) Economic Forestry and Orchards led by Israel and, in addition, the Palestinian Authority is being assisted in capacity building through support to the Palestinian Environmental Authority (P), based in Hebron. All countries carry out national support activities and cooperate in regional support programs led by the countries indicated. The project runs through 1999 and is only about 50% funded, although there is already US\$ 685,000 allocated for national activities in the Palestinian Authority, \$250,000 of which is directed to range work in the Eastern Slopes.

- *Adaptive Agricultural Research and Extension in the West Bank and Gaza Strip:* With funding from the Government of Japan, UNDP/PAPP is providing assistance to the Ministry of Agriculture in the field of research and extension. The project amounts to a total of \$US 3 million in three components: (i) policy formulation and planning in the areas of adaptive research and extension, in collaboration with ISNAR; (ii) to provide three stations with the physical facilities and equipment needed to carry out adaptive research and demonstration work; and (iii) to increase farmland productivity through better access by farmers to the results of adaptive research.
- *Palestinian Brucellosis Control Program (PBCP):* A comprehensive PBCP has been launched in January 1998 as a partnership between the Ministries of Agriculture and Health, the National Zoonosis Committee, UNDP/PAPP, the World Health Organization (WHO) and the donor community. Funds have already been contributed to the programme by the Governments of Spain, Argentina and Greece. Brucellosis is a major risk to human health in the West Bank and Gaza, causing a reduction in high-value food to the sectors of population who are most in need; negatively affecting animal health; and creating a major barrier to trade in milk products which could be helping to improve the economic position of the Palestinian Authority. The Brucellosis project has direct relevance to the present project because of the potential to link up in the same villages to provide a multi-sectoral coverage of needs in the poverty-prone areas where both projects are targeting their work.
- The Ministry of Agriculture, with support from the Dutch Government, is currently formulating an afforestation/agro-forestry project in the framework of the "*Greening Palestine*" project of the MOA. This project and the present rangeland rehabilitation project are expected to be complementary and strong synergies are expected to be found during the course of their implementation.
- A number of NGO on-going initiatives are potentially relevant to the present project, including the Union of Agricultural Cooperatives with Austrian and Swedish assistance; TCAS (The Center for Agricultural Services) with Spanish assistance; ARIJ (Applied Research Institute of Jerusalem) with Austrian assistance; and the Palestinian Agricultural Relief Committee's (PARC) Acacia Project and Olive Cake Project.

VIII. Target Areas Descriptions{PRIVATE } in the Palestinian Territories

1. Hebron Area

Location: This site is made up of two areas, one to the west of Hebron city towards the borders of Bethlehem district in the north, and the armistice lines in the west, and the second, southeast of Hebron city, from the south-western borders of Hebron province including the eastern areas in Hebron province and Bethlehem up to Wadi Nar.

Topography: The site to the west of Hebron city covers the mountains and the western slopes of Hebron province. The south and east area forms a gradation from the hills towards the Dead Sea.

Climate: It is a mountainous sub-humid variant of the Mediterranean climate that changes gradually into a semi dry area in the eastern and southern parts of the area. The semi arid area contains important rangeland and cultivated with mainly barely, wheat, and winter legumes. It suffers from habitat degradation and contains flora that should be protected.

Soil: Soil in the mountainous areas is Terra rossa, but dark Rendzina can be found in certain locations. Alluvial soils exist in plains and valleys.

Land Use: Parts of the hilly and mountainous regions are forested, however large numbers of sheep and frequent droughts have led to overgrazing. Grazing of sheep and goats depends partly on the natural plant cover, and partly on residues of crops. Cultivated land is concentrated typically in the plains and valleys where the soil is deep and field crops such as wheat and barley). The majority of land is under fruit tree cultivation. Most of the agriculture is dryland farming. Irrigated land is only found around the villages. 75% of the land is privately owned.

Flora and Agro-biodiversity Significance:

This area represents the far south of eastern Mediterranean flora. In the mountainous regions (West Hebron) *Marquis* forest exists. It is rich in an array of plant species including medicinal plants and wild relatives of fruit trees notably wild pear, cherries and almond. It is the only region which contains remnants of apple and pear trees. In addition last remnants of oak forests still exist. In the cultivated areas, ancient cultivars of olives, grapes, nuts, plum, almond, peaches and cherries are grown. There are many landraces of wheat, barley, food and feed legumes and some local varieties of vegetables.

Threats: Overgrazing by sheep and goats is severe. Unpalatable bushes and poisonous plants now predominate in the lower areas towards the Dead Sea, where degradation through overgrazing is severe.

Incremental Activities:

On-farm conservation of local varieties of crop plants and fruit trees, and rangeland rehabilitation with indigenous forage grasses and legumes, will be the focus of the project at this site. However, due to the lack of baseline information on the agrobiodiversity of the

area, much efforts will be devoted to inventory surveys at the initial period. Soil and water conservation will help conserve the habitats of wild species.

2. Jenin

Location: The site extends from Qabatia village, southeast of Jenin city, to the main road across the Jordan River.

Topography: The region is hilly with a gradient down towards the Jordan Valley, at 0-300 m.

Climate: The site represents a gradient from semi-arid to arid climate. It is semi-arid steppe. It includes wide range of agriculture such as fruit trees, vegetables, and winter and summer field crops

Soil: Soils in the valley plains are alluvial and on the mountain slopes a dark Rendzina with some wide pockets of Terra Rosa soil. Basaltic pockets exist at the edge of the area with yellow soils capable of holding moisture. Soils are being lost through overgrazing.

Land use: The 19,404 ha area is composed of 7500 ha of agricultural land; 4400 ha for wheat, barley, lentil, chickpea, *Vicia* sp., forage peas and spices (cumin, anise etc.), 1400 ha for rainfed vegetables, 1700 ha for olives and 350 ha other fruit trees. Open grazing for cattle, sheep and goats occupies a large area. In addition, closed areas and natural reserves exist in the area.

Flora and Agrobiodiversity Significance:

This site is an area of semi-arid steppe with scattered trees. The flora includes more than 1000 species, many of which are at risk through habitat destruction by overgrazing. Belts of Oak, Lentisk and Carob forest exist with numerous indigenous trees and shrubs although only wild Pistachia is represented among the target crop species (Table 3). Wild species of wheat and barley, *Ononis* sp., *Papaver* sp. and annual legumes and forage species, wild *Vicia* and *Medicago*, also exist.

Threats: Overgrazing is endangering range and forage plants in this region, notably *Trifolium*, *Medicago* and *Lathyrus* species.

Incremental Activities:

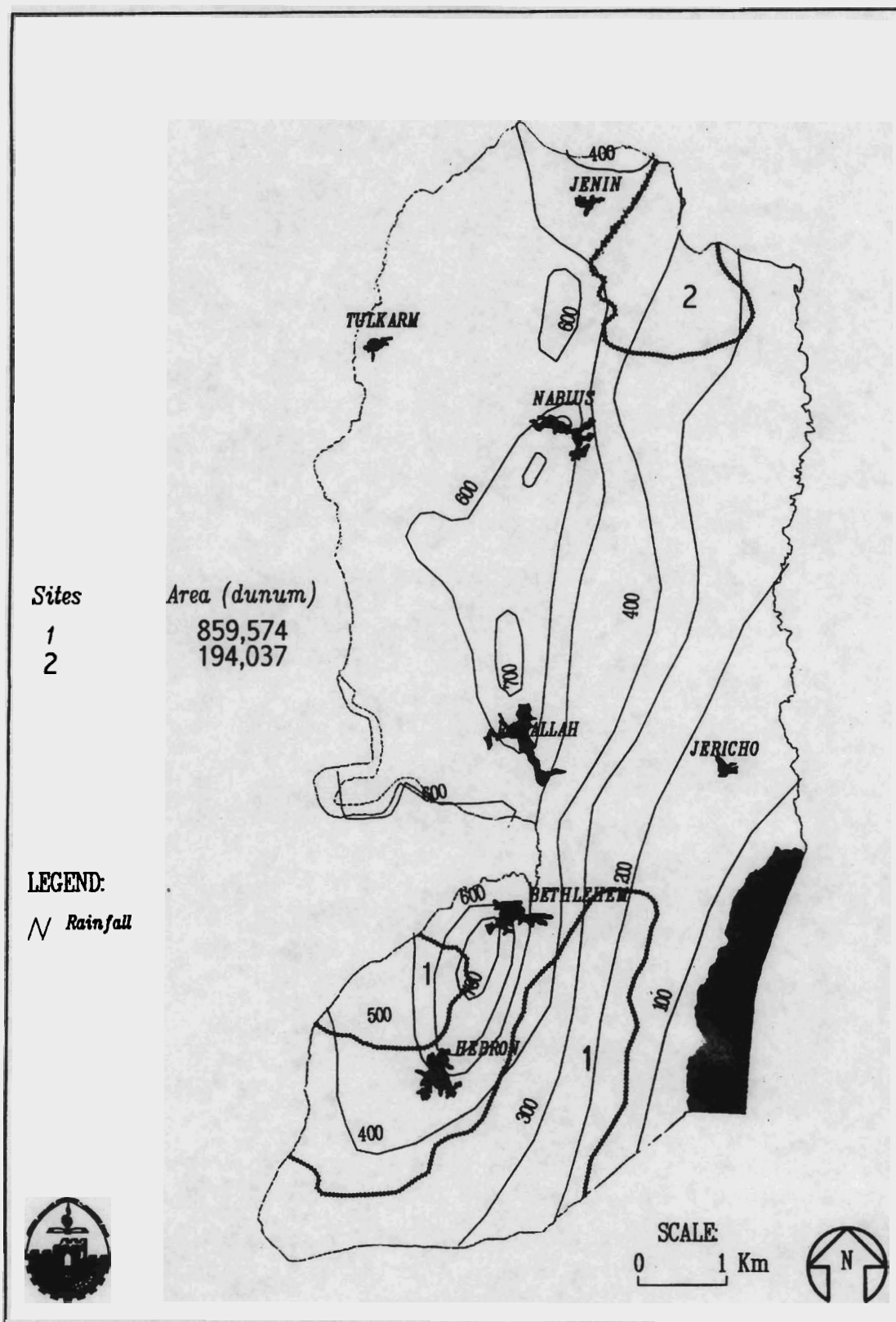
Rangeland rehabilitation and *in situ* conservation, especially through habitat restoration and improvement, will be the focus for this site. As in the case of Hebron Area, however, much effort will be devoted to inventory surveys at the initial period.

TABLE 1. TARGET AREA/CROP GERmplasm MATRIX

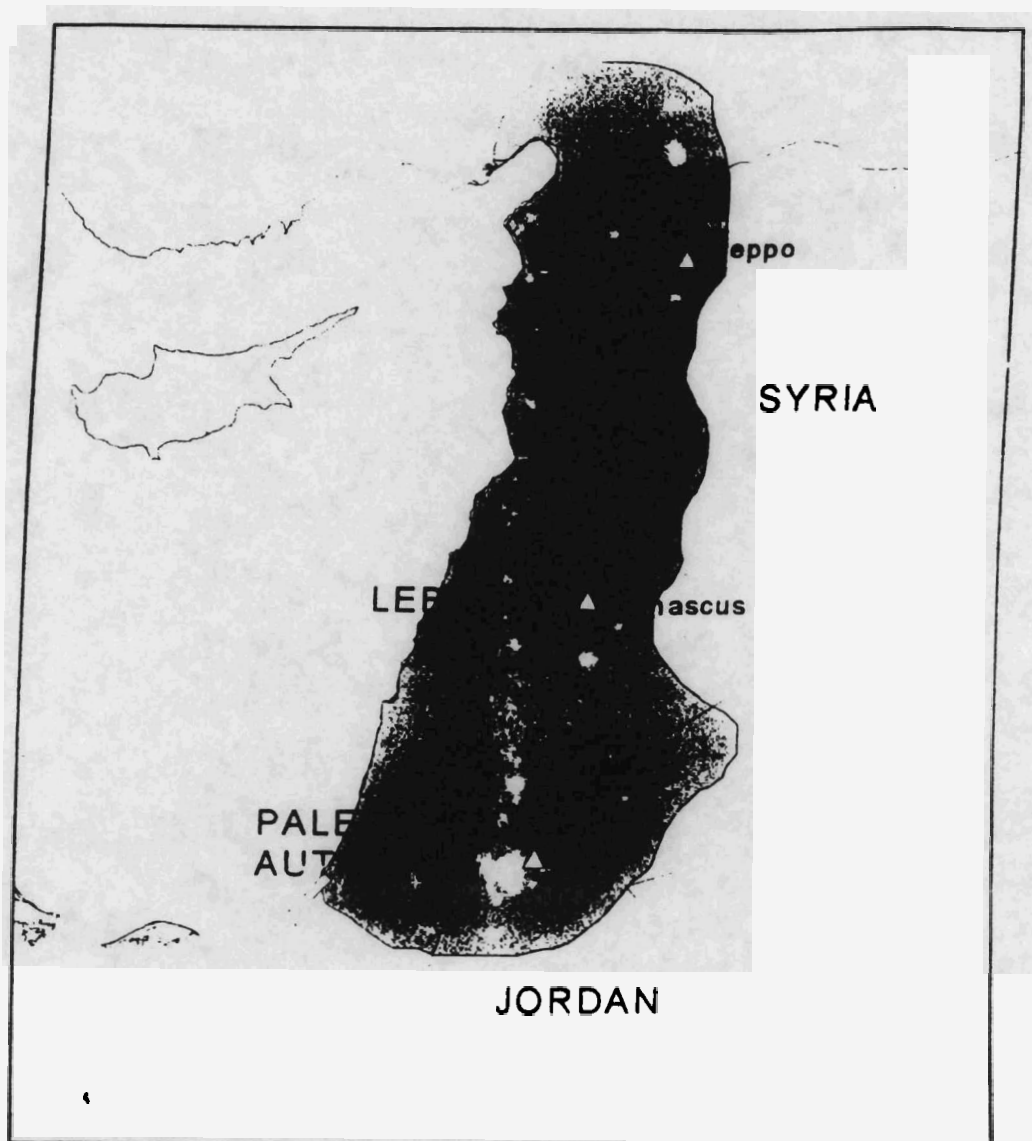
Crop	Germplasm	Jordan		Lebanon		Palestinian Authority		Syria	
		Ajlun	Muwaqqar	Baalbek	Aarsal	Hebron	Jennin	Slenfe	Sweida
Wheat	wild <i>Triticum</i>	XX		XX		X	X		XX
	<i>Aegilops</i> spp.	XX	X	XX	X	X	XX	X	XX
	landraces	XX		X	X	X		XX	XX
Barley	<i>H. spontaneum</i>	X	X	XX		X	X	X	XX
	landraces	XX		X		X		X	XX
Lentil	wild <i>Lens</i>	X		XX					XX
	landraces	X		X					X
Vetch	wild <i>Vicia</i>	XX	X	X	X	X	X	X	XX
<i>Lathyrus</i>	wild <i>Lathyrus</i>	X		X	X	X	X	X	X
Medics	wild <i>Medicago</i>	X	X	X	X	X	X	X	X
Clovers	wild <i>Trifolium</i>	X		X	X	X	X	X	X
Olive	<i>Olea oleaster</i>								X
	local varieties	XX	XX			XX		XX	XX
Apricot	local varieties	XX			XX			XX	XX
Cherries	local varieties				XX			XX	XX
Plum	local varieties					XX		XX	
Almond	wild <i>Prunus</i>				X	X		X	X
	local varieties	XX			XX	XX		XX	XX
Pear	wild <i>Pyrus</i>			X	X	X		X	
	local varieties				XX	XX			XX
Pistachio	wild <i>Pistacia</i>	X			X	X	X	X	X
	local varieties				X			XX	
Fig	local varieties	XX		X	X	XX		XX	XX
<i>Allium</i>	wild <i>Allium</i>			X				X	
	local varieties	XX	XX		XX			XX	XX
Total		10/7	2/4	4/10	5/11	5/12	1/7	9/11	15/6

XX = high presence; X = low presence; blank = target germplasm is absent

X Map of Target Area: Figure 2 Hebron and Jenin



X Map of target Areas: figure 1; target sites in relation to the Levantine Upland Center of Plant Diversity



Key:

Shaded Area Levantine Uplands Centre of Plant Diversity

Target Sites:

- | | | | |
|---|------------------|---|------------------------------------|
| 1 | Ajlun, Jordan | 5 | Jenin, Palestinian Authority |
| 2 | Muwaqqar, Jordan | 6 | Hebron Area, Palestinian Authority |
| 3 | Baalbek, Lebanon | 7 | Slenfe, Syria |
| 4 | Aarsal, Lebanon | 8 | Sweida, Syria |

INCREMENTAL COST ANALYSIS

Broad Development Goals

1. All four countries/authority, Jordan, Lebanon, the Palestinian Authority and Syria, have demonstrated increasing commitment to biodiversity. Conservation of biodiversity through protected areas has begun in Jordan, Lebanon and Syria. In the case of Jordan, range reserves were first established as early as 1945. In the Palestinian Authority, military zones and other delimited areas have in effect been protected and active management is currently being sought. All countries/territory have each established a Biodiversity Committee under their respective ministries and institutions, and Jordan, Lebanon and Syria have all ratified the Biodiversity Convention. The Biodiversity Country Studies in the three countries are at their final stage of completion. The findings in these country studies will provide significant guidance to official policies as well as projects related to biodiversity and environment. In the Palestinian Authority, Environmental Profiles have been prepared for Gaza and different areas of the West Bank and a Biodiversity Committee has been established.

2. In terms of the conservation and management of agrobiodiversity and plant genetic resources, the four countries/authority are in different stages of development but the three countries all expressed keen interest and commitment in their respective National Reports on plant genetic resources submitted for the Global Plan of Action for the Conservation and Sustainable Utilisation of PGR for Food and Agriculture (1996)¹. Syria may be regarded as the most advanced, partly due to the longterm presence of ICARDA and IPGRI. There is good progress from *ex-situ* conservation of a few major crops to increasing accessions and field gene banks of larger variety of species, and more and more trial activities for *in-situ* and on-farm conservation. There is not yet adequate facility for *ex-situ* conservation in Jordan, Lebanon nor the Palestinian Authority. Lebanon has some temporary collections only and the Palestinian Authority has none. However, Jordan has a seed centre for forest species and has recently established a genetic resource unit at its National Centre for Agricultural Research and Technology Transfer (NCARTT). It will soon build up its own national gene banks, with assistance from the IPGRI/WANA office. No *in-situ* conservation for plant genetic resources *per se* is in place yet.

3. In all four countries/authority, agriculture is an important sector of the economy, both in terms of national production and rural livelihoods. All four countries/authority

¹FAO, *in prep*. The Global Plan of Action for the Conservation and Sustainable Utilisation of Plant Genetic Resources for Food and Agriculture. International Technical Conference on Plant Genetic Resources, Leipzig, Germany, 17-23 June 1996.

are increasingly aware of the threat to long-term agricultural productivity, due to the mismanagement and resulting degradation of the natural resource base: land, water and natural vegetation. They are also aware of the fact that sustainable development through stable agriculture production will depend largely on the conservation of plant genetic resources.

4. To be effective, any strategy for the conservation of natural resources and biodiversity must be directed towards, and implemented within, national goals of sustainable agricultural production. Agrobiodiversity conservation and sustainable use in the Fertile Crescent does not merely satisfy national priority, but will also generate significant global benefits, for it is here that many of the world's major crops originated and are still present as wild relatives and landraces (local varieties), carrying some of the world's most diverse plant genetic resources.

Baseline

5. Agrobiodiversity and plant genetic resources of the world are eroding fast; the main causes being replacement by modern cultivars, land clearing and habitat destruction by expanding and heavily mechanized agriculture, overgrazing, deforestation, and loss of traditional knowledge and management. The authorities of the four participating countries/authority aim to curb natural resource degradation through sustainable management and conservation of natural resources within productive agricultural systems.

They are aware that the key to food security and sustainable agricultural production are the biological resources of agriculturally important species, and their associated insects and micro-organisms, in providing valuable sources of resistance to biotic and abiotic stresses in producing higher yielding, disease-resistant and environmentally adapted plant varieties. This requires continuous and reliable access to genetic resources, especially landraces and wild relatives of plant species.

6. Under the baseline, action for agrobiodiversity would be limited to collection, characterization, evaluation and 'ex-situ' conservation of genetic resources. Comprehensive information and understanding about the status and dynamic interactions of agrobiodiversity in the different ecosystems and agro-ecosystems of the Fertile Crescent is lacking. At ICARDA² and IPGRI-WANA³, the genetic resources of some agriculturally important species have been characterized in some detail with the aim to assist developing countries/authority in the region to improve their agricultural practices and yield while maintaining their plant genetic base. For many other species however, information is virtually non-existent. Germplasm material have to be collected and characterized in terms of the diversity of its responses to environmental factors such as cold, heat and drought stresses, resistances to disease pathogens, insect pests, as well as

²International Center for Agricultural Research in the Dry Areas.

³International Plant Genetic Resources Institute - West Asia and North Africa Program.

potential to contribute to more efficient yields. This task has begun, and substantial germplasm banks have been created, but it is far from complete.

7. The countries/authority of the Fertile Crescent and West Asia as a whole, have largely depended on these and other international institutions, though they are now allocating resources to develop or enhance their own collections. However, *ex-situ* conservation is only suitable for very small and genetically restricted populations of certain species which are unlikely to be viable in the wild. *Ex-situ* conservation has the limitation that only a small proportion of existing genetic resources may be sampled. It is impossible to maintain in germplasm banks a representative sample for large and varied populations, whose genetic make-up is constantly evolving in response to environmental changes. Such naturally occurring and evolving diversity can only be maintained *in-situ* in their natural environments or on-farm in the case of landraces and local varieties.

8. Another form of biodiversity conservation under the baseline would be protection of species within designated national parks and nature reserves which do not consider agrobiodiversity and the plant genetic resources it contains. Furthermore, it is not feasible to establish protected areas in productive agricultural areas of these developing countries/authority where rich agrobiodiversity is concentrated, because this would conflict with national goals for agricultural production. Conservation of agrobiodiversity in these areas must be based on *in-situ* and on-farm conservation and sustainable use of these biological assets. This is an area which, globally, has received much less attention than *ex-situ* conservation or protected areas management, and for which few guidelines exist. To conclude, under the current baseline, the genetic erosion of globally significant agrobiodiversity would not be tackled.

9. There is currently no *in-situ* conservation activity relating to the target species in any of the selected target areas. Wild relatives and landraces of wheat, barley and lentil and forage and pasture legume species were collected in the two Jordanian sites, in Baalbek in Lebanon and Sweida area in Syria and are now conserved in *ex-situ* collections held at ICARDA. Syrian and Jordanian germplasm is also maintained *ex-situ* at the respective national gene banks. None of the fruit tree species has even been collected in the target areas, therefore no *ex-situ* back-up exists to support the planned *in-situ* conservation activities.

Global Environmental Objective

10. The global environmental objective of this project is towards conservation, enhancement and sustainable use of the biodiversity of globally agriculturally important species, and by so doing, maximizes global food security. The strategy is to focus on the development of sustainable agricultural management strategies in the agro-ecosystems of the Fertile Crescent, the center of origin for many global agricultural species whose genetically diverse wild relatives and landraces are under threat.

GEF Alternative

11. Develop new, transferable, integrated approaches for the conservation and sustainable use of agrobiodiversity within agriculturally productive areas by addressing the proximate and intermediate causes of biodiversity erosion in the Fertile Crescent, and testing alternative agricultural and resource management practices through community-based, participatory actions in selected target areas in the countries/authority.

12. Through the GEF alternative, the shortcomings of national actions noted in the baseline will be overcome. In particular, the project will (i) inventorize and monitor the genetic diversity of target species of global significance in the target areas, (ii) document and map the current land use and management practices affecting agrobiodiversity, (iii) evaluate Government/Authority policies with respect to agrobiodiversity conservation, (iv) establish a GIS as a tool for analysing the above information and developing plans and guidelines to enhance agrobiodiversity on the national and regional scales, (iv) develop, facilitate and test community-driven measures for the conservation and sustainable use of agrobiodiversity; (v) promote local and national social and economic measures (policies, legislation, and public institutions) in support of agrobiodiversity conservation; and (vi) ensure sustainability of the program by strengthening national capacities in management, research and awareness, through participation, training and regional networking.

13. With the proposed GEF project focusing on Jordan, Lebanon, the Palestinian Authority and Syria, and with the existing GEF plant genetic diversity project in Turkey, the Fertile Crescent will be managed as a whole for the benefit of the globe, by securing global agrobiodiversity and food production.

System Boundary

14. The geographical system boundary of this project is the modern territories of the Fertile Crescent: Jordan, Lebanon, the Palestinian Authority and Syria. Specifically, the project refers to the conservation and sustainable use of agrobiodiversity of selected target species within productive agricultural systems in these countries/authority. Since the target areas of the project are representative of the agro-ecosystems of the whole region, and because the approaches taken in this regional project aim for replicability, the impacts of the project will be seen both within and beyond the boundaries of these target areas and the participating countries/authority. To some degrees, other biodiversity (non-target plant species and associated fauna) within the agro-ecosystems concerned also benefit from the project as a result of improved habitat and resource management. With a very strong institutional and capacity building component, a highly community-driven, participatory approach, and considering the time it may take for damaged ecosystems to recover, the momentum and wide-ranging impacts of the project will go well beyond the

project period, although the present systems boundary in terms of time horizon have been set to the five year project intervention.

Incidental Domestic Benefits

15. The alternative will provide the same domestic benefits as the baseline: improved agricultural production. Additional domestic benefits from the alternative will include (i) the reduction of risk in productivity in these highly variable environments, by utilizing the specific adaptation of landrace, wild relatives and other biodiversity assets in the farming systems; (ii) better managed resources, especially soil and water, for present and future agricultural development, (iii) strengthened human resources to cope with agricultural and environmental challenges, and (iv) greater public awareness of environmental and biodiversity concerns in general. These incidental domestic benefits will accrue over a longer period of time and can not be monetized within the time frame of the present project. The potential additional benefits from alternative income initiated by the project will be small and only noticeable at the village level. No immediate national benefits in monetary terms is expected.

7. Costs

The GEF contribution is US\$ 8.124 million allocated as follows:

	<u>\$ (million)</u>
Agrobiodiversity and Socio-economic Inventory and Monitoring	1.370
Community-based Agrobiodiversity Management	2.215
Social Economic Policy and Property Rights	1.410
Institutional and Human Resource Capacity Strengthening	1.630
National and Regional Coordinators	1.081
Project Support Services	0.418
TOTAL	8.124

8. Incremental Cost Matrix. See below.

9. Agreement

The technical contents of the project, including the incremental cost analysis have been negotiated with the Governments of Jordan, Lebanon and Syria as well as with representatives of the Palestinian Authority.

Incremental Cost Matrix

Project Component	Cost Category	Cost (\$million)	Domestic Benefits	Global Environmental Benefits
Agrobiodiversity & Social Economic Inventory and Monitoring	Baseline	\$2.918	Storage, characterization and evaluation of <i>ex-situ</i> germplasm collections to provide knowledge on special characteristics and quality of tested crops.	<i>Ex situ</i> conservation of the genetic diversity of wild relatives and landraces of globally important agricultural species.
	Alternative	\$4.748	Data-gathering & analyses of agrobiodiversity in relation to agricultural & land use practices. This provide baseline for monitoring & planning framework to optimize agricultural production.	Knowledge base essential for <i>in-situ</i> and on-farm conservation of the genetic diversity of target crop species of global significance.
	Increment (GEF)	\$1.830 (\$1.370)		
Community-based Agrobiodiversity Management	Baseline	\$10.273	Increased agricultural productivity through the introduction of improved agricultural technology & rational land use systems.	Supply of globally important agricultural crops.
	Alternative	\$18.432	Sustainable livelihood and reduced production risk by using locally adapted landraces, local varieties & wild relatives saved by improved, community-based species and habitat management.	Conservation & longterm availability of dynamic and evolving genetic resources of globally significant agricultural species, for utilization now and in the future by the global community.
	Increment (GEF)	\$ 8.159 (\$2.215)		
Social and Economic Policy Measures	Baseline	\$1.336	National agricultural policies, strategies and instruments that support sustainable agricultural production.	Tested models and policy recommendations transferable to other dry areas for sustainable agricultural production.
	Alternative	\$2.982	Integration of appropriate, additional social & economic policy measures in support of agrobiodiversity conservation <i>in-situ</i> and on farm, by bringing about financial sustainability.	Transferable socio-economic policy measures for <i>in situ</i> and on farm conservation of globally significant species.
	Increment (GEF)	\$1.646 (\$1.410)		
Institutional and Human Resource Capacity Strengthening	Baseline	\$1.500	National/regional capacities in agricultural resource management, land use and <i>ex situ</i> agro-biodiversity conservation.	Transferable knowledge and skills in agricultural resource management, land use and <i>ex situ</i> agro-biodiversity conservation.

Project Component	Cost Category	Cost (\$million)	Domestic Benefits	Global Environmental Benefits
	Alternative	\$4.079	In addition, enhanced national/regional capacities in community-based, participatory approaches to <i>in-situ</i> and on-farm agrobiodiversity conservation, research and development, through training, awareness promotion and networking.	Strengthened institutional and human capacity for conservation of globally significant agrobiodiversity; Transferable expertise, knowledge and increased awareness for <i>in-situ</i> and on-farm conservation and sustainable use of agrobiodiversity.
	Increment (GEF)	\$2.579 (\$1.630)		
Regional and National Coordination	Baseline	0		
	Alternative	\$1.351		Effective programme management to achieve global objectives of project.
	Increment (GEF)	\$1.351 (\$1.081)		
Project support services	(GEF)	(\$0.418)		
Totals	Baseline	\$16.027		
	Alternative	\$32.010		
	Increment (GEF)	\$15.983 (\$8.124)		

Footnotes to Incremental Cost Matrix: Sources of Non-GEF funding

- 1. Community-based Agrobiodiversity Inventory and Monitoring**
Baseline Government of Jordan: Genetic Resource Conservation; ICARDA's core programme (projects 3.3, 3.4, 4.1), IPGRI (project C 05), ACSAD, studies on water resources, soil and agro-climates and plant surveys.
Alternative ICARDA; Government in-kind contributions

- 2. Community-based Agrobiodiversity Management**
Baseline AFSED/IFAD Regional Programme for the Development of Integrated Crop/Livestock production in West Asia and North Africa. Phase II; ICARDA's core programme (projects 1.1, 2.2, 2.3, 2.4, 3.1, 3.2), Government of Jordan: Rangeland protection Project, IPGRI, (project C12).
Alternative ICARDA Government in-kind contributions

- 3. Social, Economic and Policy Issues**
Baseline Government of Jordan: National project on diversification of income (credit); ICARDA's on-going core programme (project 4.3)
Alternative ICARDA; Government in-kind contributions

- 4. Institutional and Human Resource Capacity Strengthening**
Baseline UNDP: Strengthening of national Capacity and grassroots in-situ Conservation for Sustainable Biodiversity in Lebanon.
Alternative ICARDA; Government in-kind contributions

- 5. Programme coordination**
Baseline none
Alternative ICARDA, IPGRI, ACSAD & Government in-kind contributions in addition to the present project.